Ethnography and Phenomenology applied to game research: a systematic literature review

Artur Martins Mol, Rômulo Santos Silva, Álvaro Augusto Rocha, Lucila Ishitani

Pontifícia Universidade Católica de Minas Gerais (PUC Minas)
Belo Horizonte, Brasil

amol@pucminas.br, rsantos.santos201@gmail.com, alvaro.7ocha@gmail.com, lucila@pucminas.br

Abstract. *Ethnography and Phenomenology are qualitative research methods, frequently adopted in the field of social and human sciences and also in the field of human computer interaction, but not in game research. In order to identify how computer science research uses and adapts phenomenological and ethnographic methods to the context of games, we proceeded a Systematic Literature Review (SLR) in papers published between 2015 and 2016 at ACM Digital Library and also at Proceedings of SBGames. There were two search strings: (ethnograph* and game) and (phenomenolog* and game). The initial search returned 140 scientific articles for phenomenology and 425 for ethnography that, after applying the search filters and the inclusion criteria, were reduced to 6 articles related to phenomenology and 17 to ethnography. This SLR process provided information about research goals and reasons for choosing the method, samples size, target public, research duration, procedures applied for data collection and data analysis. We highlight that articles reporting similar research were not found in the literature. Considering the relevance of qualitative research methods for research in which the focus is on the human factor (which includes some studies in the field of games) the results of this work can contribute for the understanding of how the methods of phenomenology and ethnography can be applied. Consequently, game researchers know when they can choose each method to improve the methodological approach, the conduction of data collection of their studies and finally, the reliability of the results of their work.*

1. INTRODUCTION

Ethnography and Phenomenology are qualitative research methods, frequently adopted in the field of social and human sciences. Although some authors state that they are not methods widely used in the area of computer science, the search, for example, for the term ethnograph* (that is, ethnography and other related terms such as ethnographic or ethnographer) in the digital libraries of ACM, IEEE and in the computer science articles of Science Direct returned, in September 2016, 2686, 196 and 517 articles, respectively, published from 2011. Most of these articles are in the field of human factors.

Considering the importance of both methods in researches that aim to understand the relationship of people with techno- logy, as in the area of games, this context may indicate the need of the community of the area of games in Brazil to know better the

method in order to be able to use it more often. To support this purpose, a Systematic Literature Review (SLR) was performed, searching for the terms (ethnograph* and game) and also by (phenomenolog* and game).

From the analysis of the 23 articles selected, it was possible to extract information about the objective of researches that used the method and why the method was chosen, the sample size, the target public, how long the research lasted, how data collection and analysis were performed. This set of information can help researchers in the area of games in the methodological planning of their research, improving the reliability of the results of their work.

This paper is organized as follows. Section II covers an overview of the ethnographical and phenomenological research methods. Section III presents details about the adopted method of systematic literature review. Section IV shows a quantitative summary of the search results. Section V highlights some answers to the research questions and, finally, Section VI brings the main conclusions about the results obtained.

2. THEORY

Qualitative methods are widely used for exploratory problems that seek context variables, the opinions of individuals, and stories that help to explain the mechanisms or connections in the form of theories or casual models. The results of qualitative research usually provide trends, relationships and associations that are not described in quantitative methods. Interaction among people is hard to be perceived and mapped [1]. It is not like gender, race or social class which are easily measured and quantified.

In this article we will only study two types of qualitative methods: Ethnography and Phenomenology. We will highlight the application of the two cited methods in the area of games, in order to clearly indicate the advantages of using the method.

Both methods retain the characteristics and applications of qualitative research that use interpretive and theoretical structures to seek to understand the phenomena or facts and their meanings through the participants. In both methods individuals can be analyzed in group or individually. For analysis, the purpose is to observe and collect data from individuals or groups within the context of where they live or they experience the facts and phenomena. In this way it will be possible to analyze the influence of the context on them.

