

Digital Games and the Hero's Journey in Management Workshops and Tertiary Education

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Abstract: Joseph Campbell's Monomyth not only provides a well-proven pattern for successful storytelling, it may also help to guide teams and team leaders through the challenges of change and innovation processes. In project "HELD: Innovationsdramaturgie nach dem Heldenprinzip" researchers of the University of the Arts Berlin and the Berlin Gameslab, part of the University of Applied Sciences HTW-Berlin, team up to examine the applicability of the Hero's Journey to change management using an adaptation of Campbell's pattern called „Heldenprinzip®“. The project's goal is not to teach the stages of the Monomyth as mere facts but to enable participants of training courses and interventions to actually experience its concepts using a portfolio of creative and aesthetic methods. While a pool of aesthetic methods - like drawing, performing or role-playing - is already being used, the Gameslab subproject qualitatively researches the potentials for enriching and complementing these methods with interactive digital media and games. This paper discusses three types of game based learning treatments to be used in training and intervention sessions as well as teaching the Monomyth in a game based learning university course. The first option is providing participants with a game that follows the Hero's Journey and inducing them to reflect on the experience and its relation to the learning goal. An alternative strategy is to make participants go through a game sequence broaching issues that are relevant for a stage or the journey of change in general. Last but not least, digital equivalents of the non-digital aesthetic methods can be constructed using digital games or digitally enhanced set-ups for playful interactions. All three treatments have their merits and pitfalls, which are discussed in relation to the identified game-based learning scenarios: self-study, blended game-based learning and face-to-face sessions. Furthermore, these scenarios are compared while specific techniques boundary conditions are highlighted.

Keywords: blended game-based learning, physically interactive digital games, hero's journey, innovation and change management training, teaching game-based learning

1. Introduction

Today's economy is fast changing and provides less and less certainties, thus making it mandatory for businesses to successfully innovate and adaptively change. There is a multitude of models available to support such processes by describing stages that should be considered and activities that should be tackled, thus reducing complexity. While Change Management models commonly include some thoughts about the culture and individuals in an organization that needs changing (see Todnem, 2005) such considerations tend to be missing in models of innovation processes (e.g. in Hughes & Chafin, 1996:92, 93). These, like the Stage-Gate®-Model (Cooper, 1990), tend to be sequential and resemble a metaphorical production line with little regard for the human condition. When thinking about innovation processes as being triggered and advanced by human ideas it becomes obvious that, while being excellent guides on what to do at which stage, innovation models tend to lack considerations on how motivation and creativity can be upheld in such seemingly unpredictable human-borne processes. Thoughts about individual change and growth (i.e. innovation) are certainly not new to humankind, which poses the question how knowledge about such change processes is and was collected and communicated.

1.1 The Monomyth

In 1949 Joseph Campbell, a mythologist, proposed that such knowledge has been transported in myths since the dawn of culture, especially in the form of stories that describe the journey of a hero. Campbell argued that all myths and stories, regardless of their cultural origins, share the same underlying pattern. Thus, he called this concept the Monomyth (Campbell, 1949). The Monomyth (figure 1) describes the change process as a three act structure: the hero starts off in the known world where something is amiss. She overcomes the inner and outer refusal, aided by well-disposed powers and travels into the unknown land of adventure. Learning by failing and mastering tests she finally gains an invaluable item or recovers lost knowledge. While the hero may be tempted to rest at this point, believing that she already gained all she ever desired, it is vital to return to the community

and renew it with the boon. By doing so, the hero proves her abilities to master challenges in both worlds and gains the freedom to live.

