Framework to democratise educational game design on social issues

This framework was created during a Ph.D thesis conducted by Christina Myers at the Open University. This framework aims to democratise the design of educational games on social issues during Game Jams. The objectives of the framework are to create engagement with a social issue, enable people to acquire game development skills and to support them designing educational games during Game Jams. The proposed framework was created, applied and validated during two weekend long Game Jams (n=8 and n=15) where participants created educational games on everyday sexism and used a game engine called *GameSalad*.

The framework is developed for a two-day Game Jam with participants working in groups of 4 to 5 people. The groups are created considering that diversity in age, background and gender is intended to be reflected in each group. Anyone can participate to the Game Jam; no previous skills or expertise is needed.

A booklet of instructions and timings for all the activities, as well as a box with the supporting resources (e.g. the two sets of cards, paper, pens, etc.), are provided to the participants. The Game Jams are supported by the participation of coaches who execute the activities and answer to basic questions. One of them has to lead the Game Jam by ensuring that each activity start on time and answer questions that could not be answered by the other coaches.

This framework could be used with other social issues than sexism, such as racism, islamophobia or discrimination against the LBGTQ+ community. As personal experiences about a social issue are used to create engagement, the only requirement is to choose a social issue that influences, directly or indirectly, the potential participants. Following this, other game engines than *GameSalad* could also be used. To apply another game engine, it is mainly recommended to ensure that the game engine does not require knowledge of programming languages to be used, can be learnt within the timeframe of a tutorial (i.e. 2 to 3 hours during a Game Jam), reflects some of the technical logic and structures of game development, and includes access to online help and resources (e.g. online tutorials). To use another game engine, it is also advised to explore whether the principles presented on the educational game design cards during Stage 3 (and especially the game elements) could be implemented with the game engine and or remove the principles that are not supported.

The framework presents nine stages and is based on first shaping group discussions toward exploring the social issue in question, game development and educational game design practices. These group discussions are facilitated by providing specific resources and activities as well as by inviting groups to create artefacts. The next four stages intend to support groups in conceptualising their games by applying the knowledge acquired, using the resources available and building on the artefacts created in the previous stages to create a game prototype. The penultimate stage invites groups to develop their games by transforming their prototypes into a game by using a game engine. In the last stage each group has to present their games to the other participants of the Game Jam.
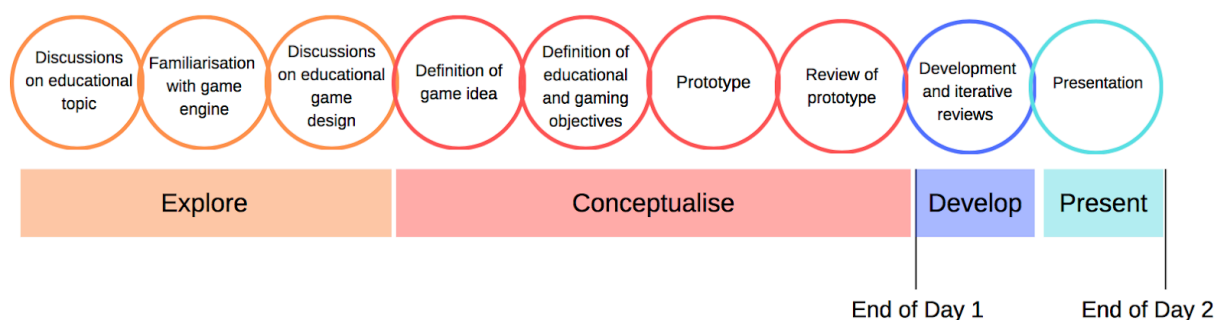