The research tools most used by these methods are observation, interviews, analysis of documents such as judicial proceedings, diaries and logs to track behaviors. Using inductive and deductive reasoning, a researcher looks for patterns to develop themes to analyze the meaning that individuals use to address the problem. At this point it is uncommon to counter the discoveries considering what is in the literature, since the individual meanings will bring new discoveries and multiple visions on the subject.

The following subsections present more details of the phenomenological and ethnographic methods.

A. Phenomenology

According to Creswell [1], “phenomenology describes the meaning for several individuals of their lived experiences of a concept or a phenomenon”. The focus of this

methodology is to observe the influence of the phenomenon based on reports of the participants.

Phenomenology is a highly appropriate research approach to study the human experience [2].

Phenomenology aims to go “back to the things themselves” [1] and to reveal the objects or phenomenon to which the meaning is being attached. For example, to study the insomnia phenomenon and as a consequence, to discover its causes like stress, anger and bad feelings.

This is similar to investigating in the area of games people who begin to play and reach a level of immersion that leads them to forget the time and basic needs like eating and sleeping and discover that some types of games or pathologies and personalities of some players can cause people to dye while playing.

Another feature of phenomenological studies is the emphasis on the phenomenon to be investigated as a single idea or concept. An example would be to analyze the influence of games on the aggressive behavior of players or whether the use of games in the area of education can improve learning. The responses may come from the exploration of the phenomenon experienced by a group of individuals.

The most common data collection procedures applied in this method are interviews with participants [3].

The contribution of phenomenology lies in describing a common behavior for events.

The major challenges of phenomenology are to choose a group of participants who will experience the phenomenon and will help to build a common understanding of the influence of the phenomenon and to analyze the inductive thoughts that will lead to the solution of the research problem.

B. Ethnography

The main characteristic of ethnography is the study of groups and communities seeking to observe behaviors, culture, ideologies, beliefs, language that are shared by the group [4]. As an example in the area of games, communities of MMO (Massively Multiplayer Online) or groups of RPG (Role Playing Game) could be studied.

According to Creswell [1], the use of the ethnographic method is appropriate if the needs are to describe groups, behavior and conflicting issues that generate resistance, domination and manipulation of power, and may also include issues such as cultural sharing, learning, cognition, inequality, development in different stages of lifetime.

The data that feed the ethnographic research are usually derived from observations of the group conducted by the researcher, who may be within the community to observe the daily life and the interactions of this group to elaborate complex descriptions and also look for patterns that differ the studied group from the others.

The major challenges of ethnography are: excessive amount of time for the study and data collection, descriptive analysis of facts that are often not done with scientific writing but rather in a narrative style, and non-involvement of the researcher in the

culture since the researcher must experience the culture with its members to conduct his/her studies.

3. METHOD

We conducted a systematic literature review in order to identify how computer science researches are using and adapting phenomenological and ethnographic methods to the context of games.

Based on the guidelines proposed by [5], we performed the following activities: specifying the research questions, setting of a search strategy, selection of primary studies, study quality assessment, data extraction and monitoring, data synthesis. These activities are detailed in the next subsections, except the last one, which is detailed in Section IV. The flow of activities can also be seen in Fig. 1.

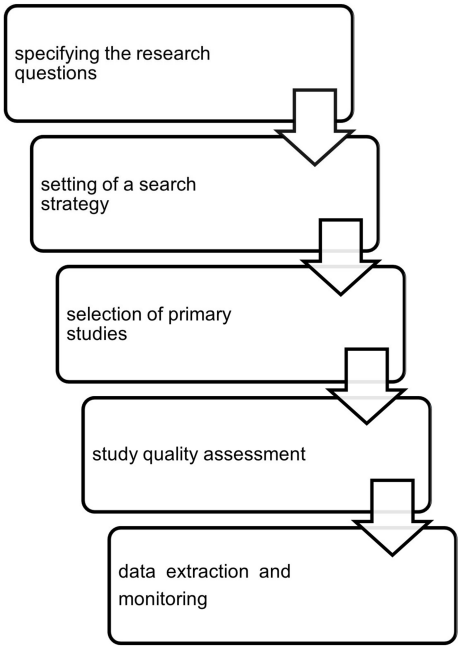

Figure 1. Methodological activities

A. *Research questions*

For this study, we defined two main research questions:

RQ 1 How is phenomenology applied to computer science researches in the field of computer games?

