

# The Meta of Game and Play Research in Finland: A Registered Report

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## 1. Introduction

Game research is a relatively young field of enquiry (Mäyrä, 2008, pp. 5-11). One that has witnessed significant growth and diversification in recent years. It is fairly multidisciplinary, converging with major research fields such as, but not limited to, storytelling, user experience research, audio research, psychology, sociology, physics, history, education, management, and linguistics. Game research is not limited to just exploring gaming in and of itself, but the societal effects of gaming, and the instrumental use of it in different fields and for different purposes.

Hence, it can become challenging to understand how game research or game studies have developed over the years. What are the most significant issues it has explored? What specific disciplines and theory has it utilized? Where was it published? Who are influencing its research directions the most? Or what social game research networks exist? Developing such a meta understanding of game studies can help us see how it is developing and where attention is needed or useful. It could also help us further quantify and communicate the field's development to "outsiders" from other fields, as well as in establishing the need for dedicated funding to be directed its way.

There exist various publications mapping out the global reach of game research, namely by Martin (2018) and Karhulahti and Koskimaa (2019), to show the explosive effect of video games and digitalization of society in the early 2000s when personal computers, gaming consoles and the internet started to break the barrier and stigma of being a gamer. However, while they give good insight and important overview on the development of the game research in terms of number of authors and the volume of publications, meta-analyses are in constant need of updates as time passes. Furthermore, these publications have directed less attention given to examining the game research field in any specific country, let alone in Finland.

One of the countries with significant contributions to the game industry and research alike is Finland. Finnish researchers and/or researchers based in Finland have been instrumental in driving and formalizing game research, for example, through the establishment of Digital Game Research Association (DiGRA) and by contributing a high volume of quality game research and game research groups. In Finland itself, the game research scene has also significantly changed from its early days, following, for example increased national funding being directed to game research, the recognition of game research by key funders as a research area, the establishment of many new game research groups and the funding of the first Centre of Excellence in Game Culture Studies (CoE-GameCult).

I find that meta-analyses mapping the game research field are in need of an update and I am especially interested in mapping the Finnish game research field due to how it has significantly developed in recent years as outlined. Furthermore, as a Finnish researcher, I have a personal interest in understanding the research scene I immediately interact with. I consider myself knowledgeable enough to conduct an informed analysis. Hence, I will conduct a quantitative meta-analysis to offer and present a holistic overview of the game research scene and its

development over the past 20 years in Finland. I will mainly focus on the last 20 years of game research in Finland, from 2003 to 2023 because the DiGRA was founded in 2003 in Finland (Crawford, 2011). The foundation of DiGRA marks a convenient departure point for this study's timeframe and allows for a more focused display of results over a manageable number of years rather than decades. This is not to dismiss research before DiGRA was founded, but merely to create a manageable analysis scope. My focus on game research will be open to consider any research connected to games, e.g., that uses "gam" or "play" as keywords in its title, abstract or keywords. The scope will, hence, be inclusive of more canon game/play research, as well as research of applied gaming in the form of gamification, serious games, gamefulness, and playfulness. The purpose is to map the overall meta status of the field, rather than impose a definition on what is or is not game research. Thus, the research aims are as follows:

1. To map the development of game research in Finland during the last two decades starting from the year DiGRA was founded in 2003 to 2023. Specifically, I will map sub-disciplines, publication venues, disciplines of publication venues, publication formats, co-authors, co-authors geographical distribution, co-citation, amongst other variables.
2. Explore, to a limited degree, how, if at all, key developments in the game research field in Finland could be connected or explained by key international developments in game research or in the game industry, with regards to e.g., technological development, or societal changes.

## 2. Background

Finland has a history of game research spanning over a century. Arguably, the first significant research publications on games and play were in 1904 by Anni Collan (*Suomen kansan leikkejä*) and in 1932 by Elsa Enäjärvi-Haavio (*The Game of Rich and Poor*) for her doctoral thesis (Sotamaa, 2009). The country's game culture has an even longer history, with the first commercial game, *Huvimatka Aavasaksaan*, released in 1862. Among the first major international successes was the game *Fortuna* in 1926. Games from this era continue to be studied today, such as the *Petsamo* board game, which Koskinen and Suominen (2023) examined within a larger cultural historical context. Finland also has a long history with gambling arcade games. *Pajatso*, or *Payazzo* in English, arrived in the 1920s and remained in active use until 2015 (Luoto & Wickström, 2008, p. 12). This history of analogue games and related research has laid a strong foundation for ongoing play and digital game research that I intend to reflect upon in this research.

