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An elucidatory research upon AI's influence on teenagers' critical thinking and decision-making abilities: Observation on mental development

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Abstract
Artificial intelligence (AI) is revolutionizing adolescent mental health, with Gen AI being a significant breakthrough. Research shows that 12-30% of school-aged children experience anxiety, impacting academic performance. Over 50% of mental health illnesses occur before age 14, with most manifesting before age 25. Early detection and prompt treatment are crucial for this age group, and schools must enhance mental health initiatives to effectively tackle daily challenges faced by children. The undertaken research objectives are focused on the influence of AI teenager's mental health, the advantages and disadvantages of AI on teenager's mental development, and further possible developmental scopes for building better AI for teenagers. The paper has executed primary research techniques to assess socioeconomic factors of desertification and drought in the Himalayan region. Data will be collected through structured questionnaires, likert-type scales, and purposive sampling to understand the challenges faced by specific communities. The study will be conducted online and in-person, with collaboration with local organizations. The analysis will be descriptive and quantitative, using themes to explain selected themes. The research method is primary qualitative, aiming to obtain data from an original source to ensure validity and reliability. The results highlights the need for adolescent-specific AI, incorporating ethical norms, data privacy regulations, and human engagement in mental health support. AI can offer personalized instruction, information accessibility, problem-solving skills improvement, and varied learning methods. However, overuse can hinder critical thinking, privacy and ethics concerns arise from data collection, and AI may spread inaccurate information. Collaboration between psychologists, educators, and teens is crucial for creating compassionate AI technologies and addressing the digital divide.

Keywords: Norms, data privacy, educators, psychologists

1. Introduction

The undertaken research paper acknowledges the influence of artificial intelligence (AI) as a driving force for searching for solutions to existing challenges in this era of technological advancement, in this case pertaining more specifically to adolescent mental health challenges noted by Rowe and Lester (2020) [24]. Gen AI is a great leading edge development in AI technology and a new approach to helping teenagers who are struggling with their mental health. This article gives a brief on how artificial intelligence is likely to affect youthful individuals in terms of their psychological well-being, analysis, and decision making in light of the title.

The rising prevalence of mental health difficulties among adolescents is a significant cause for alarm among the public health sector (American Society of Radiologist Technologies, 2019). Research indicates that a significant proportion, ranging from 12 to 30 percent, of school-aged children have anxiety that hampers their academic performance. Over 50% of mental health illnesses originate before to the age of 14, with the majority manifesting before the age of 25. Unfortunately, many persons in this group may not get enough help for their mental health difficulties, resulting in ongoing struggles into adulthood (Batty, 2018) [3]. Early detection and prompt treatment of mental health issues in adolescents and young adults is crucial, since a significant number of individuals in this age group first display symptoms ranging from moderate to severe. Therefore, it is essential to enhance and fortify mental health initiatives in schools to effectively tackle the diverse array of mental health challenges that children encounter on a daily basis.

1.1 Background

During the 1950s, there were significant developments in the fields of AI and robotics, which might be seen as the beginning of AI (Chi, Denton, & Gursoy, 2020) [5]. The publication of Eliza in 1964 and the introduction of Unimate in 1961 were both significant turning events in history. Nonetheless, the healthcare industry has exhibited caution in embracing AI. Alan Turing made substantial contributions to artificial intelligence (AI) in the mid-twentieth century. His work on universal computing machines and the "Turing Test" paved the way for the creation of current AI. Throughout the 1980s, expert systems advanced and were widely used, while the discipline of Artificial Intelligence (AI) was founded in 1956 at the Darthmouth Workshop (Desouza, Dawson, & Chenok, 2020) [7]. From the 1980s to the early 1990s, artificial intelligence (AI) experienced a period of stagnation and diminished attention characterised as a "AI winter," which was characterised by a decline in interest and financial support. The comeback of artificial intelligence (AI) in the late twentieth century is credited with driving the improvement of machine learning, namely the development of complicated pattern modelling neural networks. The development of more powerful processing systems and bigger datasets in the twenty-first century permitted significant advances in the area of artificial intelligence (Edwards, Edwards, Stoll, Lin, & Massey, 2019) [9]. Deep learning technologies, such as natural language processing and picture identification, have transformed sectors including visual perception and language comprehension. Watson, an AI system created by IBM, shows how artificial intelligence has boosted advancement in a variety of industries, including healthcare.