RQ 2 How is ethnography applied to computer science researches in the field of computer games?

We also defined seven secondary questions for each of the main research questions. The sixth secondary question was subdivided into one more specific question, as follows:

SQ 1 What were the objectives of the researches?

SQ 2 Why was ethnography/phenomenology chosen as the research method?

SQ 3 Who were the participants in each research?

SQ 4 What was the sample size?

SQ 5 How long does the investigation last?

SQ 6 Which were the data collection procedures?

SQ 6.1 Which were the data collection instruments adopted?

SQ 7 Which were the data analysis procedures?

TABLE I. RESULTS FOR THE SEARCH STRING (PHENOMENOLOG* AND GAME)

Period	Number of articles		
	ACM	*IEEE*	*Science Direct*
No restrictions	741	70	331
10 years	567	49	165
5 years	338	36	103
2 years	134	16	54

TABLE II. RESULTS FOR THE SEARCH STRING (ETHNOGRAPH* AND GAME)

Period	Number of articles		
	ACM	*IEEE*	*Science Direct*
No restrictions	2150	95	371
10 years	1641	74	248
5 years	938	38	157
2 years	417	16	63

B. *Search strategy*

Besides the word "game", there were two major search terms: ethnography and phenomenology, including related words to these topics, such as ethnographer and ethnographic, or phenomenologist and phenomenological.

Initially, we were planning to search for these terms in the title, abstract and keywords of papers published in the digital libraries of ACM, IEEE and Science Direct (considering only Computer Science publications). After an extraction pilot session, we detected some problems with this strategy: we found out that the search did not return all known primary studies, because not all the papers used the search terms in the fields that we had chosen. So, we decided to look for the search term in full texts, but the number of papers returned was unworkable: we would have to analyze 3,758 articles (Tables I and II).

So, we decided to narrow the search to the digital library of ACM, considering only the last two years – 2015 and 2016 – which resulted in 551 papers to be analyzed.

We also decided to search for articles in the proceedings of the Simpósio Brasileiro de Jogos e Entretenimento Digital (SBGames), published in 2015 and 2016.

It is important to point out that the search was restricted to primary studies, that is, we did not consider the references of the selected papers to search for additional papers on the subject.

C. *Selection of primary studies*

The inclusion criteria were:

- paper must be written in English or in Portuguese;
- the method (ethnography or phenomenology) is explicitly mentioned as the research method adopted;
- paper addresses games.

The exclusion criteria was:

- duplicate papers – when similar papers were published in more than one source, it was considered the most recent or most complete.

The selection process was based on the use of the following filters:

1) *searching* for the search string in papers published between 2015 and 2016*;*
2) *reading the title and evaluating it.* In case of doubts, the paper was aproved for the next filter*;*
3) *fast full paper reading* and evaluating if it addresses games and if the authors explicitly stated they have applied one of the two research method*;*
4) *full paper reading* in order to extract the answers to the secondary questions.

Each paper was reviewed by at least one member of the research group. Doubts were solved by discussions involving all research group during face-to-face or virtual meetings. One of the researchers randomly checked some of the papers included and excluded.

A list of excluded studies was retained for future retrieval, if necessary.

D. Quality assessment

All selected papers are peer-reviewed, because they belong to the ACM digital library or to proceedings of SBGames. So, the only quality criteria that we included is that the paper should answer to at least four of the secondary questions.

E. Data extraction

Data were extracted from the following sections of the papers: abstract, introduction and the sections which addressed the research method. A pilot study was conducted in a face- to-face meeting in order to standardize the process.

We extracted the information exactly as written by the authors. The data extracted from each paper were: publication year, paper title, publication title (journal or conference), keywords, full reference, answers to the research questions.

4. RESULTS

The SLR planning began in September 2016. In March 2017, we sought for new papers published up to December 2016.

