VIDEO GAMING AS A SOLUTION TO REAL WORLD PROBLEMS

RAHUL C

POST GRADUATE STUDENT (M.COM), JAIN DEEMED-TO-BE UNIVERSITY, BANGALORE

RAKESH PANDEY

POST GRADUATE STUDENT (M.COM), JAIN DEEMED-TO-BE UNIVERSITY, BANGALORE

DR. PATCHA BHUJANGA RAO

PROFESSOR & FACILITATOR, JAIN DEEMED-TO-BE UNIVERSITY, BANGALORE

ABSTRACT

Thirty years ago, video games entered the young adult realm. It has an impact on their everyday routine, as well as their thoughts and actions. To make sure that video games have some sort of boundary or limitation, it is crucial to thoroughly research and examine the concerns surrounding the influence of these games. Social and technological design are the two primary topics that have been covered. In addition, the connection between technology, the present market, and education via video games has been taken into account. The government, parents, and video game developers are the three key groups that have the power to influence issues.

Keywords: Video games, Problem-solving skills, Game-based learning, Game genres and mechanisms, Transfer of skills to academic performance, Impact of video gameplay

INTRODUCTION

In 2018, the video gaming business brought in $36 billion, with over 50% of Americans being avid gamers. Owing to the widespread appeal and prosperity of the video game business, academics studying game design are delving into the concept of "game-based learning," which is the application of well-crafted video games to enhance a variety of information, skills, and talents. The core tenet of GBL is that well-designed video games can influence behavior and thought processes because they are centered around engagement and active participation from the learner. Furthermore, by encouraging participation and the transfer of knowledge from virtual to real-world settings, well-designed video games immerse players in settings that can serve as a framework for educational experiences.

Moreover, American corporate executives bemoan the deficiency of problem-solving abilities among recent college graduates. Problem-solving abilities are becoming more and more valued by American employers, according to two surveys of students and business leaders by the Association of American Colleges and Universities. However, only 38% of employers said that newly hired American college graduates could analyze and solve complex problems while working.

Video game researchers discover that playing games can have a beneficial impact on the development of problem-solving abilities. Nonetheless, the majority of the conversation that is currently taking place in the area of gameplay and problem-solving abilities revolves around descriptive research, which can be summed up as follows: Playing video games makes players solve problems, which will eventually improve their problem-solving abilities. It is crucial to use descriptive research to support the claim that video games help people solve problems, but more empirical study is required to show whether playing video games actually helps people learn how to solve problems. The purpose of this study was to

determine whether undergraduates' ability to solve problems is empirically impacted by two different kinds of video gaming.

OBJECTIVES

1. To assess the Impact of Video Gameplay on Problem-Solving Skills.
2. To Identify Specific Game Genres and Mechanisms.
3. To Explore the Transfer of Skills to Academic Performance.

LITERATURE REVIEW

Rohit Mehta in Digital Mehta, TOI(2022) This article highlights the power of problem-solving in video games and their potential to enhance skills. Gamers find satisfaction in problem-solving rather than just winning. Video games can contribute to workforce readiness, especially in the tech and gaming industry. The growing demand for game-related jobs is emphasized, with global revenue projected to reach $110 billion. Major companies like Google, Apple, and Microsoft hire video game designers, while independent studios offer opportunities. Starting one's game design business is also a possibility. In a dynamic industry, gaming offers avenues for personal and professional growth, making it an attractive career choice.

Nitin Suvagiya, LinkedIn (2018) This article discusses the role of video games in modern society. It highlights the positive aspects, such as stress reduction, improved decision-making skills, teamwork encouragement, motor skill enhancement, and enhanced vision. However, it also acknowledges concerns about time wastage, addiction, and the negative impact on physical outdoor activities. Some believe that video games can address real-world problems, while others disagree. In summary, video games offer various benefits but also raise issues related to time management and physical well-being. Their potential to solve real-world problems remains a topic of debate.

