



# What is the Game? Study of Subjective Perceptions

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**Abstract.** The use of simulation games in education requires coherence in their understanding as methods of instruction. Variety of definitions of the game concept has been put forth; but is still difficult to give an unambiguous and universally accepted one. To identify how a simulation game is understood by its participants the study of subjective perceptions of game was undertaken. Results obtained showed that, primarily, the game is described by all participants as an active form of learning-by-doing (regardless of gaming experience). Participants' subjective perceptions of game reality are mostly influenced by experience of participation in simulation games. The perception of game also depends on the cultural context.

**Keywords:** Simulation games · Subjective perceptions · Learning-by-doing

## 1 Introduction

The use of simulation games in education requires coherence in their understanding as methods of instruction. For example, variety of definitions of the game concept has been put forth; but is still difficult to give an unambiguous and universally accepted one. It is natural that people with diverse backgrounds have different subjective opinions. To identify how a simulation game is understood by its participants the study of subjective perceptions of a game was undertaken. We wanted to detect similarities and substantial differences, depending on game experience, gender and cultural context (here as represented by language – English or Russian).

## 2 The Study

To conduct this investigation, we developed a questionnaire [1]. For the purpose of obtaining spontaneous answers of participants the questionnaire contained the open type questions as they provide an opportunity to give answers in free form and are not restricted by rigid statements. The survey involved 125 attendees of the several Russian and International conferences, seminars, schools on interactive methods (including participants of ISAGA Summer School-2005 and several ISAGA conferences). The participants differed in gaming experience, gender and cultural contexts (Table 1).

**Table 1.** Distribution of participants by their game experience, gender and cultural context (N = 125)

Game experience		Gender			Cultural context (language)	
Absence	Presence	Men	Women	Did not specify	Russian speaking	English speaking
54	71	40	77	8	89	36

Game experience was determined by the participant's answer to the first question: "What is your experience of playing/facilitation games?" 54 persons out of 125 participants (43.2%) had no experience or had an insignificant one (participation in 1–2 games); 71 persons (56.8%) had an experience of participation in simulation games, facilitation and their designing.

89 persons (71.2%) were Russian-speaking people (including the CIS countries), out of them 54 persons had no or an insignificant experience, 35 persons had such experience (rarely in designing); 36 (28.8%) – English-speaking participants (all had a game experience).

117 participants specified their gender: 40 men, 77 women. Due to the small number of the participants who did not specify gender, the comparative analysis between this group and two other groups (men and women) was not carried out.

The age was specified by 52 participants (covers the range from 22 to 68 years). Due to the small amount of participants who indicated their age the comparative analysis of different age groups was not carried out.

As long as there were no English-speaking participants without game experience, to exclude an influence of game experience on final results the comparison only between the following groups was executed:

1. The Russian-speaking participants with (N = 35) and without (N = 54) experience;
2. Russian-speaking (N = 35) and English-speaking (N = 36) participants having an experience of participation, facilitation and designing of simulation games;
3. Men (N = 40) and women (N = 77).

Analysis was performed using the content-analysis technique [2]. Procedure of content-analysis included the text splitting into meaningful units and calculation of frequency and number of the text units. A certain category was given to each statement (if possible) or unit. The attribution of a text unit to a certain category sometimes caused difficulties, since being included by different participants into various contexts the unit got a slightly different meaning. In other words, the strict categorization of the data was impossible without loss of the semantic nuances given to the same concept (phenomenon, object, etc.) by different participants. Thus, the meaning of the same statement sometimes was set to several categories, for example: "For me the game is an interesting pastime and an opportunity to be not myself, but another person", received categories: (1) game is interesting; (2) it is related with rest, pastime, etc.

After the calculation of the allocated specific categories they were grouped into more general blocks, for example: self-cognition; sphere of personality; cognitive sphere, etc. Then calculation of their occurrence for each of the groups of participants

and comparison were carried out. Statistical significance of differences between groups of participants was checked by the  $\chi^2$ -Pearson criterion ( $p < 0.01$ ) [3] (MATLAB R2007b package).

### 3 Results Obtained and Discussion

Participation in simulation games allowed participants without game experience or with insignificant game experience to learn new things about games, to reconsider their views on learning. It changed their perception (including perception of games). Game is described by them as an active form of education. Training, learning is mentioned as the goal and meaning of simulation games. Thereby the participants without an experience of participation in games or with insignificant one perceive simulation game, first of all, as a form of learning.

