

Experimenting with GAME OVER to Create Processes of Reflection and Academic Inquiry

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Abstract: Educations are challenged in their effort to facilitate students learning when it comes to especially processes of reflection. Also in a Problem-Based Learning context, errors often cause a lack of motivation, that gives reflection processes and academic inquiry difficult conditions Game-Based Learning is thus suggested as a learning strategy which can address these learning needs through a procedural rhetoric. Furthermore, Game-Based Learning is found to afford students risk taking and engagement in learning activities. However, a literature review of empirical studies of Game-Based Learning reveals existing gaps in the literature. There are missing models for how academic activities can be enhanced through the use of Game-Based Learning, here especially the transformation of "Game Over" elements into a learning environment based on physical Game objects. This study aims to describe learning situations where the academic focal point is a reflective and innovative writing process through gaming principles. The study design aims to identify what impact Game-Based Learning have on facilitating academic literacy to create processes of reflection. Based on two cases, the empirical data are retrieved from video observations during a period of 1 year. A qualitative content analysis and interpretation of the collected data reveals how the use of "Game Over" strengthens the depth of the students' writing through a reflective and metacognitive approach to the task. As a contribution to the existing knowledge, this paper presents a Procedural Rhetoric for how to work with a "Game Over" strategy to facilitate academic literacy and thereby create processes of reflection in a physical context.

Keywords: Game Over, Fun Failure, Reflection, Procedural rhetoric, 21st. Century Skills

1. Introduction.

In recent years, the concept of knowledge is changing. Knowledge is no longer perceived as a static entity; instead, it is continually shaped and reshaped through analytical and reflective processes (Adams B. et al., 2017; McConville et al., 2017; Rodrigues and Bidarra, 2017; OECD, 2019). OECD (2019) highlights the significance of two overarching trends: the "Increase of complexity" and the "Speed of change." These trends necessitate the ongoing evolution of educational institutions to equip students with the essential 21st. Century skills and competencies required for a modern world (OECD, 2019; Rahim et al., 2019). Evidently, educational institutions are increasingly focusing on developing innovative and active forms of learning that empower students to actively engage with knowledge and new ideas. This approach positions students as partners in their own learning trajectory, fostering active knowledge creation (Adams B. et al., 2017; Becker et al., 2018). OECD (2019) emphasizes that the future does not merely entail a continuation of past educational patterns. Accordingly, there is a growing advocacy for a departure from traditional lecture-based teaching methods, which primarily involve the transmission of knowledge, towards emerging educational concepts such as Authentic Learning, Project-Based Learning, Challenge-Based Learning, Competency-Based Learning, Inquiry-Based Learning, and more (Adams B. et al., 2017; Paaskesen and Nørgård, 2017; Becker et al., 2018; OECD, 2019). Paaskesen and Nørgård (2017) take this perspective a step further by arguing that merely participating in projects aimed at producing creative and innovative outcomes is insufficient. They advocate for an education framework rooted in open exploratory and experimental learning designs within open learning environments. This approach emphasizes open learning cycles that strike a balance between what they term "directed" and "emergent learning," with key concepts including creation, imagination, play, sharing, and reflection (Paaskesen and Nørgård, 2017). Nevertheless, ushering in a new educational paradigm presents a multifaceted challenge, requiring learning models built upon complex design criteria (McConville et al., 2017).

Based on experimental participatory design this article presents a case study at the education of architectural and construction management education at UCN. The educational philosophy of UCN centers on fostering a dynamic interplay between theory and practical application. In this approach, students are actively engaged in learning, requiring them to analyze, solve problems, develop solutions, communicate effectively, explore various facets, and engage in investigative processes—all underpinned by reflective thinking that point towards the development of 21st. Century Skills (Rahim et al., 2019). However, students enrolled in technology programs at UCN often lack well-defined learning strategies for delving deeply into the curriculum through an explorative and analytical approach. They frequently find themselves in situations where they are uncertain about the next

steps and therefore may not fully grasp the value of working reflective with the ability to question and adapt to the demands of their professional context. (www.ucn.dk, 2020).

