Games: Learning Experiences and Analogical Scaffolds

A **game** is a **rule governed play experience**. Players **interact** with each other, and **objects** (both material and digital) to achieve **goals**. Goals provide clear motivation that directs player actions. A game designer sets the parameters of this experience by creating the **components**, **goals**, **narrative** and **rules**.

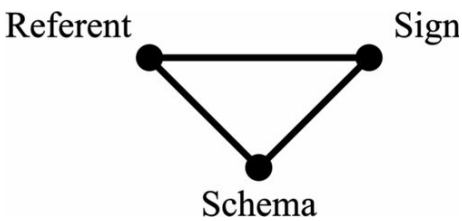
An **analogical scaffold** is an experience or example that learners already grasp and understand that bears analogical resemblance to the concepts, theories such that it can be used by learners to arrive at a an understanding of those concepts and theories.

An experience bears **analogy to content** of a theory or concept when that experience provides a way of living out that concept. In such a case, the analogical scaffold is made by reflecting on "what it *was* like" to play, and connecting that to the concept or theory.

An experience bears **analogy to subject** of a theory or concept when that experience provides a way of simulating or realizing the situations that the theory or concept is about. In such a case, the analogical scaffold is made by reflecting on "what it *is* like" to play, and identifying the concept or theory in the immediate experience.

Analogical Scaffolding

(adapted from Podolefsky and Finkelstein 2007)



The **sign** is an external representation (graphic, words, materials); the **referent** is what the sign refers to; the **schema** is an interpretation of the sign-referent relationship

Parallels can be drawn with the aspects of a game: The **sign** is the materials, objects and players that interact. The **reference** is the narrative, or elements of the narrative, that the signs represent. The **schema** are the rules that constrain the interactions and the narrative of the game. Then, **playing a game** 'blends' the sign and schema in an experience, which can then be applied in a new domain through **reflection**.

When constructing an analogy to the **content** of a theory or concept, use the **rules** to create an instance of that theory or concept in the play experience.

When constructing an analogy to the **subject** of a theory or concept, use the **objects** to create a representation of that subject.

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Game Elements, Mechanics and Tools

Cards are a versatile object to use as a game component. They can be one-sided with a common back, or double-sided. Cards can carry a lot of information (suits, numbers, actions), can interact with each other in a variety of ways (collect, compare), and can interact with rules in different ways (hand of cards, collection face up on the table, a deck, a discard pile, drafting cards, trade cards, steal cards).

Dice are a good source of random input, and it is easy to find a large number of six-sided dice. There are two basic types of randomness: **input randomness**, which is when a choice or decision is prefaced with a random outcome (roll dice to determine number of action points a player has); and **output randomness**, which is when the result of an action or choice is determined by a random outcome (roll dice to determine if your action succeeds).

Boards, Tokens and Tracks are useful generic components to work with in a game design. Boards can be used to represent space, and organize pieces. Tokens are good for counting (poker chips are a very common kind of 'token') and representing resources (gold, wood, soldiers). Tracks can be used to make score keeping visible to all players.

Drafting is a common mechanic for selecting game pieces to use during play, and is commonly done with cards. In a draft all players are given a hand of cards, pick one to keep, then pass the rest of the hand to the next player. The next player then also picks one and passes the remaining cards on. This repeats until all cards have been picked. The result is that each player has selected a hand of cards that they then use in a game.

Variable Roles are used in games to create asymmetry. A role defines a set of actions, abilities, or resources unique to the player that gets that role. Players then choose, or in some way receive, roles during the game.

Auctions are very common mechanisms for deciding how players value resources or pieces. There are many different ways an auction can be implemented. Here are two:

> **Dutch Auction** where the 'dealer' puts an item up for sale, then says a price out loud, then a lower price, and a lower price, until a player reaches out and grabs the item. The first player to grab the item, pays the 'dealer' the last price they said.
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> **Fixed Bid Auction** where the buyer's wealth or resources occur in fixed amounts on tokens (e.g., each player has three 1's, two 2's, a 3, a 5 and an 8) and may only use those tokens (and cannot make change) when bidding.

Graphics & Design Tools:
http://game-icons.net/
http://www.godeckyourself.com/
http://www.ccgmaker.com/
http://www.gimp.org/

Game Printers:
https://www.thegamecrafter.com/
http://www.printplaygames.com/