GEO*Logic – A board-game designed to be a versatile geological learning and teaching tool

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ABSTRACT: GEO*Logic is an iEarth Seed project which resulted in a versatile geology game which can be altered and designed to match many purposes. The game can be played in 3 different formats depending on the players and the desired outcomes. The basic game can be played by anyone, and is a board-game designed to get an understanding of geological time and some important geological events. The second version is led by the teacher/educator, who designs the questions. These questions can be simple or complex, and the game played in teams or solo. The idea is to use the game in labs/exercises/revision to assess learning outcomes (in a fun, non-confrontational way) and/or enhance learning in a fun, physically active way. The third version adds an additional component of fun and team-work, building on adding charades and drawing to enhance the social aspect and amusement of the game to build and strengthen a groups sense of community.

1. Introduction

The idea to create a game to learn, grew from reading an article on a board-game designed to teach taphonomy (Martindale and Weiss, 2020). As someone who enjoys board-games and an interest in new approaches to teaching and learning, the idea to design a board-game that was easy to play but also versatile in what it taught was born.

Using innovative and different approaches to engage students leads to improved comprehension of core concepts and material (Prince, 2004). It is well documented that students learn best when they are actively engaged and participating (Perkins, 2005, Wirth, 2007). Using games can help students retain material, even gain deeper understanding of some concepts and enhance their creative problem-solving skills (Martindale and Weiss 2020 and references therein). Meanwhile, many games are created to teach a specific concept, making them useful and fun for a specific case. GEO*Logic was designed to be versatile and used for different purposes.

2. Aims

GEO*Logic aimed to design a game which could be:

- Played in several different ways, by any age-group, with or without prior knowledge of geology
- Played to meet different needs from an educator’s side such as; Assessing learning outcomes (in a non-confrontational, fun, easy way). Teaching concepts through questions and discussion Building a good group dynamic/sense of community through fun, team-work, communication contributing to a more active and engaged classroom. Engaging students and creating enthusiasm. Visual learning input through physical game-play.
- Played with questions designed by the educator to meet any teaching/learning assessment/revision goal within any subject matter.
3. Methods

The creator of GEO*Logic came up with the basic concept for the game. She thereafter met with a group of students, bachelor and master level, to discuss the project prior to starting. The main ideas were well in place and the students were enthusiastic about the concept. Through discussion with the students the final game-form was improved and finalised. Student input was encouraged. The board was designed in discussion with the designer and the first version of the board-game was ready in March of 2023.

4. Results

Figure 1: The GEO*Logic game board, concept idea by Ingrid Anell and created by Grace Shepard

GEO*Logic is designed either to be printed large-scale foldable plastic/pvc banner to create a board on which the players themselves form the pieces, or smaller-scale and then small objects, for example rocks, can form the pieces.
iEarth projects database

GEO*Logic is designed so it can be played in 3 different ways. Game-version 1 suitable for anyone with the goal to advance through geological time, passing geological events on the way which can help and hinder your way to present time. This game-version can be played for example at school-visits or even kindergarten, the large printed version might be extra fun then (with big dice of course). Game-version 2 includes the question-squares and here the teacher/educator is free to design questions, multiple-choice, true or false, complex discussions, explanations, queries, depending on the aim: learning outcome assessment, teaching, revision etc. Game-version 3 is designed to play in teams and includes activity cards, which can be printed or designed on one’s own. These have geological terms on them and depending on the roll of the dice the player has to convey the term to their team using charades, description, drawing (/blindfolded), building or spelling backwards. This game-version can be used by educators wanting to also enhance the fun/team-building/sense of community or students revising together.

The board-game, game instructions and activity cards will be made available on the iEarth webpage, and is free for anyone wishing to download and use.

Figure 2: An example of an activity card for game version 3

5. Summary discussion

GEO*Logic has yet to be tested in a classroom setting and evaluated as a tool. In general games and innovative approaches to teaching, activities which are fun and engaging, are met positively by students. There are many other potential benefits than just pure enjoyment. Learning is often achieved through a variety of ways based on individuality and diversifying the learning experience is a good principle in education (Jones, 2007 and references therein), so an approach which is visual, active, and collaborative can meet many needs. A game-form is student-centred with active participation (Budd et al, 2013) and GEO*Logic can be designed to be inquiry-based, where students have to make critical assessments and draw their own conclusions (Apedoe et al., 2006). An activity with potential for enjoyment and peer interaction can engage students and enhance their communication, collaboration and group-dynamic, but also build a rapport between lectures and students which is central in promoting learning (Hodgson, 2005). The main strength of GEO*Logic is likely to be its flexibility in meeting unique needs in different courses, at different levels and with different student bodies.

REFERENCES