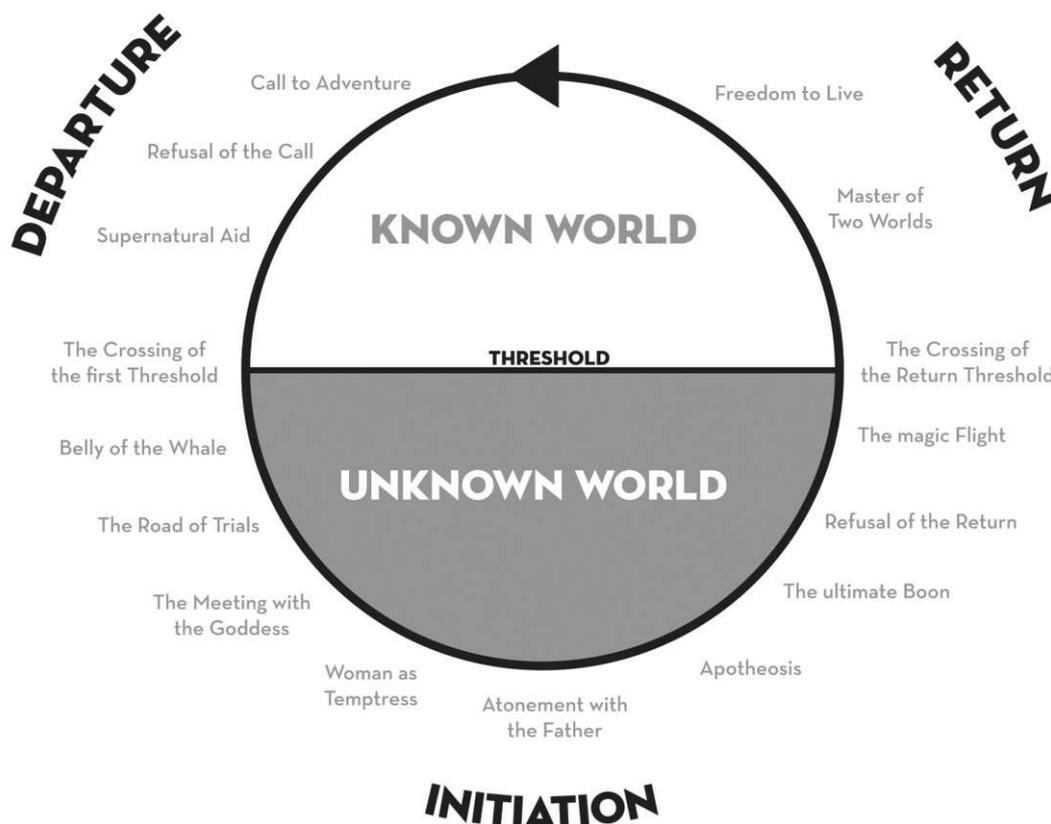


Figure 1: The Stages of the Monomyth according to (Campbell, 1949)

1.2 Teaching the hero's journey as a change-model

Just like the mythical hero, team leaders and members even projects and whole organisations have to navigate the path of change. Everyone in a team should know both the "Call" of the project and their own. Every project and every changing organisation needs to deal with resistance from without and within (Hauschildt, 1997). Severe challenges need to be mastered and gained boons must be integrated into the day-to-day business. A complete description of the Monomyth and its mapping to the management of innovation and change processes in the Heldenprinzip® (figure 2) would go well beyond the scope of this paper: How to teach this valuable instrument and enable learners to use it for their personal development as well as the anticipation and consideration of vital stages in an innovation or change process. We do not teach the Monomyth as an abstract concept. Instead, we strive to let the participants experience it, thus demonstrating the power of using the Monomyth to analyse, reflect on and predict individual and organizational change processes. Furthermore, the repeated reflection (Craik & Lockhart, 1972) and the active emotional experience support the memorization (Cahill et al., 1996) of the concepts covered. The existing and evolving content of our toolbox can be roughly divided into two strategies: on the one hand we are using non-digital creative and aesthetic methods – like drawing, performing, or role-playing – and on the other hand we are researching the applicability of digital media and games.

Both non-digital aesthetic methods and digital game based learning have been tested separately and conjunctively in three settings. Firstly, 12 team leaders and executives have been counselled in seven two-day workshops spread over one year in the seminar cycle "Ring of Leadership" (Denisow & Trobisch, 2012). Secondly, three small and medium-sized businesses (SMBs) have been accompanied on their journey. Last but not least, workshops have been conducted at conferences and in other settings, ranging from one hour up to five days. Needless to say, this wide range of settings entails quite diverse requirements and boundary conditions which are discussed along with the corresponding treatments below.

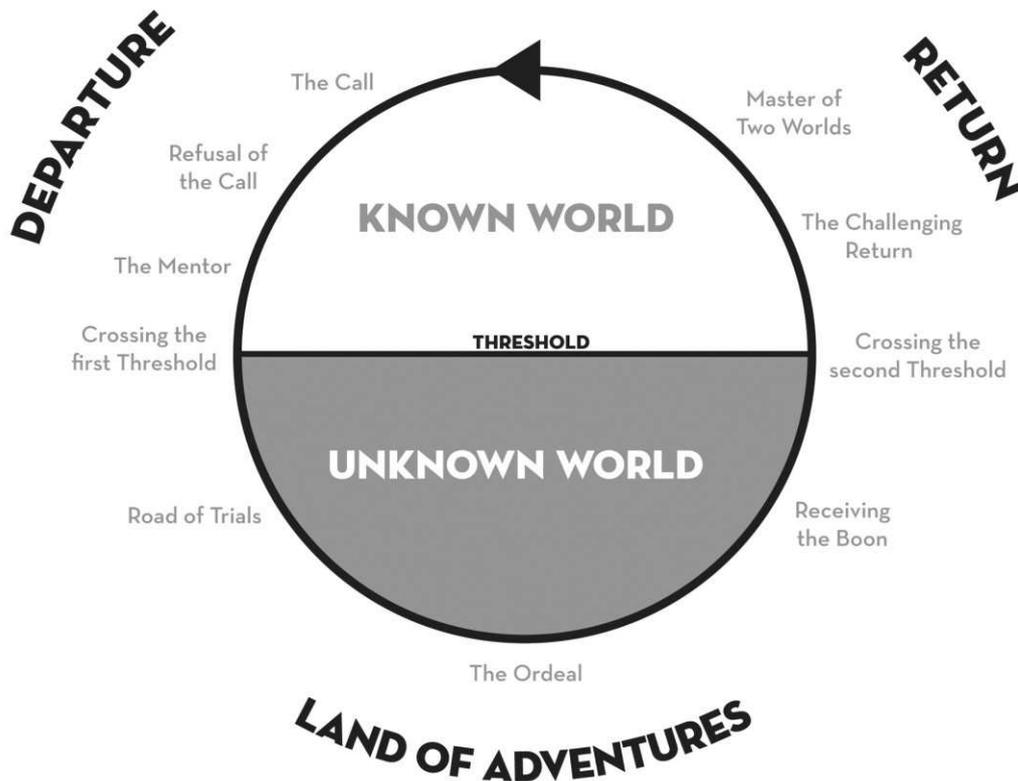


Figure 2: The Heldenprinzip[®]: process model for individual and organisational change and innovation

2. Digital game-based learning treatments

At HTW Berlin and especially in the gameslab, a comparatively wide definition of digital game-based learning is applied:

“Digital game based learning is the process of being taught and/or learning via digitally enriched play-/gamelike activities or by playing/designing/creating/modifying digital games.” (Bodrow et al, 2011)

