Can Video Games Help Czechs Take Climate Change More Seriously?

Patrick A. B. de Sousa [a]

[a] Bachelor of Organizational Communication, Federal University of Technology – Curitiba, Paraná, Brasil
patricksousa@alunos.utfpr.edu.br.

Abstract. Climate change is one of the most relevant issues our societies have been faced with in recent decades. Although the effects of this conjecture can be observed worldwide, some have opposite opinions or are at least sceptical. This article investigates how the Czech video game industry can support the decline of climate change scepticism among Czechs. In the first section, the relevance of the research, the main problem, and the aim of this study are presented. The methodology section elucidates why the integrative literature review methodology was used and how the search criteria were applied. The results in the third section were divided into three subsections; the first explained the procedures used to select the literature, the second revealed the reasons why Czechs are considered sceptical about climate change, and the third showed that there are many different forms of using video games as a tool to raise awareness of serious issues among people. Also, the efficiency of this type of media in the transmission of knowledge is argued as sufficient to assist society if implemented in a cooperative form among the social institutions. Finally, the fourth section briefly discussed the conclusions about the use of video games to fight climate change scepticism in the Czech Republic and pointed out other problems that could be research objects of future studies.

Keywords. Czech Republic, Scepticism, Climate Change, Video Games.

1. Introduction

It is a fact that the Earth's climate as we know it is changing faster than ever. To combat this reality, countries around the world are making efforts to inform and raise awareness about the impacts of climate emergency on daily life.

The mass media plays a key role in a climate policy that takes this issue truthfully, this way governments allocate its budget on television, radio, newspaper, cinema and digital social networks.

However, according to the European Commission, at least one-third (33%) of Czechs "tend to disagree", "totally disagree", or "don't know" if their rotine and health are directly affected by environmental issues. [1]

What policymakers possibly do not know is that the global market for video games has been growing rapidly and continuously in recent years, in the Czech Republic, the revenues of this sector in 2019 were three times higher than the Czech film production in 2018. [2]

Thus, the main problem that drives this review is the following question: Can the Czech video game industry somehow assist in decreasing climate change scepticism in the Czech Republic?

To answer this question, an integrative literature review will be carried out to provide a synthesis of relevant scientific findings that together offer new perspectives on this subject.

This article aims to create a critical approach to clarify how the Czech Republic's video game industry could be a tool to diminish climate change scepticism in the country. It is limited to the selected country's data and a five-year time interval of bibliographical research.

2. Research Methods

The debate on how video games can or not be used as a tool to conscientise people about the daily effects of climate change is recent in academia; therefore, some preliminary views on the topic from different fields are needed.

The integrative literature review methodology was selected because of its ability to provide a solid foundation for future theory development; The findings and perspectives of the selected articles are analysed and integrated, so other relevant research frameworks can be found. [3]

The integrative literature review structure used is

described by Torraco [4]. The keywords selected for the inclusion and exclusion criteria were: "Video Games, Glimate Ghange and Czech Scepticism".

These keywords were combined in different ways, but at least two were kept in the search box. If the outputted article's title had alignment with two or more of the keywords searched, its abstract had to be analysed.

The other two criteria of choice were the relevance and impact factor of the journal or database that holds the research; and the year of the publication, the newest got priority.

Most of the research was carried out on the periodicals portal of the Coordination for the Improvement of Higher Education Personnel (CAPES) through the Federated Academic Community (CAFe). It offers access to full texts available in more than 45 thousand international and national periodical publications, and to various databases such as Web of Science and Scopus.

The other search portal used was the advanced search of Google Scholar, one of the keywords was set in the "with all" input, another in the "exact phrase" box, and the last in the "at least one" option, with a date range between 2020 and 2024.

3. Results

This section first elucidates the scheme used to select the bibliography, then describes why the Czechs can be considered sceptical of climate change impacts, and finally, the use of video games to engage the population on this issue is analysed.

3.1 Procesures of Literature Selection

The structure of this integrative review has keywords as its basis; with this in mind, these pre-selected words were combined in different forms to achieve a consistent sample of scientific works.

For the first combination trial, all keywords were put together, changing only their sequence, the **Tab. 1** shows the results by order of input in the CAFe portal.

Tab. 1 - Number of articles by keyword order (CAFe Portal).