As can be seen in Table III, 20 papers were extracted from ACM Digital Library, six addressing phenomenology and 14 addressing ethnography. Table IV shows that only three articles were selected from the Proceedings of SBGames.

It is interesting to note that, at the fast reading stage, ten of the twelve papers selected from Proceedings of SBGames were published in the Culture track and the

others in the Art & Design Track. All of the papers had authors from several fields, mainly Communication and Education. Only three papers [6], [7], [8] were written by researchers from the Computer Science field. But two of these three papers are very similar and from the same multidisciplinary research team, which included people from the areas of Bioengineering, Biomedical Engineering, Design and Nutrition. Despite being very similar papers, it was not possible to exclude one of them, because both of them were short papers and each one emphasized different results.

The list of selected articles is presented in tables V and VI.

5. DISCUSSION

As stated in subsection III-E, one of the data extracted from the selected articles is their keywords. Tables VII and VIII present the most frequent keywords of the selected articles. The keywords of an article of SBGames were translated to English. As can be observed, the word *design* is the most frequent in the selected articles of both research methods.

TABLE I. PHENOMENOLOGY – LIST OF SELECTED ARTICLES

Title	Publication	Year	Ref
A Breathtaking Journey. On the Design of an Empathy- Arousing Mixed-Reality Game	Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play	2016	[9]
An Enactive Characterization of Pretend Play	Proceedings of the 2015 ACM SIGCHI Conference on	2015	[10]
Applying Seamful Design in Location-Based Mobile	ACM Trans. Multimedia Comput. Commun. Appl.	2016	[11]
Beagle: A Stimulating Quest Throughout the Hospital	Proceedings of the 15th International Conference on Interaction Design and Children	2016	[12]
Masters of Control: Behavioral Patterns of Simultaneous	Proceedings of the 33rd Annual ACM Conference on	2015	[13]
Simulating Marriage: Gender Roles and Emerging Intimacy in an Online Game	Proceedings of the 18th ACM Conf. Computer Supported	2015	[14]

In the following subsections, we present the answers to our research questions.

A. Objectives of the researches

In the objectives of the selected articles, the nouns with more occurrences were *design* (twelve occurrences) and *insight* (five occurrences). The verbs *explore* and *understand* were the most used, with three and seven occurrences, respectively.

In this section we will discuss the objectives of the selected articles.

TABLE III. ETHNOGRAPHY – LIST OF SELECTED ARTICLES

Title	Publication	Year	Ref
After All the Time I Put Into This: Co-Creation and the End-of-life of Social Network Games	Proceedings of the 2015 Annual Symposium on Computer-Human Interaction in Play	2015	[15]
Animating the Ethical Demand: Exploring User Dispositions in Industry Innovation Cases Through Animation- based Sketching	SIGCAS Computers & Society	2016	[16]
Aprendizagem do uso de smartphones por adultos mais velhos mediada por jogo educacional	Proceedings of the SBGames 2015	2015	[6]
Collaborative Planning Gameplay from Disaster Response Practice	Proceedings of the 2015 Annual Symposium on Computer-Human Interaction in Play	2015	[17]
Comer Legal: a Game for Nutrition Education based on Popular Education and Participatory Design	Proceedings of the 2015 SBGames	2015	[7]
Comer Legal: a Serious Game for Nutrition Education to Aid Children to Identify Healthy Food Against Fast Food	Proceedings of the 2015 SBGames	2015	[8]
From Front-End to Back-End and Everything In- Between: Work Practice in Game Development	Proceedings of the 2015 Annual Symposium on Computer-Human Interaction in Play	2015	[18]
Gamifying Mathematics for Primary Students in Rural Sri Lanka	Proceedings of the 9th Nordic Conference on Human-Computer Interaction	2016	[19]
Gendered Barriers to Participation in Gaming Culture	Proceedings of the Third Conference on GenderIT	2015	[20]
Interactive Dome Experiences: Designing Astrosurf	Proceedings of the 20th International Academic Mindtrek Conference	2016	[21]
Making Safe: Community-Centered Practices in a Virtual World Dedicated to Children with Autism	Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing	2015	[22]
Maximizing Children's Opportunities with Inclusive Play: Considerations for Interactive Technology Design	Proceedings of the 14th International Conference on Interaction Design and Children	2015	[23]
Performing Universal Tasks on the Web: Interaction with Digital Content by People with Intellectual Disabilities	Proceedings of the XVI International Conference on Human Computer Interaction	2015	[24]
Playful Interactions for People with Intellectual Disabilities	Computers in Entertainment	2015	[25]
SheHealthy: A Serious Game Approach Towards Evicting PCOS Amongst Adolescent Girls	Proceedings of the 7th International Conference on HCI	2015	[26]
The Value of Rewards: Exploring World of Warcraft for Gamification Design	Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts	2016	[27]
Would You Be Mine: Appropriating Minecraft As an Assistive Technology for Youth with Autism	Proceedings of the 18th International ACM SIGACCESS Conference on Computers and Accessibility	2016	[28]