Bipul Anand, Medium (2023) Video gaming extends beyond mindless entertainment and can address global challenges. It can raise awareness and encourage sustainable behavior for climate change, teach economic principles to combat poverty, provide interactive learning experiences for education, promote physical health and healthy habits, and stimulate discussions about social justice. Games like Eco, Minecraft, Wii Fit, and This War of Mine offer tools for positive change. Harnessing the potential of video gaming is crucial in addressing pressing global issues and making the world a better place through awareness, cooperation, and skill development.

Josh Lawler and Dargan Frierson, University of Washington (2016) Two researchers, Josh Lawler and Dargan Frierson, identified a gap in climate change educational games and founded EarthGamesUW, an interdisciplinary collaboration to create scientifically accurate and enjoyable climate change games. The group has gained national recognition and developed an independent study course that provides students from various disciplines with real-world experience and professional skills. EarthGamesUW's success extends beyond gaming, as it empowers students to have a positive impact on climate change awareness and solutions.

HAMNIC Solutions - Research Support & Consultancy, LinkedIn (2023) This article explores the potential of video games to address global issues. While video games are often associated with negative effects, such as addiction and violence, they can also have positive impacts. They can serve as educational tools, promoting critical thinking and problem-solving. Video games can reduce stress and anxiety, contributing to better mental health. They foster social interaction and empathy, even across different backgrounds. Additionally, they support environmental initiatives by reducing the need for physical products and lowering carbon emissions. Video games have the potential to be a valuable resource in addressing various global challenges if used responsibly.

Xeon Ostler, TechyV.com (2021) The article highlights the positive aspects of playing video games, emphasizing their ability to provide enjoyment and relaxation. It mentions that gaming can enhance problem-solving skills, coordination, attention, and multitasking abilities. Video games are credited with reducing stress and improving decision-making speed, promoting teamwork, and enhancing motor skills and life balance. Additionally, gaming is suggested to boost vision and help individuals face life's challenges with more resilience. The article acknowledges that while there are numerous benefits to gaming, some studies warn about excessive time spent on video games. Overall, the article underscores the potential for video games to facilitate learning and personal development, particularly in children, by improving social skills and confidence.

Shubhi Singh, Fairgaze (2020)
The article explores the benefits of video games, acknowledging their capacity to enhance decision-making, teamwork, motor skills, vision, and reduce stress. It emphasizes that gaming can help individuals on a personal level, regardless of whether they're occasional or dedicated gamers. Game developers and researchers recognize the untapped potential of gamers in addressing real-world challenges. Players dedicate significant time and brainpower to solving in-game problems. The article highlights the example of Foldit, a scientific game designed to tackle protein structure challenges. Gamers worldwide solved an elusive protein problem within 10 days, surpassing computer algorithms in biochemistry and molecular research, demonstrating the problem-solving abilities of gamers.

David Brooke, Learn Worthy (2020) Video games provide both entertainment and valuable problem-solving skills. Gamers, who often face failures in games, exhibit a resilience and determination that can be applied to real-world challenges. Gaming enhances brain function, with studies showing improved memory and spatial orientation, and increased grey matter. Video games foster learning from mistakes, deep practice, and the willingness to explore different approaches, valuable for real-life problem-solving. They also teach when to give up on futile strategies. Video games can improve hand-eye coordination and increase cortical thickness in the brain's higher-order thinking areas. For kids, gaming improves coordination, problem-solving, attention, brain speed, and multitasking skills.

Dara Mohammedi , The Guardian (2014) Online games are increasingly used to engage players in solving real-world scientific problems. Gamers have made significant contributions to research, such as solving the structure of an enzyme causing a disease and discovering potentially habitable planets. These games tap into players' pattern recognition skills and cognitive abilities, making them valuable for scientific tasks. The potential is vast, as billions of hours are spent on online games each week. Games like Foldit and Planet Hunters address the need for more people in science, helping to solve pressing scientific problems by involving a broader population. The challenge is to make these games enjoyable and addictive to maximize their impact.