Figure: Overview of framework

Stage 1: Discussions on educational topic

This stage lasts 90 minutes and is divided in three activities of 30 minutes (see *Figure 1* below). Activity 1 invites groups to discuss the provided cards and choose up to three cards before discussing the questions presented at the back of the selected cards. Activity 2 requests groups to create a story that illustrates an issue related to the social topic presented on the cards and, in Activity 3, groups have to transform the story into a branching story that presents an intervention to tackle the presented issue. The set of cards on the issue of everyday sexism can be found here: https://figshare.com/s/e9c84fd34fcb1264388e

Additional instruction distributed to coaches: if groups cannot create their stories at the beginning of Activity 2 because they report having too many cards or express to be overwhelmed, require groups to prioritise two cards.
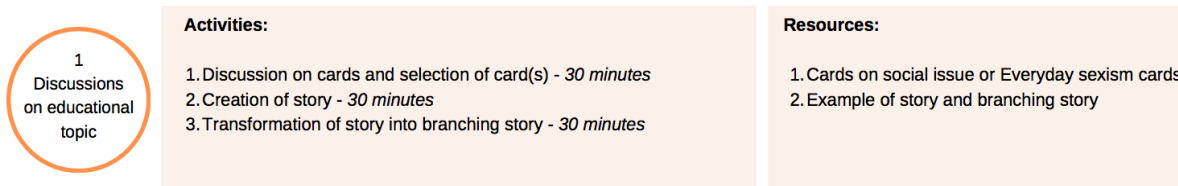
| 1
Discussions on educational topic | **Activities:**

1. Discussion on cards and selection of card(s) - *30 minutes*
2. Creation of story - *30 minutes*
3. Transformation of story into branching story - *30 minutes* | **Resources:**

1. Cards on social issue or Everyday sexism cards
2. Example of story and branching story |

Figure 1: Activities and resources facilitated for Stage 1

Stage 2: Familiarisation with game engine

This stage lasts 180 minutes in total (see *Figure 2* below). Activity 1 invites participants to read brief descriptions about 10 games developed with a game engine in 20 minutes. Activity 2 is a two-hours long tutorial on the game engine where participants develop a test game. Activity 3 is a 10 minutes discussion on the potential and limitations of the game engine. This stage is supported by a manual on the game engine document with free art-game assets that participants could use in their games. For *GameSalad*, the tutorial followed can be found at this URL: http://learn.gamesalad.com/course/the-absolute-beginners-guide-to-gamesalad/. This tutorial was found on the *GameSalad* website and is called 'The absolute beginners guide to *GameSalad*'.

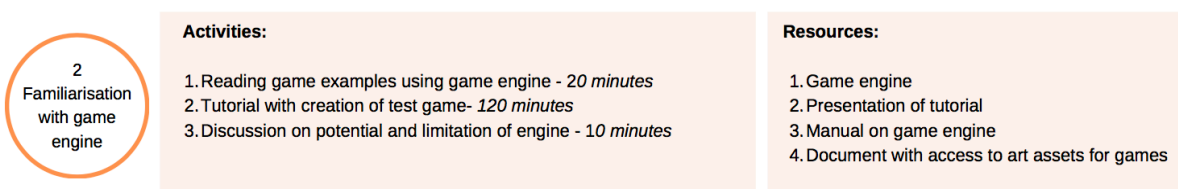| 2
Familiarisation with game engine | **Activities:**

1. Reading game examples using game engine - *20 minutes*
2. Tutorial with creation of test game- *120 minutes*
3. Discussion on potential and limitation of engine - 1*0 minutes* | **Resources:**