Experienced participants consider the game as a synthesis of knowledge and experience, they connect simulation games with efficiency and productivity, and they consider personal experience of participation in the games and receiving practice as important. They define game as a set of several features (list of its characteristics): “Model of life, a type of human activity, the source of energy, knowledge and feelings”. These participants distinguish simulation games from methods of conventional education by:

- Subject-subject approach to learning (the learner is active in the process of instruction);
- Higher motivation of participants;
- More effective use of the available resources;
- Orientation of methods of conventional education towards the transfer of knowledge.

The goal and meaning of simulation games for participants with game experience are cognition, including development of thinking (in particular, environmental and logical thinking). Personal experience of participation, practice, and orientation to the problem-based learning were mentioned as variants of meaning of simulation games.

Thus, the participants with experience of participation in games (especially, their design and facilitation), perceive simulation games more broadly than inexperienced participants (more answers). The game is perceived by them as an effective way to learn something new through complicity and activity, experimenting, practice. This special way of learning through personal experience gives the chance and an impulse for the development of cognitive and motivational spheres of the personality. We propose that in a process of accumulation of game experience the perception of differences between simulation games and methods of conventional education shifts, first, from the narrower to broader (more categories) and, secondly, from external, unstable interest in games towards internally driven cognitive interest and motivational involvement.

In order to identify an influence of a cultural context on the participants' subjective perceptions of game reality we carried out the comparative analysis of the answers of

English-speaking and Russian-speaking participants, who had an experience of designing, facilitation and participation in simulation games.

Russian-speaking participants more often experienced difficulties while formulating the specific answers to the questions “What did the game experience change for you? What new have you learned about yourself?”; they answered that they didn’t learn anything new about themselves and about the games more frequently. While answering the question about the differences between simulation games and conventional education these participants experienced difficulties more often than English-speaking participants, as the specific differences between the games and traditional methods of learning were not revealed (answers are terse and short): “Yes, it differs”. Russian-speaking participants associate games with a form of cognition, transfer of knowledge, opportunity for an application of knowledge to practice (an emphasis on cognitive aspect of simulation games is made). The development of thinking, in particular, of environmental thinking was mentioned as the goal of the simulation games. These participants more often mentioned the development of cognitive abilities (a cognitive component of the games), visual presentation and interest as advantages of simulation games.

It is interesting that Russian-speaking participants with game experience significantly more often did not give answers to the question “What did the game experience change for you? What new have you learned about yourself?” than Russian inexperienced participants. May be this result could be connected with cultural context: generally English-speaking participants, all with experience in games, gave answers to this question in contrast to experienced Russian-speaking participants. We propose that traditions of life in Russian-speaking countries imply closeness and intimacy concerning information about oneself.

English-speaking participants specified that games had an impact on their thinking and allowed them to learn new about themselves and about the sphere of the personality in games. Apparently, as a result, these participants mention development of the personality and learning as the goals and meanings of simulation games. For many participants with experience game is specially modeled reality, “a magic door to the special world”: “... educational games: they are as attractive initiation to the world of special reality which cannot be transferred in other ways” (the English-speaking teacher, the designer, the researcher of simulation games; experience of studying, use, teaching and game-design – more than 19 years). Games involve the person in learning and change: “For the personality it gives an opportunity to be oneself because I’m active and alive!”.

Thus, Russian-speaking participants perceive the game through the development of the cognitive sphere of the participant’s personality. English-speaking participants perceive it more as learning through feeling of immersiveness, active involvement and an opportunity for personal development. Representation of game reality in a world of English-speaking participants has a clear emotional accent: unlike methods of conventional education, game for them is the tool allowing to express emotions freely in the game environment.

In order to identify an influence of a gender on subjective perceptions of participants we carried out the comparative analysis of the answers of men and women. Significant differences were revealed in the answers to a question “What are the goal

and the meaning of the simulation games?” Men significantly more often than women answered that modeling of a situation and transfer of its results to the real life is the goal of game.

In order to identify the factors which have the strongest impact on the subjective perceptions of the game reality we summarized the amount of differences for each group of participants in Table 2. In the 1<sup>st</sup> column of the Table questions are shown; in 2<sup>nd</sup> column the number of participants is shown; in the 3<sup>rd</sup> column the number of the categories revealed by means of the content-analysis is shown. The numbers in the 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup> columns show the amount of categories with significant differences between groups of participants.