In the following, a general description of the Game-Based Learning and the concept of Procedural Rhetoric is elaborated. Then the article presents a case study based on a specific Game-design. This is followed up by a description of how data is collected and analysed. Based on the analysis, the article ends with a final debating conclusion where we sum up the main findings from the study and offers a methodology for how to work with Game-Based Learning without having to apply existing computer Games that do not meet the substantive requirements of the instruction and the learning situation.

2. Theoretical framework.

Game-Based Learning has gained increased attention within higher education with the aim of inspiring new learning designs that challenge students' ability to explore different academic perspectives and experiences through active and reflective dialogues. However, for Game-Based Learning to realize its potential, it is crucial that the Game is well-designed (de la Hera et al., 2021; Gurbuz, & Celik, 2022). This entails developing Game design techniques that promote in-depth learning, connecting theory and practice through reflection processes, rather than merely short-term motivation. In practice, it can be challenging to reconcile Games with pedagogical principles in a meaningful way, where both the academic content and the pedagogical visions are integrated into the core Game activities (Squire, 2006; Ravyse et al., 2017; Patti, 2022). If a learning Game is not based on an integrated learning experience, there can be an overemphasis on "playing the Game" instead of learning through the Game (Egenfeldt-Nielsen, Smith, & Tosca, 2013; Ravyse et al., 2017). According to Egenfeldt-Nielsen, Smith, and Tosca (2013), educational Games are often developed with a focus on "drill-and-practice thinking" rather than understanding. This type of Game only encourages students to memorize answers and does not facilitate learning through exploration and experiential learning (Egenfeldt-Nielsen, Smith, & Tosca, 2013; Laine, & Lindberg, 2020). One of the reasons for this is that many educational Games are characterized by uninspiring narratives combined with an uninteresting Game structure that fails to sufficiently motivate and engage students in their own learning activities and experiences with an inductive approach. Recent literature shows significant criticism and concern that a large portion of Games developed for educational purposes do not adequately support reflective, exploratory, and innovative learning activities (Qian & Clark, 2016; Krath et al., 2022; Laine, & Lindberg, 2020).

2.1 Procedural rhetoric.

Ian Bogost introduced the concept of procedural rhetoric, which provides a relatively new framework for the design of educational Games (Patti, 2022; Bogost, 2008) in achieving a holistic interaction between pedagogical principles and Game theory in practice. When playing to learn, the interplay of multiple consecutive decisions creates complex social, educational, and academic processes that impact future learning activities in various ways. Some decisions may seem immediately logical to the student, while others may be disruptive as they challenge the student's existing understanding. This is particularly relevant to theoretical understandings of learning in higher education, such as Reflective practice-based learning (RPL) (Horn et al. 2020; 2021) or problem-based learning (PBL), as it involves an approach to learning that connects theory and practice through reflection processes. The word "procedure" has historically had a negative connotation in pedagogy, as it has often been understood as something predetermined through deductive thinking (Bogost, 2021). Bogost challenges this notion and points out that it is a misconception that "rules always restrict behavior." We do things, we do them according to a certain logic, and this logic constitutes a process in the general sense of the word. It is this logic that can be explored, changed, or discussed through reflection processes, challenging the student's normative understandings. Only when normative and practice-related processes become clear in their logic is it possible to create a descriptive language that can support reflection. When using Game-Based Learning in higher education it is thus important to ensure that the Game support academic activities and processes of inquiry (Doucet & Srinivasan, 2010; Bogost, 2008; Bogost, 2021). Academic inquiry entails a systematic and critical exploration aimed at acquiring new knowledge, fostering academic rigor, and attaining a comprehensive understanding of a specific subject matter. It holds a pivotal role within the realm of academia, urging students to pose questions, engage in critical thinking, and bridge the gap between theory and practice. This endeavour encompasses a combination of theoretical learning and practical application. Academic practice, on the other hand, pertains to the methods, techniques, and processes employed to pursue academic objectives and advance knowledge within a specific field or discipline. Within the context of academic inquiry, students employ theoretical frameworks to gather information, synthesize ideas, and generate fresh insights that address real-world situations (Gyldendahl, 2020; Horn et al. 2020; 2021; Dewey, 1998; Dewey, 2013). According to Schön (1968, 1987), inquiry in professional practice involves an ongoing process of reflection and learning, where