1) *Phenomenology:* The objectives of the selected articles emphasizes the importance of the method to understand the influence of a phenomenon among individuals. For example, in [14], we can find that the authors aimed to "present an empirical study of how players perceive, experience, and interpret their in-game marriages". And in [13], the researchers had as their objective "to understand how players of Starcraft 2 use control groups". On their turn, there are authors who emphasized their effort "to characterize successful playful behavior between adult dyads (groups of two people)" [10]. It is worth noting the use of some uncommon expressions like "shed light" and insight in some objectives, which is a characteristic of qualitative research, such as in the following "to shed light on how multisensory immersive experiences, and the subsequent identification with the game's protagonist, could be used to arouse empathy" [9] and "to provide insight into some of the challenges and possible solutions connected to the process of developing location-based BLE-enabled experiences for public cultural spaces" [11].

TABLE IV. PHENOMENOLOGY – MOST FREQUENT KEYWORDS

Word	Frequency
design	4
play	3
interaction	3
creativity	2
mobile	2
reality	2
research	2

TABLE V. ETHNOGRAPHY – MOST FREQUENT KEYWORDS

Word	Frequency
design	12
health	4
disability	3
centered	3
assistive	3
human	3
play	3
technology	3
experience	2
children	2

2) *Ethnography*: An interesting objective that illustrates well the use of Ethnography is the one stated by [28]: "we sought to understand the DIY (do-it-yourself) culture surrounding and imbued in a virtual world that has been appropriated as a safe space, a social skills intervention, and, as we explore here, an assistive technology". They used Autcraft in their study, which is "a Minecraft virtual world for individuals with autism".

Another research used the game World of Warcraft (WoW) to investigate how it "may inspire the design of rewards in the gamification domain" [27]. They aimed to "define a catalogue of game elements for the gamification domain starting from the players' perspective".

Some objectives are related to design, such as the one from [21]: "this paper firstly provides context of the game, AstroSurf, including its design goals and an overview of its development. This provides insights for others seeking to design games and interactive experiences for domes using technology, such as the Unity game engine". As can be seen, the authors aimed to support the work of game designers with recommendations and guidelines.

Other examples were "we propose a game design method combining usual Participatory Design approaches with Popular Education methods, to build a participatory human factors elicitation process" [7], [8] and "to identify characteristics that educational games must have to favor the learning of older adults" [6].

B. Reasons for the adoption of Phenomenology or Ethnography

Seventeen articles did not present the reason why Phenomenology or Ethnography was adopted. It is important to know the reason for the adoption of a research method, because it may help other authors to choose for one of the qualitative methods discussed in this article. In the following subsections, we present the reasons found in the selected articles.

1) *Phenomenology:* Among the six selected articles, only one presented the reason for adopting the phenomenological method: they used phenomenology “in order to gain sufficient insights into the behavior, attitude, emotional response, and overall perception of the system” [11].