QRIUS (2023) Video games have evolved from simple 2-D amusements to complex 9-D and VR experiences. They now have the potential to positively influence users and address scientific issues. Games like Foldit and Planet Hunters have enabled gamers to contribute to solving real-world problems, from protein folding to discovering new planets. Beyond scientific benefits, video games enhance cognitive skills, critical thinking, and social interaction. Gamers often become more curious and informed. Leveraging games for scientific solutions can tap into untapped talent and make complex issues engaging. Shifting the perception of games from mere entertainment to problem-solving tools is key.

DATA COLLECTION PROCESS

The data collection process is done in a methodical way in order to impose questions, test hypothesis and analysis results. Students, working professionals, people of different gender orientations to be chosen to participate in the data collection process for this study.

Primary data

A sample of 25 individuals to be given questionnaire that gathers data and their opinions about the topic "Video games as a solution to world problems". The acquired data is used for analyzing the hypothesis and interpretation of the findings.

Secondary data

Sources of secondary data to be acquired from documents and journals by other researchers, literature review of previous findings, websites about the topic "Video games as a solution to world problems" and from various parts of the Internet

SAMPLING TECHNIQUE

In this research study, simple random sampling is the technique used for sampling. The participants are chosen randomly which helps in removing the selection bias from the dataset

DEMOGRAPHIC FACTORS OF THE RESPONSES

FREQUENCY TABLE

PARTICULARS		FREQUENCY	PERCENT
GENDER	Male	20	80%
	Female	3	12%
	Prefer Not To Say	2	8%
	Total	**25**	**100%**
AGE	Below 20	17	68%
	20-25	7	28%
	25-30	1	4%
	Total	**25**	**100%**
EDUCATIONAL LEVEL	Pre-University	13	52%
	Under Graduate	6	24%
	Post Graduate	6	24%
	Total	**25**	**100%**
DESIGNATION	Employee	2	8%
	Student	23	92%
	Total	**25**	**100%**

INTERPRETATION

The provided table represents the distribution of survey responses across different demographic categories. Here's an interpretation of the data:
Gender:
- Male: 20 (80%)
- Female: 3 (12%)
- Total**:** 25 (100%)
Age:
- Prefer Not to Say: 2 (8%)

- Below 20: 17 (68%)
- 20-25: 7 (28%)
- 25-30: 1 (4%)
- Above 30: 0
- Total**:** 25 (100%)

Educational Level:
- Pre-University: 13 (52%)
- Undergraduate: 6 (24%)
- Postgraduate: 6 (24%)
- Total: 25 (100%)

Designation:
- Employee: 2 (8%)
- Student: 23 (92%)
- Total: 25 (100%)

This dataset appears to be representative of a youthful population, with a high representation of students from all educational backgrounds, mostly under the age of twenty. Males predominate in the gender distribution, and although educational backgrounds are varied, there is a minor bias towards pre-university education. The low percentage of employees in the survey suggests that students or younger people may have been the survey's primary intended audience.

DATA ANALYSIS

1.Video games have the potential to significantly impact and solve real world problems

RESPONSE	NO. OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	2	8%
AGREE	10	40%
NEUTRAL	9	36%
DISAGREE	3	12%
STRONGLY DISAGREE	1	4%
TOTAL	25	100%

INTERPRETATION

The interpretation suggests that a significant portion of the respondents (48% combined from Strongly Agree and Agree) lean towards agreement with the statement/question, while a smaller percentage (16% combined from Disagree and Strongly Disagree) leans towards disagreement. The largest segment, at 36%, remains neutral, indicating a sizeable group that neither strongly agrees nor disagrees with the statement/question.

This breakdown shows a tendency towards agreement, though a notable proportion remains undecided or neutral on the topic.

2.I have personally witnessed instances where video games positively influenced societal issues.