practitioners continuously evaluate their experiences to identify their own assumptions, biases, and limitations. They then utilize this self-awareness to enhance their practice. Schön underscores the significance of integrating reflective practice into the inquiry process, as it fosters profound learning and comprehension in professional contexts (Schön, 1968, 1987; Watts, 2019). Dewey's conceptualization of inquiry is understood as a process of reflection. The inquiry is an emotional experience where a conflict is embedded. The conflict acts as a trigger for the inquiry process when the situation is experienced difficult or uncertain. Prior experiences are activated to create meaning and action in the present learning situation. The process affords a cognitive transformation of emotional experience through thinking and action. Thereby, reflection occurs and become a learning experience and embedded knowledge. The loops of connected experiences are organically interrelated circles with individually unique characteristic (Dewey, 1998; Dewey, 2013; Buch & Elkjær, 2015; Buch, 2021). Procedural Rhetoric thus challenges the classical understanding of Game-Based Learning, where the focus is often on aspects such as the Game's narrative for conveying the academic content or Gameplay centred around winning and completion. Instead, it promotes a Game thinking that emphasizes establishing dialogues focused on exploring an academic subject while allowing students to perceive the relationships between specific procedural activities through a critical approach (Bogost, 2008; Bogost, 2021).

3. Research question.

This study is aimed at problem-oriented learning situations where the academic focal point is gamifying a reflective and innovative writing process. The study design aims to identify what impact Game based learning have on facilitating Students through a reflective and collaborative writing process.

The research question driving this study is: *How can Game based learning afford reflective practice among undergraduates through the use of a "Game Over" strategy?*

In the following section, the criteria of the study design will be described according to the theory of experimental and participatory case study. A description of the design setup and its content will follow afterward.

4. Methodology.

Based on experimental participatory design this case study relies on two classes in architectural and construction management education in their fifth semester. The selection of the case is information-oriented. It is a paradigmatic case selection aiming at establishing an example and school for the domain (Flyvbjerg, 2004, p. 426) of "Game Over" in a non-virtual context. The case study is chosen it allows to reveal events with little control and phenomena within holistic and real-life events (Yin, 2013). Case studies offer a way to capture social processes and development (Launsø, Rieber & Olsen, 2011). Thus, case studies are a design that has the possibility to map a complex situation where people and artifact interact. Case studies are accordingly suitable for looking into the affordance of fun-failure in gamification. Moreover, case studies allow for the different type of data collection and thereby methodological triangulation. However, not all data might be recorded in writing, but are selected by a professional judgment of the available data resources (Stake, 1995, s.49-50). The case story forms the empirical data and creates a history including a pivot point (Fog, 1994, s. 175). The pivot point is the plot (here main categories) created by the analysis though the structure of the content.

4.1 The Game design.

The case setup deals with the process of students' developing concept that aims to identify relevant problems within their field of professions. The task is structured through gamification principles where particular "Game Over" mechanisms are the focal point. The task is divided into five levels which together form a continuous learning process, while each level has its characteristics; what Dewey referred to as organic circles. The content is built around a sequence of headlines - words - sentences - paragraphs - full text. Along the way, students must follow some rules that support a gamification thinking. It is vital that the students voluntarily accept the selected rules. The first rule is about each level must be completed within a given timeframe. If time runs out, it's "Game Over" and everything produced is being discarded. If the student manages to solve the task within the prescribed time, they can save their work. Work being saved cannot be lost again. .