The authors felt the need to propose this definition after an ongoing literature review did not yield a definition that was neither too broad nor too narrow, e.g. “So, let us define Digital-Game-based Learning as *any learning game on a computer or online*” (Prensky, 2001:146). For a further discussion of the latter and a delineation of DGBL from Serious Games and Edutainment see (Bodrow et al, 2011). Other authors circumvent a DGBL definition completely just referring to learning with games (Salen, 2010; Squire, 2011) or learning games (Klopfer et al., 2009). While the first concept matches game-based learning pretty well, the latter poses some problems. To begin with, it might lead to an immoderate focus on software products instead of the process of teaching and/or learning with them. Furthermore it begs the question of what should be considered a learning game. On the one hand this label could be restricted to games that were created with an explicit educational goal. Following the definition of (Prensky, 2001:146) this would result in a very narrow model and mode of application (Bodrow et al, 2011). On the other hand including commercial of the shelf (entertainment) digital games that can be used to teach something could be considered too, e.g. “*Civilization, Rollercoaster Tycoon, and SimCity*” [sic] (Klopfer et al., 2009:21). Unfortunately this basically implies that there can not be a single game that might not be considered a learning game. A valid but ignorable reason for this is that games are about learning to play them (Gee, 2003; Koster, 2005:34-46) in the first place. Rather, any game might be used to teach at least about two out of the following three points:

- its theme or narration, e.g. segregation and racial prejudices in “Of Orcs and Men” (Cyanide & Spiders, 2012).

- its simulated model or procedural representation (Salen & Zimmerman, 2004:422; Bogost, 2007), e.g. business models in tycoon games (Bodrow et al, 2011) or physics in “Portal” (Valve Corporation, 2007; Valve Corporation, 2012).
- game design and game art.

Thus a focus on learning games proves to be either too narrow or too broad, too. In contrast the proposed definition of digital game-based learning covers three more or less distinct scenarios: To begin with, learning by playing a digital game with or without individual reflection or group discussion. This covers learning in formal as well as informal – e.g. “stealth learning” (De Freitas & Maharg, 2011) or “interest-driven learning” (Squire, 2011:19-22) – settings. The second scenario is learning by designing and creating (e.g. Marlow, 2012) or modifying (e.g. Squire, 2011:174f; Monterrat et al., 2012) digital games. Wherein the produced game or mod might be created to generate either an entertainment or learning experience for the prospective player. The latter will be elucidated in 2.3 by referring to a digital game-based learning course taught by one of the authors. The third scenario covered by our definition is learning framed by playful interaction with digital media or game components. One approach that fits into this scenario is digital aesthetic learning, which will be presented in 2.4.

2.1 System-based learning – core-mechanics and rule-set-based reflection

One approach of learning by playing a digital game is based on the notion of games as systems which can be considered from three complementary perspectives. Firstly, digital games depict real or imaginary systems in a more or less abstract or condensed way (Salen & Zimmerman, 2004:422f). Secondly, digital games are (complex) systems themselves (Salen & Zimmerman, 2004:156). And last but not least, the act of playing the game creates a temporary system that encompasses the game and its players, their actions and the social space surrounding them (Salen & Zimmerman, 2004:471). With this in mind, learning with digital games can be considered as training systemic thinking in general (Salen et al., 2010). Furthermore, the player may learn about the represented system, its procedural properties and causal relationships, consciously or unconsciously engaging with its procedural rhetoric (Bogost, 2007). Thus, they may be enabled to reflect on their assumptions and procedures potentially changing their attitudes and behaviour. Depending on the context and learning goals, the game itself does not necessarily need to depict the target system very accurately. Indeed, in some cases, not at all. When focusing on training skills or discussing behavioural patterns, for example, it may suffice that the game triggers relevant reactions or patterns. These can then be discussed and brought into relation to the learning goals after or between game sequences. To further illustrate this, consider the following example of this approach in change and innovation workshops.

Besides focusing on the narrative of digital games, one can make participants experience the challenges of the Hero’s Journey by applying games with core-mechanics (Salen & Zimmerman, 2004:316f) or rule-sets that trigger the emergence of relevant issues. This might be both competencies needed constantly and specific skills or insights necessary to master a certain stage of the Heldenprinzip. While COTS-DGs with conventional input and output devices can certainly be used in workshop-settings, e.g. broaching the subject of monetary motivation via the digital game “Majesty 2: The Fantasy Kingdom Sim”. The relatively short duration of workshops in conjunction with oftentimes low gaming-experience of participants favours less complex and time-consuming games as teaching tools. These games should ideally (Busch et al, 2011):

- have a low learning curve and intuitive interface to reduce the threshold for non-gamers
- be fun, challenging and engaging for a wide range of participants
- be entertaining and easy to follow for spectators to allow watching and discussing their results



Figure 4: Leadership training with “Kinect Adventures”

To test and evaluate this approach we combined motion-controlled game-interfaces such as Microsoft's Kinect with large projections creating an engaging and entertaining set-up that can be used within the temporal/spatial limits of a short workshop. Instead of exploring a complex storyline, players are asked to prove their heroic skills in various mini-games. We found that there are COTS-DGs that can be used out of the box to challenge and improve a number of skills relevant to the concept of the Heldenprinzip. To exemplify this, consider the digital game collection “Kinect Adventures” featuring a two-player rafting game. Players have to actually jump to surmount obstacles and steer by moving their entire body left or right. If one player moves right and the other left, the boat continues straightforward, thus both need to coordinate their behaviour to steer the boat in such a way as to collect as many silver coins as possible. While there is sometimes a single course to follow, quite often multiple options are available, thus increasing the need to explicitly agree either on actions (left, right, jump) or a targeted path under extreme time pressure. Both the setting and the core-mechanics lend themselves very well to experience leadership and discuss related issues in general or targeted at change and innovation processes. While the core-mechanics reward good coordination, the setting on the one hand invokes the metaphor of sitting in the same boat and on the other typically gives rise to questions like: How does an “ideal” type of leadership might look like in the game? Is this congruent with working life experience?