An indicator of the recognition of the impact of games, game studies, and game research in Finland occurred in the early 2000s. Specifically, Tampere University began offering game research courses in 2002. Perhaps the biggest validation for the status especially video games held in contemporary international society was the foundation of the international DiGRA in 2003 in Finland following the Computer Games and Digital Cultural conference that was held in Tampere in 2002 (Kuorikoski, 2014, p. 104). To date, DiGRA continues to provide a significant and integral platform for the discussion and advancement of game research.

Since the founding of DiGRA, Finland has experienced steady growth in the number of researchers and funding for game research covering all aspects of games and play across various publication formats. Simultaneously, the popularity of gaming has increased both a pastime and a professional activity (e.g., game development, esports), with nearly every citizen

either familiar with games or actively gaming (Kinnunen, Tuomela, & Mäyrä, 2022). At present, 21 Finnish higher education institutes (HEI) offer game research courses and degree programmes (Neogames, 2024). One of the most impactful recent developments in the game research field in Finland was the establishment of the CoE-GameCult in 2018, funded by the Academy of Finland. CoE-GameCult has, arguably, provided a substantial boost to Finnish game research in terms of quality, quantity, and both national and international impact. Despite being a relatively young discipline, game research has established a solid foothold in the Finnish academic sphere and is expected to continue to grow its hold.

There have been numerous commendable efforts over the years aimed at documenting the historical progression and development of games, the nature of play, and the evolution of game development within the context of Finland, as referenced (Nylund, 2020; Nylund, Prax & Sotamaa, 2021; Saarikoski & Suominen, 2009; Sotamaa, 2021, 2023; Suominen, 2008). Despite these efforts, it is noteworthy to point out that, until now, there has been a glaring absence of a comprehensive, in-depth review specifically focused on the game research field in Finland. Such a review would ideally delve into the intricate details of its development, explore its current status, and project potential future directions. Recognizing this gap in the literature, this study was designed to fill this void. As a result, this study provides the first-ever detailed overview of contemporary game research conducted in Finland, spanning a period of two decades from 2003 to 2023. This overview is timely and significant as it offers a milestone review of the progress and advancements in game research within Finland's context.

### 3. Research objectives

In this section, I relay the areas of analysis I am interested in investigating in this study. I have selected these specific objectives based on my intuition for what analysis would be useful to get an overall understanding of the game and play research scene in Finland. Such an understanding is intended to be useful for funding policymakers in Finland, establishment of further educational programs related to games, and for researchers and scholars interested in the Finnish game research field. Furthermore, in determining these areas of analysis, I have been highly guided by a previous study by Martin (2018) that aimed to reveal the intellectual structure of game research internationally. I expect that the intellectual structure of game research in Finland will align with international trends, and could be revealed with similar analyses, but I also recognise that limiting the analysis to a specific geographical area affords a unique opportunity and challenges to examine the specific nuances and contributions of Finland's game research field. The area of analysis and the research objectives are as follows:

*Uncovering scholars with high impact on directing game and play research in Finland:* given the relative newness of game research as a field nationally and internationally, it is currently being actively established and shaped by a few key scholars, who would have a far-reaching and significant impact on how it is developing theoretically, socially and empirically. This can be seen in other fields, for example, in philosophy where figures like Plato, Aristotle, Descartes & Kant have been central to the development of the field, in the same way that Einstein and Newton have been central to the physics field. In the game research field in general, and in Finland specifically, these figures could be revealed through an analysis of the most cited or authoring scholars. These two indicators could potentially reveal those who have been active in the field the longest and who are considered pivotal to cite. Hence, the objectives are:

Objective 1: Reveal the key prolific scholars who potentially have a significant impact on the development of game and play research in Finland.