N	1st	2nd	3rd
5	Video Games	Climate Change	Czech Scepticism
136	Video Games	Czech Scepticism	Climate Change
9	Climate Change	Video Games	Czech Scepticism
131	Climate Change	Czech Scepticism	Video Games
16	Czech Scepticism	Video Games	Climate Change
12	Czech Scepticism	Climate Change	Video Games

The table above presents that a total of 309 review articles have been found using the CAFe search engine, then applying the criteria all titles had to be read and the abstracts of the studies with at least two of the keywords needed to be read.

After applying the title criteria using the CAFe portal, 16 abstracts of different fields were read and 7 met the expected research topic.

Tab. 2 shows how many articles were found using Google Scholar Advanced Search, it is important to note that only peer reviewed articles were selected due to its scientific credibility.

Tab. 2 - Number of articles by keyword order (Google Scholar Advanced Search).

N	"With all"	"Exact phrase"	"At least one"
833	Video Games	Climate Change	Czech Scepticism
0	Video Games	Czech Scepticism	Climate Change
24	Czech Scepticism	Video Games	Climate Change
65	Czech Scepticism	Climate Change	Video Games
0	Climate Change	Czech Scepticism	Video Games
409	Climate Change	Video Games	Czech Scepticism

In total, 1331 articles were found using the Google Scholar Advanced Search portal among them 26 titles met the inclusion criteria, and after the abstract read 2 were selected.

In **Tab. 3** these 9 peer-reviewed articles are listed, they integrate the scientific basis and provide the knowledge used to answer the questions derived from the research problem of this review.

Tab. 3 – List of selected articles by authors and aim of publication.

Authors	Aim
Becklas C., Baumann	"Our study uses the example of Eco to analyse, with the help of a validated set of criteria, how commercial games communicate

S. 2023	climate change and the science behind it […]."
Besalti M., Smith G. 2024	"This study investigates how we can spark high school students' interest in learning about climate change using educational computer games."
Boncu S., Candel O., Popa N. 2022	"[…] We aimed to verify which pro-environmental information, attitudes, and behaviors are targeted by serious games and gamified apps, how their efficiency is tested, and the main results."
Čermák D., Patočková V. 2020	"This article focuses on the issue of climate change scepticism among the inhabitants of the Czech Republic"
Fischer S., Göhlich M., Schmitt J. 2024	"[…] We developed a business simulation game, simultaneously identifying didactically effective elements for managers who would participate in it."
Fizek S., Fiadotau M., Wirman H., Garda M. 2023	"[…] The article reflects on the lessons learned and the challenges encountered while implementing the projects' pilot stages, as well as their implications for environmentally conscious game design education more broadly."
Galeote D., Legaki N., Hamari J. 2023	"[…] This study investigates the effects of a serious game vs. control on learning outcomes related to climate change concepts."
Svendsen S. 2022	"This article's focal point is the recent historic rapid rise of the climate change issue on public agendas across Europe."
Gerber A., Ulrich M., Wäger F., Puigròs M., Gonçalves J., Wäger P. 2021	"In this article, we present a mapping review study of games that address climate change issues (climate games)."

The other data that help to clarify why and how video games can be a tool to spread climate change education within Czechs has been found in the databases of the European Commission and the Czech Game Developers Association.

3.2 Why are Czechs sceptical about climate change?

It is possible to argue that the news of the media can play a significant role in how issues on the public agenda are covered because there are measurable social impacts on the design of public opinion. [5]

Each group will be influenced on different scales due to specific features of the media system such as its application, funding, culture, size, etc. In other words, the less fragmented the mass media system, the more it will affect the public. [5]

The Czech media was not interested in climate change topics until 1997 and even after the first approaches to this subject, the news coverage if compared to the rest of Europe was not too significant. [6]

Czechia can be considered among the more sceptic countries in Europe when climate change is the subject, it is a fact since the surveys taken in 2013 and 2015. An explanation is related to the polarisation derived from the negative influence of the Czech president in the years before the surveys. [6]

More recently, the Eurobarometer found that the Czech Republic population considers armed conflicts the most serious problem in the world. It was considered more than twice as serious as climate change, the deterioration of nature, and almost six times more serious than health problems caused by pollution. [7]

As a collective the Czech Republic proved to be one of the five less engaged countries in Europe to fight climate change. More than half (53%) of the citizens interviewed said that they had not taken any kind of attitude the combat climate issues over the past six months. [8]

On the individual level, climate change scepticism in the Czech Republic is understood to be one of the social symptoms of the change of political, social and economic systems that occurred after the communist era. [9]

Some variables with statistical influence on the level of scepticism of a Czech citizen are self-trancendence, gender, education and parenthood. It was found that being more altruist, having more years of education, being a woman, and having kids are related with significantly less sceptical attitudes or perception on the climate change context. [10]