2) *Ethnography:* Among the 17 selected articles, only five presented the reason for adopting the ethnographic method. [18] used to uncover “the nature of real-world work practices, used in this case to provide formative insights regarding the ordering of the kinds of creative and technical work associated with the development of game experiences”. [23] stated they chose the method to be able to “identify and deeply understand the attitudes, practices, and environmental factors that have implications for technology design”. [22] chose the method due to other similar studies that also use ethnography method. [25] used ethnography to “develop an understanding of adults with intellectual disability and their interactions". And finally, [6] chose the method to understand better the research problem.

C. Participants of the study

This section presents characteristics of participants as drawn from selected papers. As can be seen, there are no characteristics that define the profile of a typical participant of a qualitative research in game.

1) Phenomenology: The age of the participants is a characteristic that is usually discriminated in the researches. For example, older than 18 years [9]. Others presented the age range [10], [14].

Gender is another characteristic that is usually presented [9], [10].

One interesting characteristic was presented in [11]: the relationship among group of participants. For example, mother and daughter, parents with a son and daughter, grandparents, mother, and two children.

Only one research group specified the race of the participants, which comprised four different ethnicities (white, Asian, black, and mix) [14].

2) Ethnography: The participants of the selected ethno- graphic studies were very diverse. As expected, in some studies, the participants were players, but in others they were nutritionists [7], [8], game developers [18] or teachers [23].

The age range also varied a lot. There were children [7], [8], [19], adolescent [26] and older adults [6].

Other groups that were considered include people with intellectual disability [24], [25], children with autism [28] and parents [23].

TABLE IX. PHENOMENOLOGY – SAMPLE SIZE

Sample Size	Number of Articles
1-50	1
51-100	2
101-150	0
More than 150	0
No information	3

TABLE X. ETHNOGRAPHY – SAMPLE SIZE

Sample Size	Number of Articles
1-50	5
51-100	4
101-150	2
More than 150	0
No information	6

TABLE XI. PHENOMENOLOGY – RESEARCH PERIOD

Period	Number of Articles
Up to one month	2
From one to six months	0
From six months to one year	0
More than one year	0
No information	4

TABLE XII. ETHNOGRAPHY – RESEARCH PERIOD

Period	Number of Articles
Up to one month	5
From one to six months	1
From six months to one year	1
More than one year	6
No information	4

D. Sample size

Tables IX and X show the sample size of the phenomenological and ethnographic selected studies, respectively. In the following subsections, we present some data about sample size in the selected articles.

1) Phenomenology: Considering Table IX, it can be observed that in two studies the samples ranged from 51 to 100 participants [9], [10]. Next, there is a study with up to 50 participants [14]. It is worth mentioning that two articles did not provide effective information on the samples used. In the first study, fourteen groups of users participated in the research, but there is no further information about the total number of participants [11]. In the second study, the researchers used for analysis 50 posts with 776 comments, without specifying the number of people, which is impossible to calculate as a person can post more than one comment. This also shows us that a sample must not be restricted to people [13].

2) Ethnography: Considering only the studies that provided information about the sample size, in Table X we can see that most of the studies used samples of up to 50 participants. Then, there are four studies that used samples ranging from 51 to 100 participants [7], [8], [20], [21] and two other studies ranging from 101 to 150 participants [16], [19]. Participants of the studies of [7] and [8] were from different groups: 25 were popular leaders, 9 were nutritionists and 40 were children.

Among the six selected articles which did not provide information on the size of the samples used, it is worth highlighting four. In the first one, the author informed the number of interviews, but not the number of people formally and informally interviewed [27]. In the second one, the authors only informed having used 8323 Facebook posts [15]. Finally, in the third and fourth articles, they considered as sample the players of a Minecraft server, without specifying the number of participants [22], [28].

E. Research period

Tables XI and XII summarize the period of investigation informed in the selected articles. The following subsections explain these data.

1) Phenomenology: Considering Table XI, most of the studies did not inform the period of the researches. The two studies that presented this data informed a period that lasted up to one month [9], [14].