Objective 2: Reveal the key cited scholars who potentially have a significant impact on the development of game and play research in Finland.

*Uncovering popular thematic research areas in game and play research in Finland:* Examining frequently used keywords in publications can clue in on the popular thematic areas of game research in Finland. I also recognise that a challenge lies in the swift evolution of games and the related technologies, research areas, and research terminology. Researchers often strive to update their used terminology, adopt new ones, or enter new research directions. The inconsistent and evolving use of terminology by different scholars presents a problem in identifying popular thematic game research areas in Finland. Hence, I complement my analysis of keywords with a hypothesis that once the central research figures in Finnish are revealed (citedness score and authorship volume), that would also indicate some of the popular research directions in Finland. Central scholars in a field can often have a clear line of thought (e.g., a philosophical school) or grow to be considered a part of a popular line of thought or research direction. I expect to see that the citation of and co-authorship with the revealed central scholars would reflect thematic clusters within Finnish research.

Objective 3: Reveal thematic clusters within Finnish game and play research.

*Uncovering collaboration structures in game and play research in Finland:* To further reveal thematic structures in Finnish game and play research, I augment previous analyses with a co-authorship cluster analysis. There is a growing list of doctoral programmes focusing on the intersection of games and play with other thematic areas, such as history, game production, player studies, game-based applications and so on. It is natural that scholars working within the boundaries of these programs in different forms would co-author with their immediate colleagues and supervisors. Outside of these programs, I anticipate that there may be collaborations between researchers working on similar themes or research topics, leading to the formation of thematic clusters outside of formal game programs, e.g., on women in gaming, esports, and accessibility. Therefore, conducting a co-authorship cluster analysis will shed light on the collaborative networks and research communities within Finnish game and play research, further enhancing the general understanding.

It is also important to acknowledge that clusters in Finland exist not only based on thematic proximity, but also based on geographical proximity and co-location within the same research groups or communities even if scholars within the location or research community are working on different research topics. Especially intra-group members often highly co-author with and cite each as they are often more aware of each other's work. Similarly, geographical proximity can foster collaboration and knowledge sharing among researchers more easily through formal and informal meetings. Hence, co-authorship and co-citation clusters will exist based on established research groups and based on geographical proximity in Finland. While it is logical to think as such, I am more interested in how clearly defined these groups have been from the perspective of co-authorship and co-citation and less so on the number of members, volume of publications or topics covered.

Objective 4: Reveal collaborative networks and clusters within Finnish game and play research, whether within formal game programs (departments, research groups, or based on geographical proximity).

*Uncovering popular publication disciplines in game and play research in Finland:* Anecdotally, it is often said that there is a lack of established avenues for publishing game and play research, both nationally and internationally. This poses a significant challenge to publishing game research. At the same time, a considerable amount of game research is being conducted in Finland on various topics. These topics often overlap with other established

research fields such as psychology, business, history, humanities, and human-computer interaction (HCI). As a result, game research often appears in venues that publish research in these established fields. Hence, in terms of where Finnish game research (defined in methodology) has appeared and the disciplines it has pollinated the most, I hypothesize the following:

Objective 5: Reveal publication venues of Finnish game and play research and their respective disciplines through a frequency analysis.

## 4. Methodology

### 4.1. Research approach

This study builds upon previous scoping and scientometric analyses of game research (e.g. Bragge, Thavikulwat, & Töyli, 2010; Coavoux, Boutet, & Zabban, 2017; Deterding, 2017; Martin, 2018; Melcer et al., 2015) by both widening the topics searched and analysed but also limiting the output the scope of analysis to a singular country. I utilize a meta level approach where the foundation for the understanding of the history, the development, current status and the future of game research in Finland can be laid out into a presentable form. The overarching aim of this research is to reveal invisible thematic, authorship, and geographic clusters within the larger game and play research field in Finland. Accordingly, I have chosen the “invisible college” approach utilized by Martin (2018) in this meta-analysis. An invisible college can be thought of as a community of researchers focused on a specific field that may not be visibly recognised within a larger field but can be recognised through a large-scale analysis (De Solla Price, 1965). The purpose of employing the invisible college approach in specific is to minimize the bias of the data selection, gathering, analysis and interpretation stages of this study that the authors might have while attempting to reveal these invisible colleges.

