

2.2.2 Rule design

Since knowledge is deeply connected with its application, an integrated approach to game design should also consider the rule set – the game mechanics – which allows or calls for specific behaviour by the players, while suppressing or discouraging other. Rules define the possible actions for a player, and what consequences result from these actions. Like grammar in speech they give directions and jurisdiction, and usually require unquestioned acceptance from the player to play a game⁶⁵.

For becoming a better player, the knowledge of the game's rules for deciding on possible and beneficial actions has to grow ingrained, procedural and automatic. As with any language, a fluent native speaker is probably less aware of grammar and vocabulary as a first year student of this language.

Specific paradigms of teaching have repercussions on what is learned beyond the overt content by supporting specific types of interaction with knowledge bases, peers and experts, comparable to aspects of the "hidden curriculum" encountered in schools⁶⁶. For example behaviouristic approaches try for an imprint of facts by repeated drill & practice of objective knowledge, while constructivist approaches may go for social interaction and collaboration towards a self-set goal in a field of expertise: the overt topic may be the same in both approaches, though. In educational games, rules represent similar paradigmatic settings, guiding the playing style and thus the situating of attitudes, skills and knowledge achieved in-game.

For topics like "How does our economy work?", "How do I get safely to school?", or "How do I do research on the web?" the choice of a rule set demanding and thus fostering a certain behaviour connected to the aimed for skill is an important design decision. If the closed, simplified game environment has to resonate the actual field of application, then the required mechanics to perceive, judge and act should do, too.

In the same ilk, narrative elements like background story, basic metaphor, visualisation of game elements or a game's obvious genre assignment may influence how the game is perceived by the player and what actions may obviously be required. Narrative elements may be added to motivate and justify the player's decisions in a game's rule space.

For example a competitive player vs. player behaviour is supported by the narrative background of a quiz-show, but this may run counter to what the

⁶⁵ Cailliois (2001): "Man, Play and Games", p.10 and p.46.

⁶⁶ Baumgartner (1997), „Didaktische Anforderungen an (multimediale) Lernsoftware“, p.244.

learner is supposed to learn when the topic is e.g. about affirmative action and considerate behaviour at the job.

Thus a proven competitive game mechanic like in a quiz game, i.e. question-correct answer-reward, may mirror the hidden curriculum in school education in ways not wanted by some educational game designers.

Some examples of rule dimensions to be included in design decisions⁶⁷:

Dimension	Directions	Examples for design and games	Examples for fitting topics
Mode of Cooperation <i>What is the role of co-players, opponents, allies, or friends?</i>	Competitive	Player vs. player "Trivial Pursuit"	"Economic workings"
	Collaborative	Team based games "America's Army" (team vs. team), "World without Oil" (collaborative storytelling)	"Democratic values"
Temporal boundaries <i>Are there clearly defined end conditions?</i>	Limited	Goal-oriented games "eLECTIONS"	"Study planning"
	Unlimited	Networked Massively Multiplayer Online Games "Netherworld (PMOG)"	"Lifelong learning"
Spatial boundaries <i>Is there a clearly defined playing field?</i>	Limited	Path based or area-based games and simulations "Simcity"	"Urban development"
	Unlimited	Participative networked Alternative Reality Games "World without Oil"	"Sustainability in face of an oil crisis"
Mode of jurisdiction <i>What moves are allowed, and what are the consequences?</i>	Algorithmic, objective	Jurisdiction and evaluation by software algorithm "Global Conflicts: Palestine"	"Medical differential diagnosis"
	Interpretative, subjective	Contextual jurisdiction and evaluation by peer players "Once upon a time"	"Storytelling"
Information as resource <i>Is possession of knowledge or its generation important?</i>	Depletable	Question & answer, Quiz games, puzzle games	"Learning European capitals"
	Replenishable	Participative networked Alternate Reality Games "World without Oil"	"Web-based Information retrieval"
Complexity <i>How foreseeable are the consequences of moves?</i>	Linear causality	Unidirectional linear causality, player steers "Trivial Pursuit"	"Road safety for kids"
	Systemic feedback	systemic simulations, causal feedback loops, player tunes ⁶⁸ "Simcity", "Nomic"	"Eco-systems"

⁶⁷ See also Tan (2008): "Rulespaces". All games mentioned in the table can be found in the mediography.

⁶⁸ "Tuning" describes the balancing of interdependent game elements, either while playing or designing systemic simulation games.