2) Ethnography: Considering only the studies that provided information about the research period, in Table XII, we can see that five studies lasted for up to one month [6], [16], [18], [19], [21] and four lasted more than one year [7], [8], [15], [20], [24], [28]. Among the studies that did not present the period, there is one that did not finish the research [27].

F. Data collection procedures

In this section we will analyze the data collection processes adopted in the selected studies, reporting the characteristics that frequently occur in each method and highlighting the works that rely on other data collection procedures to enrich or validate the discovered patterns.

1) Phenomenology: As already reported in Section II, in Phenomenology, one of the most used research tools is the interview. This use is due to the fact that a phenomenological study relies on the individual perception of each participant to identify the standard effect caused by the phenomena or fact. By means of a semi-structured interview, for example, it is possible to collect opinions and perceptions of individuals about a fact or phenomenon that has occurred. These collected qualitative data can be later crossed to facilitate the identification of an investigated profile. However, this does not mean that the interview is a mandatory instrument of data collection for phenomenology.

In the work of [10], no interview was used, since the observation during the investigation process would bring more reliable evidence than the interview, as the phenomenon studied were the “bluffs” or convincing power used during a game to intimidate the opponent.

Observations and interviews were widely used in the selected studies, but they are usually adopted in conjunction with other collection methods to facilitate further data analysis.

The observation period is registered in field notes and recorded (film, photographs and voice recording) [10]. In turn, the field notes may consider several aspects such as facial expression, gestures, body movements, as well as the moment when each of these aspects occurred [11].

The observer can act on site or not. In Davis et al. [10], the observation was made through video and later analyzed and categorized by the researchers. Nilsson et al. [11] chose to use a prototype of the game to validate the actions of the players during its use and the players were encouraged to verbalize their thoughts to facilitate the capture of their expectations and frustrations.

Research can take advantage of digital resources. So, the researcher need not be present at the moment of data collection using, for instance, forums to collect data [13].

Data on the behavior and actions of the participants can also be obtained from posts where individuals will freely express their perceptions and feelings at the time of the fact or phenomenon occurred [14]

2) Ethnography: As stated in Section II, in ethnography, the most used process for data collection is observation, because it is a method for analysis of groups and communities that involve many participants, which requires a broader data collection that will allow an overview of the context by the researcher. However, some work such as [26] do not detail the observation process in data collection although making clear that data were collected from observation.

In association with observation, it is common to conduct interviews to supplement and check data collected [19]. Sometimes the observation is applied before the interviews; in other cases, interviews are applied before; and in other ones, interviews are applied before and after the observation period.

The most used interview protocol was the semi-structured [22]. Informal conversations were also conducted and recorded [27].

Some authors conducted focus groups, aiming to encourage participants to report and talk more, and also to discuss ideas [15], [28]. In [22], the researchers chose to complement their data collection with the use of weekly meetings where they presented the observation notes to the participants for analysis and validation. [7] and [8] organized 30 workshops with the communities.

In Ethnography it is also possible to perform online data collection including posts, forums and chats of various tools used by the communities studied. The selected papers that present data collected from virtual communities are [15] and [22]. Differently, [6] opted for the use of diaries. They asked the participants to record their feelings and impressions in a diary, during a week.

3) Data collection instruments: This subsection presents the research instruments used in the selected studies. Tables XIII and XIV summarize these results.

TABLE XIII. PHENOMENOLOGY – RESEARCH INSTRUMENT

Instrument	Number of Articles
Observation	4
Interviews	3

TABLE XIV. ETHNOGRAPHY – RESEARCH INSTRUMENT

Instrument	Number of Articles
Observation	14
Interviews	10

Concerning phenomenology, research collection instruments were mentioned in five of the six articles selected. The most used instruments were interview and observation. Other data collection instruments were: quotes from players, player accounts, forum, self-reports [14], "markers signaling emotions" [9], questionnaire [11] and forum posts [13].

The work that explores the greatest number of sources in phenomenology is [14], which claimed having used "quotes from players, player accounts, forum, self-reports, interviews, a set of emerging narrative themes in audition".

