

Implementation of gamification elements into the LoCoMoGo app

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LoCoMoGo is a start-up company that develops a toy train. By playing with this train, children learn how to code. The train can be programmed by an app, where levels are offered to learn coding step by step. The purpose of this thesis is to address the following research question:

How can gamification elements be used and implemented in the LoCoMoGo app; to enhance the children's experience in terms of fun and how-to code.

Gamification can be defined as implementing game-design elements in non-game contexts (Deterding, S., Dixon, D., Khaled, R., & Nacke, L. 2011). Examples of these gaming elements are points, leaderboards and badges.

To address this question, research on how to add gamification in the LoCoMoGo app was executed. To do so, first research on the brand LoCoMoGo, to make sure the final design fit to LoCoMoGo, was done. Secondly, the target group was analyzed, regarding the cognitive skills, motor skills and interests of the user group. Thirdly, research in gamification was executed and lastly, the existing app of LoCoMoGo was analyzed regarding to the existing implemented elements.

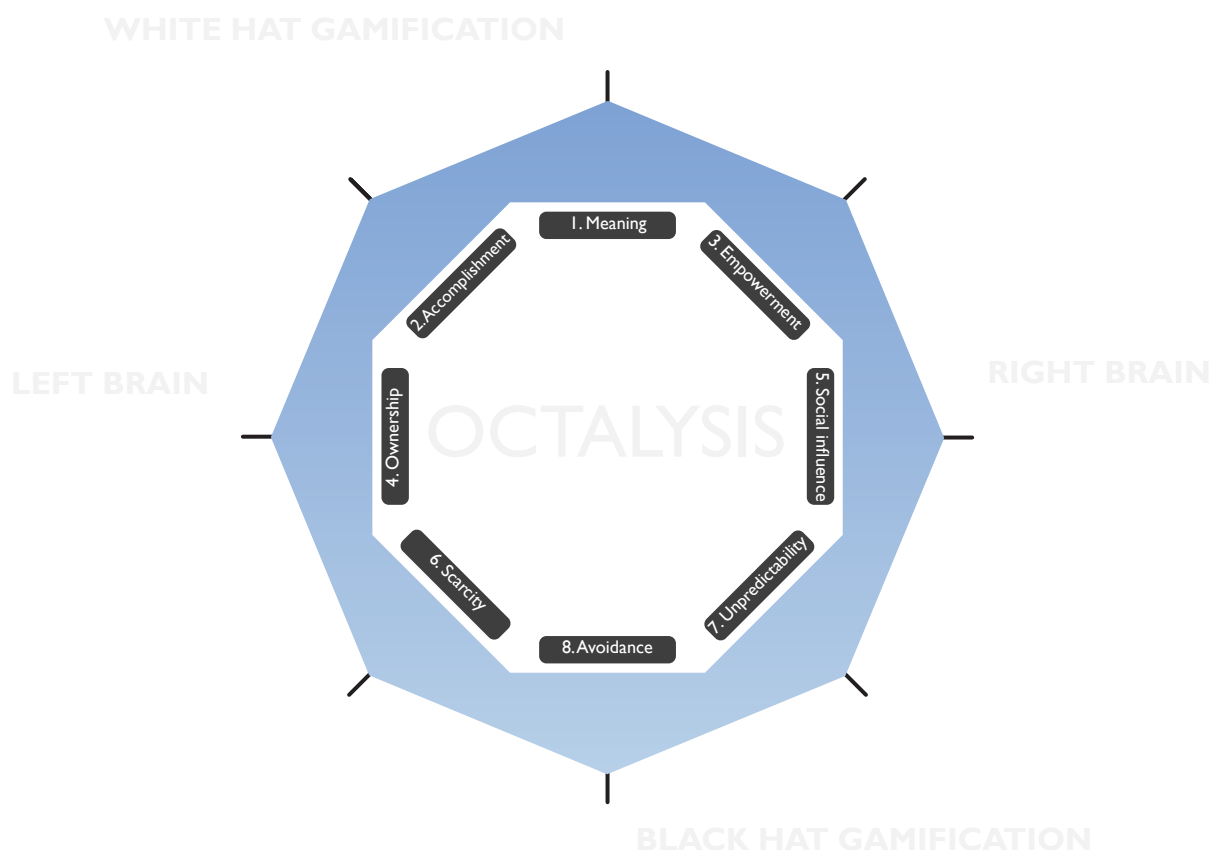


Figure 1: The octalysis framework, containing the 8 core drives.