Level number	Sequences	Description
Level 0	1. attempts - 2.5 minutes 2. attempts - 3,5 minutes 3. attempts - 5 minutes	Through group work, the students brainstorm 24 titles in total to get to level 1
Level 1	1. attempts - 5 minutes 2. attempts - 10 minutes 3. attempts - 15 minutes	Through group work, the students brainstorm 100 bricks of words in total based on the 24 headlines to get to level 2
Level 2	1. attempts - 10 minutes 2. attempts - 20 minutes 3. attempts - 30 minutes	Through group work, the students are going to use the headlines and bricks of words to create ideas for the project - 50 unique ideas in total. Every idea must be described in a sentence consisting of at least 5 words to get to level 3
Level 3	1. attempts - 30 minutes 2. attempts - 40 minutes 3. attempts - 50 minutes	Through group work, the students are going to merge their ideas into a variety of paragraph consisting of at least 3 ideas per paragraph. Each paragraph is described through text with at least 100 words per paragraph. There must be described at least 5 paragraph to get to level 4
Level 4	60 minutes	Through group work, the students are going to create a coherent text in which they apply at least 3 of their paragraphs. The goal is to develop a concept consisting of at least 1000 words to get to level 5
Level 5	Finished	

Figure 01: The table illustrates a summary of study contents and a set of requirements.

With each failed trial the specified time will be extended, and thus it is getting easier and easier for the student's to succeed. Once the timer has started, it is not possible to pause; they can't stop the clock. The students can take a break between each trial and decide for themselves when they are ready to start again. The last requirement demands that all written material must be readable and understandable. Furthermore, sentences and texts must be coherent and profession relevant. In the table below (figure 1), each level illustrates the time sequence and the content including requirements. In the next section, a content analysis is presented as a methodology for processing of data. Thereafter, a description of the ethical considerations, applied in this study, is addressed. The ethical consideration is followed by the revealing of the data collection and the coding according to the procedure of the Content analysis.

4.2 Ethics

The study includes ethical considerations regarding the student's information about the nature of the project, and the rules of the General Law for the Protection of Personal Data were guaranteed. The conduction of the study is based on the student's voluntary participation, and they are thus familiar with the experimental and unpredictability character of the setup and the research process. Before the study has been carried out, the students have given a consent allowing the documentation of the process beeing carried out. The students have agreed that documented data from videos, sound, and writing can be used for publication and dissemination. However, data are anonymized according to the code of conduct. The data processing is not confirmed by the students.

4.3 Content analysis

The data analysis is informed by the process of qualitative content analysis. The content analysis offers a structure to the analysis of communication where the content and the contextual meaning of the text is framed from different sources of data (Lindkvist, 1981). In this case, data were retrieved from workshop observations, video and sound recordings and student's written portfolio aiming for a methodological triangulation. The purpose of using content analysis is to gain knowledge and understanding of the phenomenon under study (Downe-Wamboldt, 1992, p. 314) and in our case the specific phenomenon of gamification. In this paper, a directed approach has been applied. Hsieh & Shannon (2005) distinguishes between three different approaches to content analysis; a conventional, a directed and a summative approach. As this analysis is framed by both theory and concepts creating the phenomenon a directed approach to content is taken into use with the purpose to extend the existing conceptually theoretical framework of gamification methods. In the directed approach to content analysis; "Fun-failure," "Sequential Constructive Learning," reflection, metacognition, literacy, and engagement has been used as key concepts in the initial coding and in the coding of interrelatedness as suggested by (Potter & Levine-Donnerstein, 1999). These codes are defined before and during the data analysis and derives from theory and relevant research findings.

14 students from 1 class and 14 students for another class. The selection has taken into account the students' metacognitive thinking and their ability to engage in participatory designs. The data collection consisted of two eight-hour workshops in each class monitored by three cameras. The empirical data were retrieved from 48-hour video observations (Heath et.al. 2010; Mortensen & Hazel, 2012), 48-hours audio recording, and the students' written 8 group portfolios. The data has been collected during intense workshop being held over a period of one year.