RESPONSE	NO. OF RESPONDENTS	PERCENTAGE

STRONGLY AGREE	1	4%
AGREE	7	28%
NEUTRAL	9	36%
DISAGREE	4	16%
STRONGLY DISAGREE	4	16%
TOTAL	25	100%

INTERPRETATION

This breakdown shows a tendency towards agreement, though a notable proportion remains undecided or neutral on the topic.
The distribution of the possibilities is more evenly distributed in this case. At 36%, the largest percentage is still neutral. But among the remaining alternatives, there's a more even distribution than in the preceding set.

32% of respondents agreed (combining strongly agree and agree). Disagreement (including Strongly Disagree and Disagree): 32%. Here, the proportion of respondents who are in agreement and those who are not, making up 32% of the total responses, are equal. Although disagreement and agreement are equally weighted in this dataset, neutrality is still the largest category.

3.Video games could effectively contribute to addressing global challenges like education, social awareness or environmental issues.

RESPONSE	NO. OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	1	4%
AGREE	9	36%
NEUTRAL	6	24%
DISAGREE	6	24%
STRONGLY DISAGREE	3	12%
TOTAL	25	100%

INTERPRETATION

In this case, the distribution of responses falls into three categories: Agree, Neutral, and Disagree, each of which has between 24% and 36% of the total. 40% of respondents agreed (combining strongly agree and agree). Disagreement (including Strongly Disagree and Disagree): 36 percent. The percentage of respondents who are in agreement (40%) is marginally higher than the percentage who are in disagreement (36%). Though it no longer has the majority as it did in earlier instances, the Neutral category is still noteworthy. This points to a more equally distributed opinion spectrum with a tendency toward agreement.

4.Video games are effective tools in fostering empathy and understanding towards societal problems

RESPONSE	NO. OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	3	12%

AGREE	4	16%
NEUTRAL	9	36%
DISAGREE	5	20%
STRONGLY DISAGREE	4	16%
TOTAL	25	100%

INTERPRETATION

28% of respondents agreed (combining strongly agree and agree). Disagreement (including Strongly Disagree and Disagree): 36 percent. In contrast to the preceding cases, in this instance, the total percentage of disagreement (36%) exceeds the total percentage of agreement (28%). With 36% of the total responses, the Neutral group is still the largest. This shows that although there is a sizable chunk in the middle (Neutral), respondents often have a little larger predisposition toward disagreement than agreement.

5.Games or gaming initiatives have shown measurable outcomes in addressing societal challenges

RESPONSE	NO. OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	2	8%
AGREE	7	28%
NEUTRAL	5	20%
DISAGREE	7	28%
STRONGLY DISAGREE	4	16%
TOTAL	25	100%

INTERPRETATION

36% of respondents agreed (combining strongly agree and agree). 44% of respondents disagree (combining disagree and strongly disagree). In this dataset, disagreement is represented by a higher percentage (44%) than agreement (36%). With 20% of the responses, the Neutral category is less than the agreement and disagreement categories combined. This indicates that the respondents' opinions are more split, with a sizeable percentage indicating a tendency to disagree with the statement or question that was posed.

6.Governments and organizations should allocate more resources to leverage video games as a solution to real world issues.

RESPONSE	NO. OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	2	8%
AGREE	8	32%
NEUTRAL	8	32%

DISAGREE	4	16%
STRONGLY DISAGREE	3	12%
TOTAL	25	100%

INTERPRETATION

40% of respondents agreed (combining strongly agree and agree). Disagreement (including Strongly Disagree and Disagree): 28%. According to this view, the total proportion of responses that indicate agreement (40%) is greater than the total percentage of responses that indicate disagreement (28%). Nonetheless, the proportion of neutral replies (32%) is the same as that in the agreement category.This implies that even though the percentage of responders who are in agreement is higher, there is also a sizable amount of neutrality. The fraction of disagreement is noticeably reduced but still there, suggesting that there are differing opinions among those who do have a distinct opinion

7.There are limitations and potential risks in relying on video games as a primary tool to solve global problems

RESPONSE	NO. OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	3	12%
AGREE	16	64%
NEUTRAL	4	16%
DISAGREE	0	0%
STRONGLY DISAGREE	2	8%
TOTAL	25	100%

76% of respondents agreed (combining strongly agree and agree). Disagreement (which combines Disagree and Strongly Disagree): 8%16% are neutral.