In a workshop-setting we generally give a very short introduction to the game covering only the mode of interaction and the very loosely defined goal of collecting silver coins. After that, cycles of game-play and discussion are initiated. The play sequences typically cover less than two minutes while the discussions span between five and 15 minutes, sometimes even longer. The discussions cover three aspects. Firstly, asking the players about their experience: What worked out well? What did not work? How did both players feel in their preliminarily agreed upon role or *modus operandi*? Reported perceptions are immediately compared with the perceptions of the audiences, quite often revealing interesting disaccords which fuel the discussion. This typically introduces the next stage where connections to working life experiences are discussed, and insights and knowledge (usually in form of stories) are shared within the group. The last stage then focuses on who shall play next and which setting, strategy or ad-hoc rule shall be applied next. Interestingly, the latter shows both a tendency to bring up recurring patterns, like one player shall be the steersman, and innovate ideas, e.g. leading by indicating the course with one arm instead of issuing verbal commands or objectives.

We tested the application of the white-water rafting game during workshops in all three of the aforementioned contexts (Ring of Leadership, counselled SMBs and one-time workshops) getting almost exclusively positive results. Participants *inter alia* did not hesitate to draw parallels to real-life situations and relate the game results to personal experiences from their respective professional background while at the same time visibly enjoying themselves.

Only in a single one-time workshop, with participants ranging from innovation managers over seminar managers to a ludologist, the feedback was less enthusiastic. Especially the ludologist was rather

critical, arguing that we did not meet the potential of the medium. While the latter is certainly true, especially when comparing the rafting game with the concept of persuasive games and procedural rhetoric (Bogost, 2007), it rather depends on the applied schema. While the digital game itself is certainly neither very complex nor persuasive when considered with the aforementioned schema of “a game as a temporary system” in mind – encompassing: the player(s) and their audience, the social setting, even the between-game activities (Salen & Zimmerman, 2004:471,418) and the agreed upon ad-hoc rules – it is very complex, indeed. Furthermore, it reliably lets relevant topics, concepts and disaccords emerge. Nonetheless, the game-mechanics create a certain bias, favouring some leadership and communication strategies over others. As (Squire, 2011:22-26) notes, all games come with a bias. But as he points out this is not necessarily a downside. When addressing these biases, often learning occurs (Squire, 2011:26). We address these biases on the one hand by discussing the relation of game model and working life. On the other hand we use different – both COTS and self-made – digital games and discuss the strategies each game reinforces, thus highlighting how the rules of a system shape behaviour in sometimes unexpected ways. An important point to highlight here is that our role in such workshops is not that of the “Sage on the Stage” but rather of the “Guide on the Side” (King, 1993). King proposed that in contrast to the transmittal model, where knowledge is assumed to be simply transmittable from teacher to student, the professor should focus on facilitating the learning process of students by engaging them in active thinking and discussion. Related ideas go back a long way (see e.g. Dewey, 1938) and we believe that in change and innovation workshops it is the only sensible course of action, indeed. In our experience the participants as individuals and even more as a group possess a lot, in some cases even vast “amounts”, of practical knowledge. The digital games are thus not used to transport learning content but rather as stimulus to explicated implicit knowledge and trigger discussions amongst the participants. Consequently, this treatment is better qualified for face-to-face interventions than for blended game-based learning and least of all for self-study scenarios.

2.2 Story-based repetition and reflection

A contrasting approach to learning by experiencing and discussing the core-mechanics of a digital game is to focus on the narrative of a digital game. The Monomyth has been at least unconsciously used for thousands of years as a narrative pattern for telling stories about individual change and transformation (Campbell, 1949). After its analysis by Campbell and its adaptation by (Vogler, 1998) the heroes journey can be considered a standard tool for writers and movie makers. Not surprisingly, this concept is also well known in digital game literature (e.g. Rollings & Adams, 2003:93; Howard, 2008:5) and can be found in various COTS-DGs (see e.g. Busch et al., 2012). This affords the possibility to use such games for teaching the Heldenprinzip as described in scenario one of our DGBL definition.

While a good storyteller certainly adapts a story for the specific audience, it is told the same way to all listeners. Nonetheless, the perceived and remembered story may differ according to individual preferences and cultural imprint (Bartlett, 1932). Thus, we encourage players to discuss their experiences, strengthening the memorization of the model and the ability to analyse processes according to the Heldenprinzip at the same time. A digital game offers the benefit of players gaining actual agency and likely having a stronger feeling of identification with both story and hero. Furthermore, it is possible, either by simply using side-quests or even branching storylines (Ippa & Borst, 2007:25), that players from the same group can experience different versions of a story. Both stronger identification and individual story should therefore enrich discussions where participants tell stories about their experience of success and failures while playing the game and acting out the story. This may multiply the known power of storytelling (Denning, 2001) by telling stories about experiencing both the actual plot and the meta-“heroes journey” of playing.