An Annotating of visual cues or events in the retrieved data from the video-recording were conducted. Annotating visual cues or events in video data involves identifying and labeling specific moments, objects, actions, or other visual elements within the video. This process is crucial for extracting meaningful information from video recordings, and thus what makes it possible to see how the students acted when playing the Game by following their patterns of movement and body languages (Heath et.al. 2010; Mortensen & Hazel, 2012). The Audio recordings were transcribed (Kvale, 2014) and coded according to the guidelines of the content analysis. The transcription of the audio recording was coded up against the video annotating and the written materials from the portfolios.

Figure 02 illustrates the finding from the content analysis based on the different steps of analysis. The categorization reveals how structure, motivation, progression, embodiment, forethoughts, collaborative commitment, and a writing flow affords the students learning the process. Accordingly, the identification of meaning arises. In the next section, the six chosen key concepts will be further explained based on the result of the coding process and analysis thereof.

Key concepts	ACADEMIC INQUIRY	FUN-FAILURE	SEQUENCED CONSTRUCTIVE LEARNING	REFLECTION	ENGAGEMENT	LITERACY
A coding	Exercise, Strategic, Thinking * Plan * Understand, Think, what, How, why, Which, Consider *	Yeah, Yes, Level, Finish, Oh, Swearing, Bad * Good *, Slow	Time, Level, Exercise, New, Level up	Think *, wait a moment...	Plenum	Portfolio, Process
A description of behavior	"The students' organization and structuring of the physical material."	"The face expresses disappointment." "The hand is tied and lifted."	"The students are preoccupied with times."	"The glance is raised by a staring expression." "The face is hidden in the hands."	"Collaborative behavior." "Individual workflow."	"The students build on prior experience; words become sentences, sentences become pieces of coherent text"
A mapping of interrelated concepts	Dewey's understanding of breaks and mechanical stop - related to reflection	Engagement and sequential structured learning	Engagement and literacy	Dewey's understanding of inquiry related to fun failure and metacognition	The concept of affordance related to fun failure	Metacognition and sequential constructive learning
Grouping and categorization	Structure, systematics, overview, strategy	Motivation, Fiero Expression, Self-efficacy, Behavioral persistence	Progression and Frameworks	Thoughtfulness, Embodiment	Collaboration and Commitment	Writing flow
An identification of meaning	Pre- and after processing of learning	Inner drive and external scaffolding (actual affordance)	ZPD and structured experience (Actual affordance)	Mental and embodied Knowledge creation and experience	Peer-learning (Perceived affordance)	Academic Outcome (Reel affordance)

Figure 02: The table shows the concepts, descriptions and words that have formed the data processing.

5. Analysis

The findings are based on qualitative content analysis and data interpretation. Based on coding the retrieved analysis categories of interpretation were; metacognition, reflection, literacy, "Fun-failure," "Sequential Constructive Learning" and engagement. Those categories include both the emotional, the cognitive and the mechanic phenomenon of gamification.

5.1 Academic inquiry through a procedural rhetoric

Academic inquiry through a Procedural Rhetoric is found to involve student's behavior within in strategic planning of the task in their effort to achieve the goal. The student is before each round, very conscious of the need of having a strategy for how to address the task. The systematic and the structure of the assignment affords the progression. The example below illustrates how the students create an analogy to video Games regarding what it takes to win. Thus they bring the basic principles of winning a computer Game into their assignments - it's not just about the doing the assignment but just as much to defeat yourselves. Moreover, the motivation and experiences retrieved from prior gaming become perceived affordance in the process. Affordance is thus

bottled independent of the dispositions or the use of objects associated with the embodied tacit knowledge and nested routines.