To ground the implementation of gamification in the app, the book by Yu-Kai Chou (2019), *actionable gamification: beyond point badges and leaderboards*, was taken as main reference. Chou divides gamification into 8 core drives, each core drive can give a player a motivation to perform a certain action. The core drives are placed in the octalysis framework, shown in Figure 1. In the design it is important to keep in mind that the right and left-brain core drives need to be balanced and that the focus should not be on core drive 8, due to the young ages of the user group.

The design process starts with implementing a narrative (*core drive 1: epic meaning and calling*), as the basis for implementing the other gamification elements. Three different narratives were tested among 20 children aged 8 or 9 years old. The narrative of saving characters was rated as the best concept to implement, and was therefore chosen as the basis in the final design. To make the user clear that the characters needed to be saved, the choice was made to make a short animation which is played when the app is started.



Figure 2: Elements out of the short animation containing the narrative.

The next step was to implement the characters. Characters can be collected or saved, speaking in terms of the narrative, during the game. The characters function as badges, each character could have their own challenge. Collecting the characters increases the feeling of owning them. In addition, this feeling could be empowered by the implementation of a collection book. Here, the player is able to see which characters are already obtained and which characters are still missing. A character could also be obtained randomly, empowering *core drive 7: unpredictability and curiosity*.



Figure 3: Elements of the final design, the collection book and level map.

To empower *core drive 2: Development and accomplishment* two elements are implemented, the adding of stars and a level map. Starting with the adding of stars when a level is achieved, stars could be added to give the player more feedback and to give them a new challenge, namely to collect as many stars as possible. Things that can be considered as constraints are for instance the time the level is achieved, the number of mistakes or the creativity of the solution. The level map will let the user experience the feeling of growth and accomplishment by showing them their progress. The character to be saved is shown on the level map, in this way the player sees what to work forward to.

When implementing the core drives, different frameworks for different player types and game stages can be taken into account. Since the app is still in its initial phase, this is hard to predict, and so not taken into account in the design process. Little thought has been made on how to implement the framework for end users. Here right brain core drives, and especially *core drive 3: empowerment of creativity and feedback* play an important role. An alternative can be to implement a function that creates your own level and being able to share that with others.

To establish that the final design is successful, testing with the users is required. Unfortunately, this was not possible due to the covid-19 pandemic. Luckily, the final design could be reviewed by two game-design experts as an alternative. This resulted into the following points of interest: (1) Taking the different game stages and player types into account could be valuable as the next step in the design process; (2) The level structure could be based on complexity. The more complex the task the more creative the user would be, which therefore could be a great solution to empower core drive 3; (3) Due to the range in age of the user group, coming with different interests and skills, taking this range in age can be a risk.

To conclude, the final design could serve as a basis to implement gamification elements into the LoCoMoGo app. From there, the next steps can focus on how to implement the narrative more into the app. Furthermore, it is highly recommended to perform user testing, since receiving more feedback is valuable. As this report does not include the different player stages and types, it could be wise to take them into account. Lastly, it could be valuable to compare the final design with apps that have similar aims and take similar approaches.

References:

Chou, Y. (2019). Actionable Gamification: beyond points, badges and Leaderboards. Milpitas, CA, United States of America: Octalysis media.

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness. Proceedings of the 15th International Academic MindTrek Conference on Envisioning Future Media Environments - MindTrek '11, 1. <https://doi.org/10.1145/2181037.2181040>