While the benefits of using COTS-DGs are obvious, there are some drawbacks too. According to our research most COTS-DGs that exhibit many/all stages and offer story variation are role-playing games, which bring up two significant problems: First, these games tend to require huge amounts of play-time. In COTS-DGs like “Neverwinter Nights” or “Dragon Age: Origins” even core-gamers may spend 30 or even more than 100 hours of play. This would be unfeasible in a coaching session and may strain even self-study or blended game-based learning scenarios (i.e. self-study play and group reflection). To test whether playing only a part of an COTS-DG and using this as an option to highlight key elements of a small number of related Monomyth stages we analysed several games under the focus of applying one of them in the Ring of Leadership setting. While a number of games could be identified that exhibit a strong usage of the Monomyth, it became apparent that only the first few

stages might be covered that way. This is due to the fact that playing further stages typically requires on the one hand an understanding for the story so far and on the other about the core-mechanics and rule-set of the game. While it is certainly possible to tell the story up to the point the workshop participants take over, conveying the knowledge of the latter two (normally developed incrementally by hours of game-play) seems to be tedious at best.

An important boundary condition in the context of the Ring of Leadership was the low level of gaming experience that may be due to the relatively high mean age (44 years) of the participants. Thus, we eliminated all games from the list that required extensive knowledge of the used rule-sets (e.g. the “Dungeon & Dragons” rule-set in *Neverwinter Nights 2*) or timely and exact interaction with the human-machine interface (e.g. *Elder Scrolls IV: Oblivion*). The COTS-DG “*King's Bounty: The Legend*” a tactical role-playing game qualified as a candidate due to the relatively good tutorial, the presence of a story with Monomyth stages and its turn-based battle-system (see figure 3). The latter seemed to be especially important as it favours strategy over fast reflexes, thus potentially reducing the difficulty for non-gamers.



Figure 3: RoL participant playing a “*King's Bounty: The Legend*” (Battle-Mode)

In the workshop, participants have been playing the game for one hour, subsequently discussing the experience and its relation to their working life. On the one hand the intervention enabled participants to identify and discuss key situations, like being thrown in at the deep end when facing new tasks or managerial functions and the general fear of failure. On the other hand neither a feeling of identification with the hero was reported nor enabled the game a lively discussion of the Monomyth. The latter points may have been a result of a lack of exposure to the story-line due to the long time it took players to complete the tutorial, thus covering only the “Call to Adventure”. An interesting side effect we encountered when working with “*King's Bounty: Legend*” in the “Ring of Leadership” workshop cycle was related to the reaction of those participants having little or no gaming experience when facing the challenge of handling the game mechanics. While players were provided with a tutorial introducing the key aspects of gameplay and control, we still found it a significantly steeper challenge to control the game for those who had never played a digital game before and therefore e.g. never used a typical interface concept such as the “W-A-S-D” keyboard layout for moving up, left, down and right respectively. For participants who had to start their digital gaming experience entirely from scratch, the lack of any assumption about how to control the game beyond the basic tutorial had two consequences: Firstly, depending on the individual progress in handling the game, some of these participants did not make it through the projected part of the storyline within the hour. Subsequently, they did not experience the corresponding stage of the Monomyth – in this case the “Call to Adventure” – at least not in the way we expected them to. Because secondly, those participants retrospectively described their experience with the game as an adventurous challenge, nonetheless. They reported that being exposed to a new medium and given the task to control it felt to them like the equivalent to entering a “new world” which nicely correlates to the Monomyth. Posing such a

challenge to participants may result in a positive learning experience when successfully mastered and be used as a means of encouraging people to handle unexpected situations, manage the unknown and transfer their experiences into real-life situations, closely corresponding to the system-based learning approach described in 2.1. But it may also, as interviews following this session of the “Ring of Leadership” have proven, cause frustration. Participants given insufficient or no help were not able to reach the zone of proximal development (Vygotsky, 1978:86) and were denied the rewarding experience of mastering a task never encountered before. To stick with the terminology of Campbell's Monomyth: They were not able to cross the threshold into the land of adventure. This implicates a potential to design learning units targeted at handling frustrating situations and strengthening frustration tolerance and resilience (for a literature review on resilience see Howe et al., 2012) again an important skill or process (Rutter, 2012:335) in the context of change management and the Monomyth. In any case though, our experience with the “Ring of Leadership” has confirmed the need for the trainers' substantial knowledge about the participants' gaming experiences. Which are not only constraining the choice of games to play but that of the setting, too. Especially in case that participants exhibit a very heterogeneous level of expertise placing one player per computer was found to be problematic as it led to a strong divergence in play-time and thus bored experts needed to be kept busy/happy while waiting on their pressured peers. A two on one computer setting offers the chance to place an expert and a novice each to equalize play-time and additionally spread the load of coaching novices. Nonetheless care needs to be taken in supervising the teams so that both are on equal footing and that the experts guides the novices into the zone of proximal development (Vygotsky, 1978:86) instead of dominating the other. Whether and how to intervene in the latter case depends both on the context and learning goals. It might actually be worthwhile to not intervene but let the novice express his feelings in the follow-up to highlight and discuss good mentoring practices, e.g. when covering the “Meeting the Mentor” scene of the Heldenprinzip. While the mentioned positive effects of this workshop session are worthwhile indeed and will be the source of further test settings, the intervention did not meet the Monomyth related goals. To counter this we have produced, with students of the aforementioned “Digital Game Based Learning” course, to date three modifications of COTS-DGs which integrate most or all stages in a condensed way.

2.3 Creating and modding games – learning by teaching

In the DGBL course, students are expected to gain insights concerning games and play, learning theories and digital game-based learning on the one hand. On the other hand they have to realize a practical project: Either creating a digital game that can be used to cover working-life relevant themes like leadership, teamwork and conflict management. Or modifying a commercial off-the-shelf digital game (COTS-DG), creating an experience that can be used to reflect and discuss the stages of the Heldenprinzip. No matter which option students choose, they become acquainted with key issues of digital game-based learning by practical experience in a project based learning (Blumenfeld et al., 1991) setting. Especially the “relatively long-term, problem-focused” (Blumenfeld et al., 1991:370) and authentic project task seems to motivate our students in combination with their own interest in games and the opportunity to create something of value in a self-directed way (as proposed by Blumenfeld et al., 1991:375). Needless to say, the targeted grade is an important motivational factor but sometimes a source of in-group tension, too.