Instead of focusing on analysing, for example, the most studied area of research (Couvaux et al., 2017), or a specific intersection of a certain discipline (such as history or psychology) with game and play research, or examining research only from a specific research paradigm (such as quantitative or qualitative method), this meta-analysis aims to cover as much grounds as possible within the following parameters:

1. The scope is research in Finland. By that I mean research that is authored or co-authored by a scholar affiliated with a Finnish Higher Education Institutes (HEI). Research in Finland often comes from HEIs, which include 13 universities, and 22 universities of applied sciences as well as from numerous science agencies and public research institutes (Ministry of Education and Culture, 2024). Only affiliations with the 13 universities and 22 universities of applied sciences will be considered in this analysis to allow for clear sources for data collection for this analysis.
2. The research is to cover any topic within the field of game and play research, regardless of discipline or methodology. I do not impose a definition for "game" or "play" and cover all variations of the words. Rather I include research in the literature pool for this meta-analysis based on the occurrence of the words "game" or "play" and their variations to allow for a broad interpretation to capture the diversity of research in this field. However, if games or play are not the central focus of the research but are only mentioned in passing or as a minor aspect, those studies will not be included in the analysis.

3. Publication formats covered will include peer-reviewed articles, conference papers, doctoral theses, academic books, book chapters, and white papers.
4. Publications must have appeared between January 2003 and December 2023, i.e., the last twenty years of game and play research in Finland. This time limit is to ensure that the amount of data to be analysed is manageable, with a focus on the most recent research trends that are most relevant to understanding the current state and future development of the game and play research scene in Finland.
5. The publications must be in Finnish or English, which would further allow me to compare the volume of publishing in each language and ensure that I cover a wide array of research foci. Swedish is a national language in Finland, however, given the limited proficiency of the researcher in this study in Swedish, I limit my focus to Finnish studies in Finnish or English.

## 4.2. Data collection

Data, i.e., PDFs of research publications fulfilling the selection criteria mentioned in the previous section, will be collected in the following ways:

1. The libraries of the 35 HEIs mentioned in the previous section will be searched (using keywords gam\* and play\* and their Finnish counterparts) to access the publications authored or co-authored by scholars affiliated with these HEIs. Available publications that meet the criteria previously outlined will be downloaded and included in the initial data set for analysis. The libraries will also be contacted for support with said process when needed. I utilize libraries as the first source of data collection as they can provide quick access to scholarly publications by authors associated with Finnish HEIs.
2. The national databases (journal.fi and research.fi) will be searched (using aforementioned keywords). Additional results that meet the previously mentioned selection criteria will be added to the initial data set for analysis.
3. Known national game research publication venues in Finland will be searched using the same keywords and criteria to identify further results. These venues include "Pelitutkimuksen Vuosikirja", and "Lähikuva". Should I become aware of other local publication venues during the search process, they will be added to this list and searched for further publications.
4. International databases Scopus, ScienceDirect, SAGE, EBSCOhost, Web of Science, and Wiley will be searched to further identify English publications from Finnish HEIs by limiting the search results to publications with affiliation to a Finnish HEI. These sources are added to ensure international publications are included as much as national ones are from national databases.
5. Meta data about these publications will also be collected when the publications are downloaded. This data will include publication year, authors' names, affiliations, keywords, publishing venue, publishing venue type, discipline of publishing venue. Should this meta data be missing, it will be manually extracted from the publications themselves. Should the primary discipline of a publishing venue be missing, it will be obtained from the official websites of said venues, or through inference if all else fails.

After the initial data set has been identified, it will be cleaned and organized for the analysis. The researcher will remove any duplicate publications and carefully examine each article to

determine if it meets the selection criteria. The researcher will also extract relevant information from each article, such as publication year, author affiliation, and keywords. Once all cleaned dataset has been finalized, the researcher will proceed with the analysis.

### 4.3. Data Analysis

This study utilizes a combination of bibliometric analyses, including co-authorship and co-citation cluster analysis, as well as frequency analysis of publication venues and their respective disciplines. After the cleaned data set and its accompanying metadata have been finalized, the researcher will proceed with the following analysis to attain the research objectives outlined section 3.