Person 2: It a good idea to use these extra minute because otherwise, you could easily risking starting all over again

Person 1: you prepare through a strategy before starting

Person 2: and then you go to war

Person 2: Then you just shoot the enemy

Person 3: we are making a strategy

Person 2: strategy for (swearing)

Person 2: This is what it is all about

Thus, the motivation to win, indirectly, pushes the students towards working on a metacognitive level through a reflexive discussion of how to solve the task. For instance by questioning: How many ways can it be done? And what methods are the most appropriate according to create useful knowledge? The next example shows the student's awareness of how idea generation is supporting and making sense regarding professional approached to the content of their project.

Person 2: No, but it just does not make much sense, you can say

Person 3: For what should we use the word scissors?

Person 3: It should be something about crafting building

The students' discussions illustrate that they, in their strategic planning of the idea-generating, is trying to establish some rules to ensure a professional approach to their brainstorm process - the outcome should make sense regarding the breadth and complexity of their projects. For example, a question about whether words covering building materials are too narrow, regarding the professional context, are discussed. These Academic discussions are essential for maintaining a professional quality of their work, and thereby they are not tempted to finish and to hasten the final goal.

Person 2: But, is there someone who can focus on anything inside the building and then someone can focus on anything around the outdoor areas and then there is somebody focusing...

Person 1: What if someone is concentrating on materials

Person 2: But is it not, don't you think that would almost be too narrow?

Person 1: Materials in general, I am (swearing) you can find around 40

Delegation is a central part of the collaboration aiming at solving the task. Academic inquiry is found not only in advance of each assignment but also visible afterward. Thereby both pre- and post-processing are present in the quotes revealed. Situations where students fail to solve the task within the stipulated time sequence and thereby experience "Game Over," can be observed several times. Here, they reflect on a metacognitive level, regarding the factors that had an impact on why they did not reach the goal. The example below shows how a student verbalizes his own idea generation process by using the term "dead." Based on this experience, he requests the other group members of help regarding how to shape up in the next attempt.

Person 2: Well I need to have an art break, could you just try to make a plenum about what I can write about?

Person 3: Yeah, because I also went down all the sudden, and then ten more came, and the five more

Person 2: I came to write the sun, yes, spring, summer, winter, snow, and then I went dead again

The analysis thus reveals that the use of gamification forces what Dewey call breaks or recovery periods. It creates moments where the students have the opportunity to define the quality or the direction of their work. The students use the pauses between each round to make the status of their progressing and summing up. Academic inquiry is also a part of literacy competence develop through the process. For instance, Academic inquiry is afforded by the combination of the embodied activities and the written mediums visibility. The data's video material thus illustrates how the strategic planning of the task is clarified through a sorting and structuring

of the written media. The students' literacy skills are linked to a bodily dimension through the physical material which can be combined and moved around on the table.