To make a good game or mod, students have to develop a solid understanding of the content they are covering, thus additionally learning what their games shall teach – thereby touching the concept of “learning by teaching” which has been shown to be very promising both in educational (Berliner & Casanova, 1989:12f) and business (Cortese, 2005:36&87) contexts. To cater for various set-ups and levels of gaming expertise the mods (see table 1) feature different play-times as well as complexity of rules and interaction. Furthermore, two mods feature a story that is a derivative work which thus may be known to a wide audience, enabling links to personal experiences while the others tell original stories, offering a fresh start. Due to their very recent completion, though, we cannot make informed statements about their effects in change and innovation workshops, yet. Nonetheless first experimental workshops with students have shown both potential but also problems. One interesting finding was related to an actual problem the student group designing the Mario mod had. After developing the story adaption (Neverending Story) and designing the first levels the group discovered that it would only be possible to place one text-sign containing less than 200 characters per level. This proved to be a major hurdle to tell a full-blown story. Without being able to use texts to highlight plot points and transport emotions the group had to tell their story basically via the level design. As a result of this and its short play-time it does not let the player experience a deep or complex story.

Nonetheless it proved to be an excellent help for later student groups to showcase the value of well designed levels to shape the player experience instead of focussing only on written in-game or cut-scene texts. Thus such game types or the deliberate curtailing of mod-tool functionality may be beneficial for storytelling courses in primary, secondary and tertiary education, indeed. Furthermore it showed the value of rapid prototyping and led to a redesign of the DGBL course. In the following semester students had to present their progress five instead of three times – the first presentation focusing on prototyping key functionalities thus avoiding unpleasant surprises later on.

Playing and analysing the Alice mod lead to mixed results. Warcraft 3 maps generally present a birds-eye view with a zoom-able fixed viewport orientation. The Alice mod group decided to enable a player character (PC) dependent viewport orientation instead. Thus the mod features a third-person view that rotates the viewport whenever Alice turns. This had two consequences: On the one hand students reported that the applied view led to a stronger identification with the PC. On the other hand, some players complained that it hindered their navigation and in one or two places – where glitches may twirl the PC for a short time – even made them dizzy. This highlights the need to enable players to customize the game even in mods as the viewport change did result in a positive immersion in general but some players would have benefited from an option to choose the standard viewport orientation instead. Another finding related to customization was the missing option to select a difficulty level (DL). While the campaign of Warcraft 3 enables the player to choose between several DLs this is uncommon for mods. Due to the fact, that the mod should be playable by non gamers in workshops the mod DL was low – in consequence expert players in student workshops were both bored and twice as fast as novices. Thus student groups of later semesters were required to integrate script solutions in case the mod tool did not feature DL selection in the first place.

Table 1: Created game modifications and their workshop relevant properties

Modification of	Platform	Play Time	Interaction	Story
Super Mario	PC	10 – 20 min	Side-Scroller, move & jump via keyboard (easy)	The Neverending Story
Little Big Planet 2	PS 3	40 – 90 min	Side-Scroller, move, jump & interact via controller (moderate)	“Maui’s Heroes Journey” (original)
Warcraft III	PC & Mac	90 – 180 min	birds-eye view, point & click via mouse, some optional keyboard accelerators, player can specialize in fighting abilities of avatar, mod uses various quest types (high interaction complexity but low difficulty due to mighty hero)	based on various “Alice in Wonderland” adaptations
		100 – 210 min	like “Alice” + selectable difficulty level, optional negative ending	“The Plant of Live” (original)
		120 – 240 min	like “Alice” + selectable difficulty level, significant story-branching, optional positive ending	“A Pirate’s On-Shore Adventure”(original)

While scenario two – learning by creating games/mods – could be applied in workshops. Our experiences with student game modifications projects confirmed the inkling that it does certainly require higher gaming-experience and time-investment. Thus we did not apply it in change and innovation workshops up to now.

2.4 Digital aesthetic learning

While the first two of the hitherto discussed game based learning approaches for change and innovation workshops correspond to scenario 1. – learning by playing a digital game with or without individual reflection or group discussion – and the third to scenario 2. – learning framed by playful interaction with digital media or game components – one of the goals of our project was to experiment with interfusing the approaches of both project partners, i.e. combining digital game based learning and creative/aesthetic methods. The creative/aesthetic methods typically use techniques from fine and performing arts to create artefacts or experiences that are personally meaningful to the participants and, in the majority of cases, are presented to and discussed by workshop participants. Both creation and discussion explicate implicit ideas, opinions, fears, knowledge, etc, thus enabling

the individual and the group to share, learn from and work with them. One specific exercise that may exemplify the concept and fusion of both methods is the visualization of the hero at the respective stages of the Heldenprinzip. How does the hero look like, e.g. when in “Refusal of the Call”? How are their feelings mirrored in their posture and appearance? In non-digital exercises, participants either shaped manikins or themselves into a posture that represented their notion of this stage. The embodied aspect of the latter has the advantage that the participant can actually feel the “energy” of this stage but requires an atmosphere of mutual trust in the group to avoid negative feelings. The usage of manikins has the advantage that participants can see the figurine from all sides and shape it into postures that would not be possible to maintain by the participants themselves. Furthermore, the social risk is certainly lower. A potential downside is the relative sparseness of expression due to the abstractness of the manikin.