*To attain objective 1 and 5:* the researcher will conduct a frequency analysis to identify the most common publication venues, disciplines, and authors within the dataset. Author names with the highest frequency will reflect the most prolific authors either because of their increased activity or because of a lengthier career, or a combination of both. Similarly, disciplines with the highest number of associated manuscripts in the dataset will reveal the most popular publication disciplines for Finnish game and play research. The researcher will perform a frequency count of the variables in the meta data to identify potentially interesting general patterns and trends within the dataset.

*To attain objective 2:* the researcher will conduct a citation (citedness) analysis to identify the most cited authors. The citation analysis will follow the recommendations of Zhao and Strotmann (2015, p. 27) and Backhaus, Lügger, and Koch (2011), as well as examples from a variety of fields (Chen and Lien, 2011; Ferreira, Fernandez, & Ratten, 2016; Small, 1973) as outlined by Martin (2018). In this analysis model, each cited author is a node in a network with links, or edges, between authors who are cited together in at least one document in the data.

These edges are weighted by the number of times the authors are cited together. The cited authors were disambiguated following the technique outlined in Zhao and Strotmann (2015, pp. 109-112). Citation level was determined by absolute number of citations, where selfcitation counts and where multiple citations in a single document only count once. This is in line with recommendations from Zhao and Strotmann (2015) and Chen and Lien (2011). (Martin, 2018).

*To attain objective 3:* the researcher will conduct a keyword frequency and co-occurrence analyses to identify common themes and topics in the publications through the co-occurrence of keywords and the frequency of their occurrence. Specifically, a burst analysis (Kleinberg, 2003) as used by Martin (2018) is utilized to identify any significant increase, or decrease, in the use of a particular keyword within the selected time-period. It is aimed to recognize new and rising topics at certain points in the development of game research.

*To attain objective 4:* the researcher will conduct a co-authorship analysis and utilize the previously outlined co-citation cluster analyses to reveal collaborative networks and thematic clusters within Finnish game and play research. The co-authorship analysis will identify authors who tend to publish together, forming a network, while the co-citation cluster analysis will reveal thematically connected authors. notably, to reveal these collaboration and citation networks. The researcher's knowledge of existing research groups and geographical regions in Finland would be useful in interpreting the analyses.

Accordingly, the analysed variables will include publication titles, keywords, abstracts, methods used, interdisciplinary and multidisciplinary studies (e.g. history and game research),

names of the authors, HEIs, language used to write the publication, publication venues, year of publication, and publication year.

## 4.4. Ethical considerations

The conducted analyses are intended to summarize the data and reveal patterns in it, however, interpreting these summaries and patterns requires human cognition. The results of the analyses mean little on their own without the researcher's interpretation and contextual understanding of them within knowledge of the field of game and play research on Finland, national and international political and technological events, HEI degree programmes, presumed geographical clusters, research groups, and significant research projects that have been funded over the years by notable funders such as the Academy of Finland.

Hence, interpreting some analyses will involve more researcher involvement than others. Specifically, burst, citation, co-occurrence, and co-authorship analyses. The researcher will need to carefully interpret the results of these analyses, taking into account their knowledge of the field and the broader context in order to accurately identify emerging topics, collaborative networks, and thematic clusters within Finnish game and play research. Here, to control for potential bias as much as possible, I will rely on the Registered Report process where researcher pre-registers their research plans, hypotheses, and analysis methods before conducting the study and findings are re-examined to ensure that the researcher followed the data collection and analysis planned as outlined. Furthermore, the first stage Registered Report is presented at Tampere University's Spring Seminar for initial peer feedback. I will endeavour to also present the second stage registered report at a similar venue to ensure transparency and accountability in my analysis process.

Furthermore, I expect to see outliers, or results that I am unable to interpret based on my limited knowledge of the field. In such cases, I will seek collaboration and consultation with local colleagues and scholars to gain a deeper understanding of these outliers. I will consult scholars informally until theoretical saturation is obtained, meaning no additional possible interpretations of the data is possible. All of the collected interpretations will be communicated in the registered report, allowing the reader to draw their own conclusions.

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