In this case, a sizable majority (76%) concur with the statement or query that was asked. Since none of the respondents selected "Disagree," there is obviously no express disagreement. Nonetheless, 16% of the replies fall into the Neutral group, showing a tiny but significant percentage of people who are unsure or neither agree nor disapprove.
This indicates a substantial consensus in favor of agreement among those who expressed a definite opinion, with only a small percentage expressing neutrality or a lack of opinion.

8.Game developers must actively work to avoid perpetuating stereotypes or biases in their games aimed at addressing societal issues

RESPONSE	NO. OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	2	8%
AGREE	11	44%
NEUTRAL	9	36%

DISAGREE	2	8%
STRONGLY DISAGREE	1	4%
TOTAL	25	100%

INTERPRETATION

52% of respondents agreed (combining strongly agree and agree). Disagreement (including Strongly Disagree and Disagree): 12%. 36% are neutral. In this case, the majority of responders (52%) agree with the statement or question, but only 12% disagree. At 36%, the Neutral group is still large, meaning that a sizable portion of people are either neutral or indecisive. This indicates a noteworthy degree of agreement but also reveals a sizable portion of respondents who have opted to stay neutral or uncertain rather than adopt a firm position.

9.Intergrating video games into educational curriculum to tackle social, environmental or political problems would be beneficial

RESPONSE	NO. OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	3	12%
AGREE	11	44%
NEUTRAL	8	32%
DISAGREE	3	12%
STRONGLY DISAGREE	0	0%
TOTAL	25	100%

INTERPRETATION

Strongly Agree and Agree combined to form Agreement: 56%, Disagreement (including Strongly Disagree and Disagree): 12%,32% are neutral. The majority of responders (56%) agree with the statement or question put forward in this interpretation. At 12%, the disagreement percentage is still quite low. The Neutral category, which includes 32% of respondents who haven't committed to either agreement or disagreement, stands out as a significant number of the respondents. This indicates that respondents are generally inclined to agree, with a significant proportion choosing to stay unsure or neutral.

10.The video game industry needs structural changes to maximize its potential in addressing and solving world issues

RESPONSE	NO. OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	8	32%
AGREE	10	40%

NEUTRAL	4	16%
DISAGREE	3	12%
STRONGLY DISAGREE	0	0%
TOTAL	25	100%

INTERPRETATION

72% of respondents agreed (combining strongly agree and agree), 12% disagree, 16% are neutral, According to this interpretation, the statement or question is accepted by a sizable majority of responders (72%). The percentage of respondents who disagree is lower, at 12%, in the Disagreement category. The percentage of respondents who are indifferent or unsure is still 16%, which is a significant but lower share. This indicates that there appears to be a broad consensus among respondents in favor of agreement, with a lesser percentage expressing dissent and a moderate percentage remaining neutral or unsure.

FINDINGS OF RESEARCH

Cognitive Benefits: Research indicates that playing specific video games can improve multitasking, spatial awareness, and problem-solving skills. These abilities are necessary for dealing with a variety of real-world problems, such as scientific research and urban planning.

Educational Value: A number of games are made with the express purpose of teaching players about science, history, and current social issues. According to research, thoughtfully created educational games can boost interest and aid in learning. They may also present novel answers to the world's educational problems.

Social Impact and Behavioral Change: A number of video games have been effective in bringing attention to social concerns and changing players' behavior. For example, games that promote social justice or environmental conservation have inspired players to take up real-world activities, such as volunteering or making charitable donations.

Therapeutic applications: Research indicates that video games can be used therapeutically to treat mental health conditions like PTSD, sadness, and anxiety. As a kind of therapy, gaming interventions have been created, offering a forum for coping strategies and emotional control.