One corresponding digital exercise is using the “Spore Creature Creator” instead of manikins. While it is an integral part of the COTS-DG “Spore”, the editor itself would typically not be considered a game. Nonetheless, through its appearance and in combination with the exercise goals it induces an observably playful attitude. Using an easy to learn interface, it enables participants to build creatures that can be customized in body statue and colour as well as number and look of extremities and accessories, even animated with a special selection of moves. We applied this exercise in both our work with SMBs and in one-time workshops where it proved its potential for enabling participants to express their ideas and feelings as well as highlighting and discussing key points of innovation and change processes according to the Heldenprinzip.

While this instance of the concept “build hero at stage X and discuss” does not allow the embodied experience of the “participant as hero” approach, it extends the advantages of the manikin exercise by affording a wider range of expressions and adding entirely new possibilities of shaping, animating and comparing the virtual figurines. On the downside though, it certainly requires more time to produce those digital artefacts.

In a third approach, we try to combine the tangibility of physical interaction with the extended manipulability of a digital manikin by using 3D-sensing interfaces like Microsoft’s Kinect. This way, participants can control the movement of their avatar in the most intuitive way and even record a short performance or sequence of movements representing the respective stage. This approach has not yet been tested but seems a promising way to benefit from the digital representation while still giving participants a chance to actually experience the physical and emotional implications of shaping oneself into a certain posture.

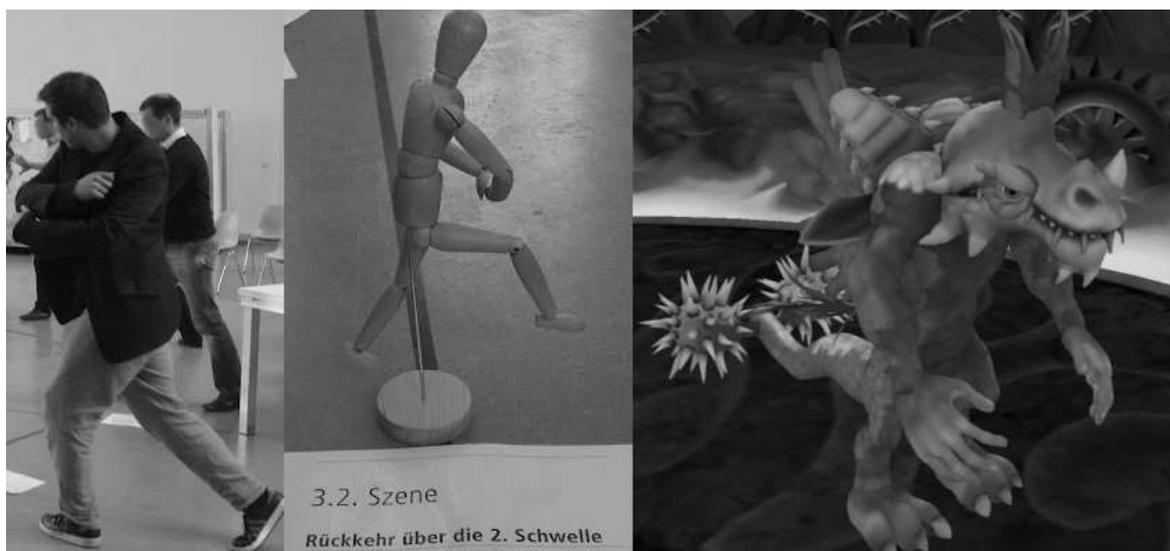


Figure 5: Instances of the exercise “build hero at stage X and discuss” (Participant, Manikin, Spore)

Another example of augmenting a creative exercise with digital means is our use of Minecraft. This game places the player into an open world with its own rules and physics but without any specific goals, but to survive. In its “creative mode” it provides an ideal setting to do just that: create. Players can choose from building blocks to assemble structures or reshape entire landscapes in a Lego-like manner. We have been using this game in several workshops encouraging participants to e.g. build

their individual interpretation of the Hero's Journey as an actual path through the virtual world of Minecraft and found it to be a valuable tool for designing digital artefacts that go beyond the possibilities of their conventionally crafted counterparts. Again, the *modus operandi* was to give participants a short tutorial, then give them between 10 and 20 minutes to build and subsequently discuss their results in the group. While the same exercise would have been much more physical using real materials like paper, plastic or clay, the digital version makes up for that by overcoming the spatial and material limits of such a setting. The building blocks in Minecraft come in a broad variety of materials ranging from wood and cobblestone to ice and gold and can be arranged in physically eccentric ways, thus allowing the players to be free in creating the artefact that matches their idea of the respective issue, e.g. a stage of the Hero's Journey, best. Furthermore, the resulting artefacts are explorable and walkable for the player characters, thus making them easier to present and explain. Participants generally enjoyed working with Minecraft, sometimes so much so, that they got lost in just playfully exploring their digital environment and had to be reminded of their actual task. We also found that similarly to manual crafting exercises, participants became very creative in improvising with the given material. One player e.g. dug a very deep hole straight into the ground leading into a small cave surrounded by lava to visualize their perception of the Monomyth's nadir.

Comparing digital and analogue instances of creative and aesthetic methods, the question here is obviously not which instance is better in general but what is the ideal mode concerning the unique combination of learning goals, participants and boundary conditions. When considering the usage of such digital aesthetic approaches in relation to the identified game-based learning scenarios, self-study does not seem to be overly promising due to the missing group discussion. Depending on the software used and the extent of the practical work that participants are expected to deliver, the treatment of choice would be either pure face-to-face or blended learning.