So, climate change scepticism among Czechs can not be taken as a universal attitude, specifically counting the people who trust political institutions, are more altruistic, and have more years of formal education. [6]

3.3 The Czech Gaming Industry Can Help?

This highly interactive media can be used in many different ways; entertainment is the most well-known, but other industries commonly test and develop their own, such as the armed forces, healthcare, education and science. [2]

Video games can reflect as well as shape social contexts and values, and they offer different points of

view for the over 3 billion people who have access to them worldwide. [9]

The urgency of global climate change debate in a country level is based on how it is mediated by science, politics, and the media, but there are some difficulties in communicating this subject in a more effective way. [10]

To increase the efficiency of environmental education and stimulate people to create pro-nature habits and behaviours the use of interactive technologies is key to engaging and educating, especially the young, on climate change issues. [11]

Video games are well known for their capacity to transmit more immersion and interactivity with practically any subject developed in them. This is the reason why this medium has gained more attention from the scientific community in recent years. [10]

A recent mapping review (**Fig. 1**) settled that games on climate change started to be created in 1995; between the first year and May 2020 the study identified 115 climate games, more than seventy percent (70%) of them were developed after 2010. However, since 2017 the production of this class of games dropped from 13 a year to only 6 in 2018, 5 in 2019, and 3 in 2020 the lowest level since 2005. [12]
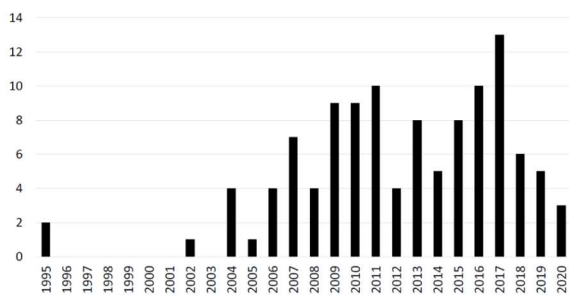

Fig. 1 - Number of climate games released from 1995 to May 2020. Gerber *et al.* 2021, p. 12.

In a 2023 experiment, it was found that video games can at least maintain the same learning effect as traditional text and chart media types considering a sample of highly educated young and middle-aged adults. [13]

Educational games were found to positively impact the interest of high school students in learning about climate change science. It helps them better understand the various scientific fields that make up the issue of climate change. [14]

The challenge is to motivate and sensitize these people about how the long-term impacts of today's behaviours change the climate system. Promoting more sustainable practices requires that policy makers, institutions, and important economic actors cooperate to effectively participate in climate adaptation. [15]

It is argued that a science-based video game on climate change has the potential to empower the understanding of young people and marginalised groups by giving them an active form of interaction with the theme. This kind of video game can help to transmit knowledge to laypeople by putting them in a position of policy marker for a more sustainable future. [10]

Climate and sustainability strategies require active learning and specific educational approaches. Climate education games can be used as effective tools for simulation of reality, promoting climate awareness, and developing knowledge and skills while entertaining the player. [15]

The last data from the Czech Game Developers Association (2023) indicate that there are 155 active studios and 2.634 employees with an estimated total turnover of 308 million euros. However, less than 16% of studios have any focus on the development of educational games (9.8%) and serious games (5.9%). [16]

Although the Czech game industry has been expanding constantly in recent years, it has investment and support constraints in education, business activities, and R&D levels. For the Czech Game Developers Association, there is a lack of government policies and legislation that reflect the needs of the national game industry. [2]

Despite these restrictions, there are companies that focus on educational and instructional games, such as Lipa Learning, which develops mobile phone and tablet games for children of preschool and elementary school ages. [2]

4. Discussion

After the integrative literature review, it becomes clear that the Czech Gaming Industry can assist in the decreasing of climate scepticism in the Czech Republic.

However, the full potential of this young industry in combating Czech climate change scepticism lies in a complex web consisting of more rigorous, concrete, and comprehensive strategies and policies from the government and private companies at all levels of the production chain.

Although the possibilities of the development of video game-based tools to combat climate scepticism are real, there are some restrictions in the effective implementation on a large scale.

One of them is the lack of sufficient investment in a research agenda on this topic and a closer integration between academia, government, and companies.

Therefore, future studies can focus on the research of statistical and viability processes to understand the financial constraints, policy restrictions and social interest of Czechs in the use of video games to help raise awareness of relevant issues such as climate change scepticism.

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