The greatest number of differences – 38 – was revealed in the groups differing by game experience (column 5). Thus, the experience of participation in simulation games mostly influences subjective perceptions of the game reality. Participants without game experience perceive games as a form of learning. For experienced participants the game is not only an effective way of learning, but is also a way to acquire/develop motivational sphere of personality.

In a group of the participants differing by a cultural context and with game experience 14 differences (column 6) were revealed. The smallest number of differences – 1 – was revealed in a group of the participants differing by gender (column 4). Thus, an influence of a cultural context (Russian-speaking and English-speaking) on subjective perceptions is much less important than gaming experience. The gender actually does not influence the subjective perceptions of game reality.

We also compared and identified questions that provided significant differences in answers. From Table 2, in a group “Presence/absence of game experience in a group of Russian-speaking participants” (column 5), the greatest number of differences (9) was revealed in the answers to the question “Do you have any experience of the use of interactive and game learning methods? What results have you got from their application?” Experienced participants use these methods of education and can describe results of their work in more detailed answers in contrast to inexperienced participants.

In a group “Presence/Absence of game experience in cultural contexts” (column 6), the greatest number of differences (4) was revealed in the answers to the questions “What did the game experience change for you? What new have you learned about yourself?” and “What are the goal and the meaning of the simulation games?”

In general, the greatest number of differences (10) was revealed in answers to a question “What are the goal and the meaning of the simulation games?” We propose that every participant (despite game experience, gender and cultural context) has his/her own understanding of things that happen in games and of the goals, aims, and meanings that simulation game has. Thus, the debriefing becomes the key value for promoting the holistic understanding of game and of the meanings that it has; and it also provides new meanings for everyone.

An analysis of the answers to the questions “Did your opinion about the subject of the game change after the game ...?” and “What disadvantages does the interactive simulation method of learning have?” did not reveal significant differences (0).

**Table 2.** Summary of Statistically Significant Differences in the Answers of Different Groups of Participants ( $p < 0.01$ )

1	2	3	4	5	6	7
Questions	N participants	N categories discovered	Gender	Presence/absence of game experience in a group of Russian-speaking participants	Presence/absence of game experience in cultural contexts	Total (sum)
What did the game experience change for you? What new have you learned about yourself?	124	38	0	4	4	8
Did your opinion about the subject of the game change after the game (the specific subject of specific game)?	33	7	0	0	–	0
Do you have any experience of the use of interactive and game learning methods? What results have you got from their application?	85	17	0	9	–	9
What is the game for you (simulation, educational, role, etc.)?	106	32	0	4	1	5
Does the simulation game differ from the conventional education? How? Please, define.	103	25	0	4	1	5
What are the goal and meaning of the simulation games?	124	35	1	5	4	10
What advantages an interactive simulation method of education has?	121	50	0	6	3	9
What disadvantages an interactive simulation method of education has?	121	26	0	0	0	0
What personal qualities the facilitator must possess?	104	52	0	6	1	7
Total	–	282	1	38	14	53

## 4 Conclusions

We carried out the comparative analysis of the subjective perceptions of participants differing by a game experience, a gender and a cultural context. Results obtained showed that, primarily, the game is described by all participants as an active form of learning (regardless of gaming experience). Participants' subjective perceptions of game reality are mostly influenced by experience of participation in simulation games. The accumulation of gaming experience makes the perception of differences between conventional forms of education and simulation games broader, and shifts from pragmatic motives (cognition), simple curiosity and excitement of gaming to the motivational component of educational games.

There are fewer differences in answers between participants belonging to two cultural groups than between two groups differing by a game experience. It is interesting that subjective perceptions of game reality of English-speaking participants are more emotional (in contrast to Russian-speaking participants): unlike conventional forms of education, game allows participants to freely express their emotions in communication. The gender actually does not influence subjective perceptions of the reality of game.

All participants perceive game as the space which unites the processes of acquiring of new knowledge and of its application – learning-by-doing. The perception of game depends on experience of gaming and on the cultural context. These specifics should be considered in facilitation of games, especially during briefing and debriefing of particular game.

Simulation games on sustainable cities are used not only with academic and scientific purposes but also as a tool of managers' education, with participants of diverse origin and background. Therefore, it is important for facilitators to know that participants may represent games differently, to understand how these perceptions can be documented and adapt the process of game.

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