2.5 Potential of dGBL in change and innovation workshops

To summarize the approaches described in this paper and illustrate further approaches in relation to their potential in change and innovation workshops consider figure six. The chart depicts goals and techniques that might be used in each of the three showcased approaches. While their potential is indicated by the size of the label, its placement indicates the most promising game-based learning settings (self-study, blended dGBL or face-to-face). To exemplify the interpretation of the chart consider scenario two – learning by creating games/mods. It could be used both to cover the Monomyth pattern and to learn about specific skills or insights one might need in change and innovation processes. But due to the need of special knowledge about games, game conventions and ideally even about modding tools its potential considering the target audience is rather small. In case it would be used nonetheless, it certainly makes sense to integrate it into a blended setting. Thus, both the typically high workload (i.e. no face-to-face-only setting) could be spread over a period of time and the probably high need for help from and interaction with the consultant (i.e. no self-study) could be realised.

In contrast, the usage of a digital game to trigger discussion and story-telling has a higher potential and might be used with the small subset of comparatively short games, even in face-to-face settings. An important point to stress here is that the position in the matrix was determined with the focus on innovation and change workshops and the characteristics of the participants today. In future settings or those that target other issues the assessment may differ. In game based learning courses for students or children it will most probably differ, indeed.

3. Conclusion

By digitally enriching the artistic exercises that are already used in the project to convey the Heldenprinzip and applying games to specifically train the skills necessary for mastering change and innovation processes, we are creating a flexible toolbox of game-based learning applications. The set of methods in this toolbox includes four main approaches:

- System-based learning, i.e. training systemic thinking abilities by exploring, mastering or manipulating the core-mechanics of a digital game, or by analyzing and varying its rule-sets while reflecting the results in group discussions.
- Story-based learning, i.e. familiarizing participants with a pattern for successful change processes by making them play through a sequence or entire storyline of a correspondingly structured game, subsequently reflecting experiences.

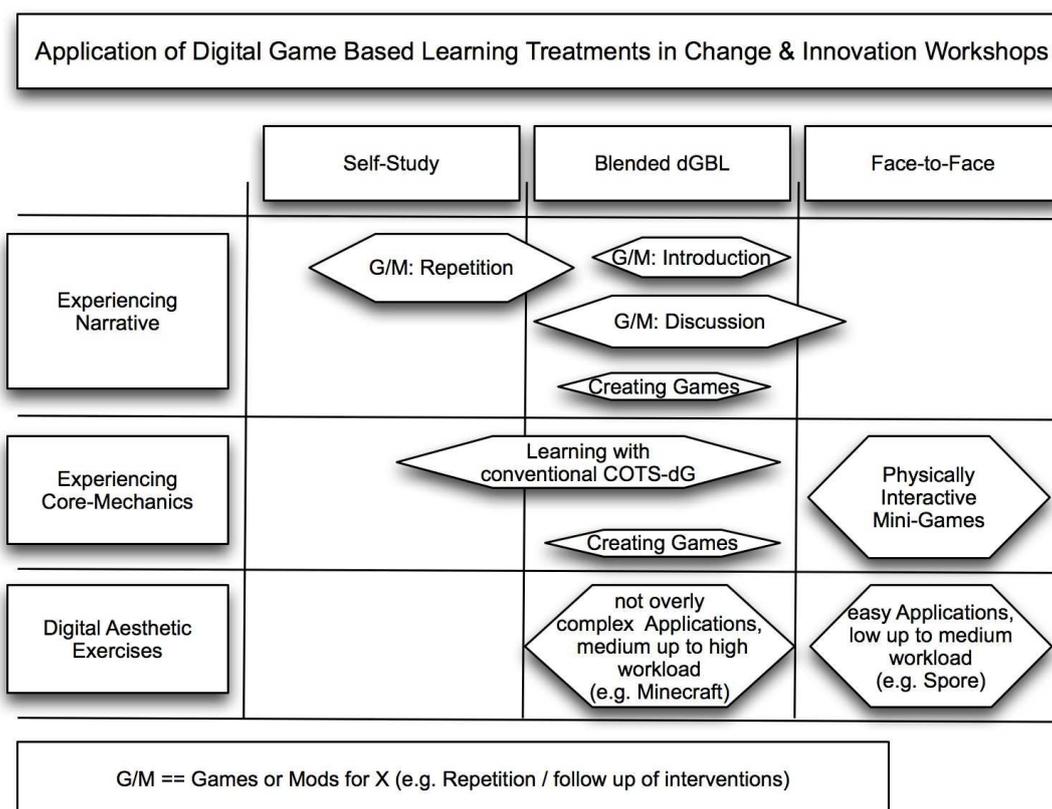


Figure 6: Assessment of the application of dGBL in change and innovation workshops

- Learning by teaching, i.e. empowering participants to create or modify a game meant to teach others and getting thorough insights into the respective matter in the process.
- Digital aesthetic learning, i.e. augmenting or re-designing learning and reflection methods from the field of fine and performing arts with digital means, e.g. using the mechanics of highly manipulable game worlds to allow participants to create digital artefacts and reflect on the results.

We have designed a number of exercises based on those methods and tested them with SMB managers, employees, coaches and students in tertiary education. The targeted group has been divers in gender and age, yet relatively small in numbers. While more extensive testing is necessary to back up our findings, hitherto yielded results have been promising and on track with our goal: To create a toolbox that will eventually allow teachers and coaches to convey the concept of the Hero's Journey to individuals and teams in a creative, immersive and effective way, providing participants with a guiding structure that can help to master the challenges of innovation and change processes.

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