1. Game engine
2. Presentation of tutorial
3. Manual on game engine
4. Document with access to art assets for games |

Figure 2: Activities and resources facilitated for Stage 2

Stage 3: Discussions on educational game design

This stage lasts 80 minutes and is organised into three activities (see *Figure 3* below). Activity 1 is based on a 5-minute presentation supported with examples and facilitated by one of the coaches which illustrates how to use the provided cards to design educational games. Activity 2 lasts 45 minutes and invites each group to discuss the cards collectively. Activity 3 lasts 30 minutes and requests groups to choose a maximum of four cards they want to use for their games and to select some game elements, presented at the back of each card, to implement the principles presented on the cards they selected. The set of cards created for this stage can be found here: https://figshare.com/articles/Educational_Game_Design_Cards/7466879
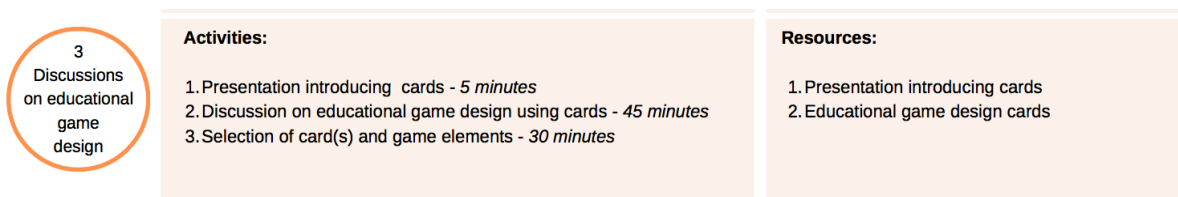
| 3
Discussions on educational game design | **Activities:**

1. Presentation introducing cards - *5 minutes*
2. Discussion on educational game design using cards - *45 minutes*
3. Selection of card(s) and game elements - *30 minutes* | **Resources:**

1. Presentation introducing cards
2. Educational game design cards |

Figure 3: Activities and resources facilitated for Stage 3

Stage 4: Definition of game idea

This stage lasts 20 minutes, as illustrated in *Figure 4*, and requests groups to come up with a brief game idea. An example is provided which was "Our game follows the life of a female athlete who faces discrimination. The player learns about the history of sports and has to challenge gender stereotypes to win the game".

Additional Instruction for coaches: Reminding groups that they should only define a preliminary brief game idea at this point and interrupt the discussion if necessary.

4 Definition of game idea

Activity:

1. Definition of game idea - *20 minutes*

Resources:

1. Example of game idea

Figure 4: Activities and resources facilitated for Stage 4

Stage 5: Definition of educational and gaming objectives

This stage lasts 25 minutes and is divided in three activities (see *Figure 5* below). Activity 1 invites groups to define the gaming objective of their games in 10 minutes. To support groups in this activity it is stated that not all games aim at being fun in an amusing manner and that they should define what feelings they intend to enhance through their games, with the possibility to create fun and/or uncomfortable feelings to the players of their games. This is also supported by game examples extracted from the educational game design cards, for instance the game 'Depression Quest' was used to exemplify a game that invites players to experience depression and sadness. Activity 2 requests groups to determine the educational objective of their games in 10 minutes. The groups are provided with supporting information that the educational objective(s) of their game should describe what they would like players to learn about a social issue. In Activity 3 groups are required to evaluate the extent to which their defined objectives are coherent. The checklist consists of two questions, namely 'Does the gaming objective you defined describe fun and/or uncomfortable feelings that you intend to convey to the players of your game?' and 'Does the educational objective you defined present what you intend players to learn about [social issue in question, e.g. everyday sexism] through your game?'. The groups are requested to write these objectives in the provided Yin and Yang template, introduced in *Image 1*.
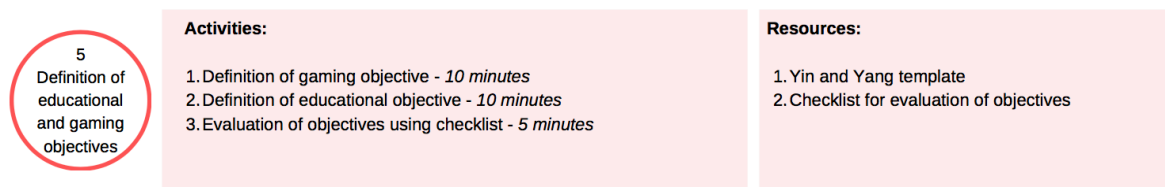
5 Definition of educational and gaming objectives