Innovation and Problem-Solving: Studies reveal that gaming environments frequently encourage experimentation and original thought. Some contend that games' creative problem-solving elements can stimulate original answers to actual issues, encouraging a resilient and adaptable mindset.

SUGGESTIONS:

Design for Purpose: Promote the development of video games that have clear learning or problem-solving goals. Game designers ought to concentrate on creating interactive experiences that tackle pressing concerns such as social justice, healthcare, and climate change. To guarantee correctness and efficacy in the dissemination of knowledge or solutions, this may need working in conjunction with professionals in the relevant domains.

Integrate Gaming into Education: Throughout the world, add well-crafted instructional video games to official schooling systems. These games ought to be in line with the objectives of the curriculum, providing interesting and dynamic

resources to improve learning and critical thinking in a variety of subject areas and supporting conventional teaching strategies.

Encourage Social Impact Gaming Initiatives: Provide funding and support for gaming initiatives that try to improve society. Urge game creators to build immersive experiences that elicit empathy, increase consciousness, and inspire players to take concrete steps toward addressing pressing social issues such as environmental preservation, poverty, or inequality.

Research and Investment: Encourage studies to fully investigate the possibilities of gaming. Invest in research that evaluates how games affect mental health, cognitive abilities, and the development of creative solutions to global issues. Policies, development initiatives, and the incorporation of gaming solutions into larger social plans can all be influenced by the findings of this research.

CONCLUSION:

Undoubtedly, although video games may not provide instantaneous or direct answers to global issues, their capacity as agents of constructive transformation is becoming more and more apparent. The many advantages of gaming, ranging from social influence to educational value and cognitive enhancement, highlight their potential to make a significant contribution to solving global issues.

Promoting goal-driven game production, integrating gaming into education, and using gaming for social effect become increasingly important as research on the many uses of video games grows. Using gaming as a tool for social change, education, and problem-solving presents opportunities for people to get involved, learn, and be inspired to take on larger societal concerns.

In the end, video games are a dynamic medium that can impact minds, stimulate creativity, and motivate action, even though they are not a panacea. If used wisely, this potential can be included into the multimodal strategy required to address difficult global issues.

REFERENCES

1. Rohit Mehta in Digital Mehta, TOI (2022): Video games can solve world problems, https://timesofindia.indiatimes.com/blogs/digital-mehta/video-gaming-can-help-solve-world-problems/
1. Nitin Suvagiya, LinkedIn (2018): Can video gaming really help solve world problems? https://www.linkedin.com/pulse/can-video-gaming-really-help-solve-world-problems-nitin-suvagiya/
2. Bipul Anand, Medium (2023): Video Gaming as a Solution to World Problems, https://medium.com/@anandblogs/video-gaming-as-a-solution-to-world-problems-e07ea7f27358
3. Josh Lawler and Dargan Frierson , University of Washington (2016):Can video games solve world problems? https://www.washington.edu/trends/earthgames/
4. HAMNIC Solutions - Research Support and Consultancy, LinkedIn(2023): Video Gaming as a Solution to World Problems,https://www.linkedin.com/pulse/video-gaming-solution-world-problems-hamnicwriting/
5. Xeon Ostler, TechyV (2021): Can Video Gaming Help Solve World Problems? https://www.techyv.com/article/can-video-gaming-help-solve-world-problems/
6. Shubhi Singh, Fairgaze (2020): Can Video Gaming Really Help Solve World Problems? https://fairgaze.com/generalnews/can-video-gaming-really-help-solve-world-problems.html
7. David Brooke, Learn Worthy(2020): How video games help solve real-world problems faster, https://learnworthy.net/how-video-games-help-solve-real-world-problems-faster/
8. Dara Mohammadi , The Guardian (2014): How online gamers are solving science's biggest problems, https://www.theguardian.com/technology/2014/jan/25/online-gamers-solving-sciences-biggest-problemsto Solve Scientific Problems?

9. QRIUS (2023): How Can Video Games Be Used to Solve Scientific Problems? https://qrius.com/how-can-video-games-be-used-to-solve-scientific-problems/