Concerning Ethnography, research collection instruments were mentioned in 16 of the 17 selected Ethnography articles. The most used instruments were also interviews and observation. Besides these, other used instruments were video, forum, notes, audio, chat logs and surveys.

It is worth noting that [28] was the study that used more research instruments: interviews of children and parents, participant observations, directed and non-directed forum discussions, chat logs, and digital artifacts. The use of a diary was reported by [6].

G. Data collection analysis

Fifteen different data analysis methods were found in the selected articles. They are presented in the following subsections.

1) Phenomenology: In their data analyses, [9] and [13] used grounded theory, the most used approach among the selected phenomenological studies. In [10], a combined data analysis was made with "cognitive science theory of enaction as a theoretical lens to analyze the empirical data" and grounded theory approach. [11], in turn, analyzed their research data using the affinity diagramming method.

In some cases phenomenology is used in combination with quantitative methods and even with other qualitative methods. For example, [10] and [9], [13], [14] used

grounded theory in conjunction with phenomenology to enrich the data analysis. According to [1], the use of grounded theory aims to provide a general explanation of the process shaped by the views of the participants. This analysis will facilitate the identification of the pattern caused by the fact or phenomenon studied.

2) Ethnography: In [26], the "qualitative analysis was done by conducting semi-structured interviews and informal evaluation in the form of a focus group study". [18] and [23] used ethnomethodological analysis, while in [20], "the data was analyzed using qualitative coding". [24] "allied ethnography with user tests". [27] based his analysis on "a review of the notes, reflections and interviews made during the entire period of the fieldwork".

[28] used a three-phased approach to data analysis and revisited each phase multiple times. They "became familiar with the data as individuals and then drafted and shared memos related to themes within the team. Finally, they reviewed the themes collaboratively in meetings, searching the data for indicators or support for their hypotheses, as well as for conflicting data that was not well explained by their initial interpretation".

[15] applied Qualitative Content Analysis.

[22] used several approaches: "inductive approach to derive the emergent themes from data, following techniques similar to those employed in grounded theory, open coding to organize memos of observations and interviews and used affinity diagramming and axial coding to understand the relationship between, across, and within these codes". [6] applied quantitative analysis of the data collected from tests. But they applied Grounded Theory for the analysis of data collected from the diary and interviews.

Ultimately, [25] realized "discussions of the collected information from interviews and observations".

6. CONCLUSIONS

In this article, we present the results of a Systematic Literature Review aiming to identify game studies that applied Phenomenology or Ethnography. Only 23 articles were selected which indicates that these methods are not frequently applied in the field of games. In the proceedings of SBGames, the few articles returned were published in the Culture track or in the Art & Design Track. But when one analyzes the potential topics of the Computing track, one can find many research topics that could apply a phenomenological or ethnographic method, for example, Accessibility, Affective Computing, Development Process and Tools, Game-based applications and Serious Games, Human-Computer Interfaces and Interaction.

This work contributes with information regarding the number of participants, duration of a study, data collection and analysis methods that can be conducted. This information can help researchers in the field of computer science in the methodological planning of their research, to improve the reliability of the results of their work. For example, researchers may find references to articles that have defined a short period of research or a small number of participants, and then examine whether this is also acceptable for their own research. They may also find suggestions for defining data collection activities and instruments, as well as the methods and techniques used to analyze these data.

After reading the selected articles, we could identify that the most frequent verb used in the objectives was “understand”. There are no profile of a typical participant of a qualitative research in game. The sample size and the period of the studies can also vary a lot. But usually, sample size of an ethnographic study is smaller than the sample size of an phenomenological study. One reason for that may be related to the period of the study that is smaller in phenomenological studies. Some ethnographic studies last for more than one year and it is difficult to keep observing a large amount of people, during a longer period.

This study has three limitations. The first one is that the search was restricted to only primary studies. The second is that we could have discarded studies that used phenomenological or ethnographic method, because the authors did not explicitly stated that they used one of these methods. Finally, the search considered only articles published in ACM and in proceedings of the SBGames in the last two years. So, for future work we propose the conduction of studies that address the failures resulting from these limitations.

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