Activities:

1. Definition of gaming objective - *10 minutes*
2. Definition of educational objective - *10 minutes*
3. Evaluation of objectives using checklist - *5 minutes*

Resources:

1. Yin and Yang template
2. Checklist for evaluation of objectives

Figure 5: Activities and resources facilitated for Stage 5
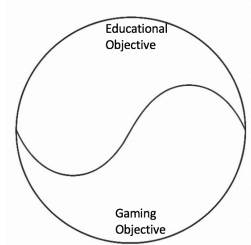
Educational Objective

Gaming Objective

Image 1: Yin and Yang template with the educational and gaming objectives

Stage 6: Prototype

The prototype stage has one activity which is to create an educational game prototype in two hours. This activity was supported by a document listing the main components of educational games, namely the simplified version of the SGDA framework (proposed in a paper written by Mitgutsch and Alvarado "Purposeful by design?: a serious game design assessment framework" in 2012). A document with available art assets, which are images and animations that can be used in games, is provided again in this stage.
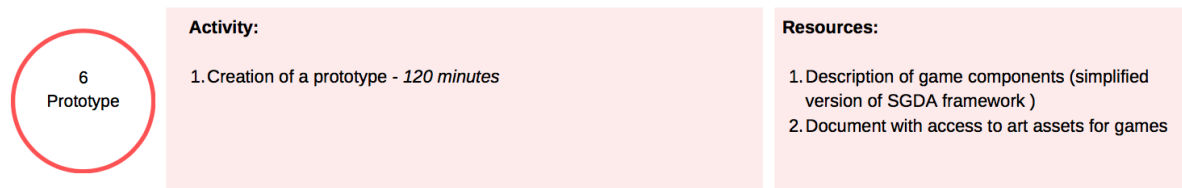
6 Prototype

Activity:

1. Creation of a prototype - *120 minutes*

Resources:

1. Description of game components (simplified version of SGDA framework)
2. Document with access to art assets for games

Figure 6: Activities and resources facilitated for Stage 6

Stage 7: Review of the prototype

The next stage lasts 20 minutes and invites groups to step back from the prototypes they just created and adopt a holistic view to review them, as presented in *Figure 7*. The groups are instructed to review that the game conceptualised would not send mixed messages to potential players by ensuring that all the defined components are consistent between them and toward the game objectives. Examples are provided, for instance 'Depression Quest' illustrates that dark colors were chosen for the appearances of the game to invite participants to experience sadness and depression as its gaming objective.
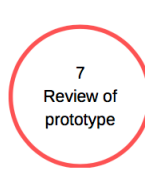
7 Review of prototype	**Activity:** 1. Reflection about coherence of game prototype - *20 minutes*	**Resources:** None

Figure 7: Activities and resources facilitated for Stage 7

Stage 8: Development and iterative evaluations

This first stage of the second day of the Game Jam invites participants to develop in 10 hours their games based on the prototypes, as illustrated in *Figure 8*. This stage is supported by the use of a game engine and a reflective question inviting participants to consider potential modifications when transforming the prototype into a game, for instance if a participant cannot develop a feature with the game engine as conceptualised. The groups are invited to use this question to consider the objectives of their games when they potentially implement a modification, 'Does the modification you are proposing to your game align with the objectives of your game?'.

8 Development and iterative evaluations	**Activities:** 1. Development of game using game engine - *10 hours* 2. Evaluation of prototype modification(s)	**Resources:** 1. Game engine 2. Reflecttive question to evaluate prototype modification(s)

Figure 8: Activities and resources facilitated for Stage 8

Stage 9: Presentation

This is the last stage of the Game Jam and each group is invited to present their games to the other participants. The time allocated is 5 minutes per group, as presented in *Figure 9*.

9 Presentation	**Activity:** 1. Group presentation to all Game Jam participant - 5 minutes per group	**Resource:** 1. Screen for presentation

Figure 9: Activities and resources facilitated for Stage 9