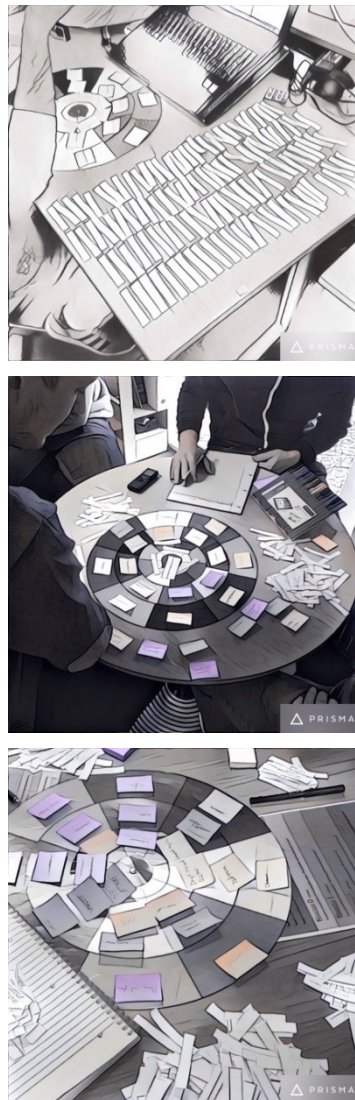


Figure 03: Scraps of paper expressing respectively headlines, words, and phrases

Through the small scraps of paper expressing respectively headlines, words, and phrases, the students can work and organize specific disciplines through various thematisations (figure 03). The academic discussion thus supported the students' ability to see connections or combinations between the written headlines and words. The selection of these acts as stimuli to help the formation of new and alternative suggestions or problems which may be subsequently incorporated into the project. The "hands on" material raise an embodied awareness of the combined process of metacognition and literacy skills (figure 03). The use of Game-Based Learning through a "Game Over" mindset regarding the structuring of the task, supports an open idea generating process as the students did not have "time" to stop up and reject the crazy ideas. This open approach releases ideas and words that otherwise would have been sorted out through dialogue if the working process had not been forced by Game-Based Learning. A large part of the combinations, will due to the "Game Over" mindset not form ideas that make sense in the first place. A conversational reflection is, therefore, necessary since it includes questions such as "that is very strange," "how are we to understand it?" "what can we get out of this combination?" etc. These crazy ideas thus create a provocation, which aims to force a reflection about the relevance and how it appears relevant. The many examples above seems to support the findings of how the student's through intense conversation created by the "Game Over" principle obtains a academic perspective on their ideas based on a procedural rhetoric.

5.2 Reflection

In the beginning, reflection seems to be superficial or tacit by the reflection in action, but at the end, reflection is visible in their creation of the written portfolio, where the reflection reveals both cognition and the solving of the prior conflicts gained by the process of inquiry. The physical artifact acts as a trigger of abstraction, obstruction, and lateral thinking. The reflection is visible in the situations where the students are speaking loudly about being under pressure due to running out of time. Phrases like; *"I'll just go lock myself into my mind"* or *"What is it? It says architecture, now we think, we think - green lines"* illustrates how the reflection become the grip, which creates a necessary concentrated and focused process. The "Game Over" principle thus provokes to an immediate and direct reflection. Moreover, reflection is furnished in embodied interactions. The analysis point towards that the "Game Over" principle compels what Dewey describes as an emotional meeting in an experience with an embedded conflict. The students are affected emotionally by the desire to win, and at the same time, they want to maintain a professional quality. Dewey points out that it is precisely in situations where there is a feeling about something being difficult that inquiry is the method to resolve this conflict and afford meaning. Video material reveals repeated examples of how the students through their body language use inquiry as a tool to maintain the idea generation process. The illustrations below pictures how the students are "hiding" their faces in their hands to create a maximum concentration. Another example is situations where the students look up from the table with a fixed look out in the room, to maintain their thoughts (figure 05).



Figure 05: Reflection present in embodied actions

The non-verbal actions illustrated in figure 05 are part of the emotional expressions in the reflective processes. Those processes are interrelated to the emotional experience in the situation. The complexity of bodily expressions raises forethought and pictures the embodied engagement. The reflections and forethoughts afford a foundation for the upcoming literacy process.

5.3 Literacy

According to the category of Literacy, the findings from the portfolio reveal how the use of gamification affords the quality of the students' writing through a reflective and collaborative approach to the task. A step by step approach facilitates the writing process in a continuous flow. Dewey is, for example, talking about "series of continuous situations" or the "organic circles" which can create learning through inquiry. These situations of reflection are all linked with each other while each of them possesses unique characteristics. The case set up where students through five phases are preparing a concept for their project can be characterized as a series of contiguous situations. It is precisely the students' reflections which becomes the factor that creates a movement from words into a coherent text. The following example illustrates a discussion of how the random word "concrete" ends up in the idea *"Concrete floors in the kitchens to create an industrial look."*

- Person A: Should we take concrete?
- Person B: Can we make the concrete floor in the kitchen?
- Person A: That could be cool
- Person B: It could give a cool...
- Person A: ...architectural, yes
- Person B: Yeah but, yes as an industrial, what's the name?
- Person A: Yes, exactly

Person B: an industrial look

Person A: Concrete floor in the kitchen to...

Person B: to get an industrial look. That way it could also be.. but there is also sustainable, you do have a long lifetime for it

A review of the group's subsequent work shows that the idea was incorporated as an integrated part of the conceptual thoughts. The initial and superficial reflections are thus visible later in the writing process. The specific analysis reveals that the structural use of gamification as a series of coherent levels ensure that student's quality in work in all planned phases as no stage can be skipped, which is also not questioned by the students. The early reflections help and support the students' writing process by building on previous experiences in a movement from words to phrases and to coherent text.

5.4 "Fun Failure".

The category of "Fun Failure" is closely connected to the sequential constructive learning process. The analysis reveals that the principle "Fun failure" and engagement is expressed in both verbal and nonverbal attitudes. A "Fiero" behavior is expressed as an emotional benefit of hard work as a result of the "Game Over" strategy.

The examples below in figure 07 pictures how the hand is tied to a fist when a winning experience occurs. If, however, the experience is "Game Over" a disappointed facial expression is revealing irritation of the planned strategy not being sufficient. The last types of examples are situations where the students are hiding their faces in their hands to ensure maximum concentration.



Figure 07: The student's body language, reveals the phenomenon of "fun Failure" by expressing a "Fiero" behavior

Besides the bodily expression, the presence of "Fun Failure is illustrated in the students' conversations. In the following quote "come on, last one last one, it's the last one we need now" the student is clearly expressing a desire to win and tries through pep talk to encourage his team members to intensify their efforts and behavioral persistence. The inner drive is pictured in the bodily behavior and the emotional outbursts expressed by; yeah!, Good!, Oh!, Bad!, Yes! and swearing. The students desire to win affords an engagement in the approach and alternative thinking to accomplish the task and thus an actual affordance in relation to self-efficacy. Thereby, the "Fun Failure" supports the inner drive through the external scaffolding.

6. Discussion and conclusion

As a contribution to the existing knowledge, this current understanding, and the case study adds new perspectives to the pro and cons of Game-Based Learning. The case study offered in this research has raised out of the desire to understand the complex phenomena of Game-Based Learning though the use of a Procedural Rhetoric to create a reflective and collaborative practice by using two specific gaming principles; "Fun Failure" and "Game Over." The case study provides a way of investigating a phenomenon within blurred contexts where there are several variables of interest and multiple sources of data. The educational Game-Based Learning design in this study reveals how a "level thinking" and "Game Over" strategy creates the phenomenon "Fiero" behavior. "Fiero" behavior is regarded as an emotional benefit of hard work. Even through "Fiero" behavior is a term used by the Game industry it is measurable within learning environments. This emotional behavior is an expression of the gaming principle "Fun-Failure". Thus, "Fun failure" creates the possibility to engage students. Accordingly, this paper adds new perspectives to the measurement of learning within "fun failure" environment. This is illustrated in the findings of "Game Over" and "Fun Failure" as triggers for reflection and metacognition observed by video and sounds. By thinking in a simple and direct application of gaming principles, it is possible to design a learning situation that can facilitate academic inquiry and literacy through a reflective and collaborative

approach. Therefore, this study offers a methodology for how to work with Game-Based Learning without having to apply existing computer Games that do not meet the substantive requirements of the instruction and the learning situation. The real and perceived affordance of Game-Based Learning are also revealed in the assessment of group work, where student's individual contributions are comparable to peers in a situation where gamification is applied. Finally, this study illustrates how to work with Game-Based Learning aspects without using technology and traditional learning managements system (LMS), by applying gaming principles to a physical non-virtual context. This approach contributes to existing research within the field of Game-Based Learning as it offers a model of Game designs element in non-Game contexts. To afford academic inquiry and deep reflection rules are essential. You can't play a Game, for instance, soccer, without knowing the rules and the actions of the Game. In contrary, if the Game is without rules chaos and regression might be the result. When Games and learning are coupled by rules, it provokes reflection and affords knowledge creation. Game-Based Learning is not about learning the curriculum but changing the learning conditions. However, you need all the "puzzle pieces to create a puzzle picture."

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