By incorporating Artificial Intelligence into projects, several positive impacts have been witnessed in terms of awareness, accuracy of information being passed around, series of stigma eliminated, and even stimulation of more discourses and conversations in regards to mental health. These options which have been occasioned by the integration of artificial intelligence and mental health awareness are some of the new paradigms that have the likely hood of revolutionizing how we interact and understand mental health issues in our society as indicated in the following; Following are the possibilities that AI opens for the creation and launching of highly efficient awareness campaigns, thanks to the systems' data gathering and analysis potential and their capability to interact with people. Recent algorithms within the field of artificial intelligence (AI) can recognize and analyze the emotional footprint conveyed in online conversations. This talent is useful to academic institutions and Mental Health organisations to know what is being said in the public domain and what ought to be of more focus in awareness creation. The AI-embedded chatbots are gradually becoming popular as engaging media for providing pertinent information and knowledge on specific mental health (Guo *et al*., 2020). These chatbots can mimic and empathise with the clients and assist them; provide solutions to some problems and advice on where to seek professional help. One of the key components of psychoeducation is disclosing essential bits of information about a specific mental health difficulty along with teaching the ways to deal with it, which is highly effective in increasing the awareness of the problem.

2. Literature reviews: AI is a general term that refers to a development in technology whereby computers emulate some abilities associated with the human mind. In the discussion section, the authors (Jakhar & Kaur, 2020) [18] argue for highlighting the need to conduct more research focused on the generation that is more likely to be affected by AI. In the course of the analysis, it is important to focus on ways how teenagers might be guided to the context of entering higher education (Chi *et al*., 2020). From the paper of Kaplan and Haenlein (2020, p. 5), the views shared are that AI has the learning effectiveness advantage; drives accessibility of knowledge; and thus offers opportunities for personalized learning. Nonetheless, there are still some people who remain skeptical regarding the sooner or later utilization of AI and its positive influence on physical and mental wellbeing. Firstly, it is important to address the aspect of data privacy by not exposing the identity of the young persons involved.

Several studies have thus suggested that AI might be helpful to the young people by positively improving on their psychological health. According to the authors' study published by Muro, Maxim, and Whiton in 2019, incorporating feature AI intelligent virtual advisors was effective in reducing the level of depression in young people. In contrast, another study revealed that artificial intelligence affects the behavior of teenagers, accompanying them with the incorrect information (Pedro, Subosa, Rivas, & Valverde, 2019) [23]. This literally means the youngster can be psychologically vulnerable due to AI's sharing of materials that disregard their mental history.

Young people may benefit from AI-integrated goods in several approaches. One example of this is the use of virtual assistants powered by artificial intelligence (AI) to aid students in their academic tasks and responsibilities (Schwalbe & Wahl, 2020) [25]. In addition, they have the ability to provide personalised coaching and assessment to youngsters, therefore motivating them to make choices and achieve goals (Shank, Graves, Gott, Gamez, & Rodriguez, 2019) [26]. (Topol, 2019) [28] have asserted that robotic systems integrated with artificial intelligence has the capacity to assist youngsters in many areas, including academic endeavours and recreational activities. In addition, the gadgets are capable of offering emotional support by providing reassurance and comfort to pupils who are feeling distressed, such as those suffering worry or bewilderment.

AI systems provide a unique viewpoint on user interaction and data, particularly in terms of reacting in a personalised and conversational manner. (Williams, Park, & Breazeal, 2019) [31] conducted a review research named "Artificial Intelligence for Personalised Preventive Adolescent Healthcare" to investigate the possible advantages of artificial intelligence in adolescent health. In 2021, the United Nations International Children's Emergency Fund conducted a poll that revealed the viewpoints of teenagers from across the globe on artificial intelligence. Despite the importance of these papers, there is a lack of empirical research on how teenagers use AI to meet their health needs and the resultant consequences. The level of utilisation of AI by teenagers for finding health-related information, their method of understanding the results, and the possible consequences for public health in general are yet uncertain (Unicef, 2021) [29]. Is it possible to use AI to communicate with teenagers and answer their questions about sexual and reproductive health in order to improve their mental well-

being? In order to completely explore these possibilities, it is necessary to perform empirical study on the feasibility and efficacy of using AI in various settings. By understanding the capacity of AI to provide a new kind of assistance, it becomes possible to improve the welfare of teenagers and close the current gaps in healthcare availability (Alam, 2021) [1].

(Cao & Liu, 2022) [4] Advocacy groups aim to guarantee that healthcare professionals have sufficient training to effectively handle the special healthcare requirements of adolescents, which differ from those of adults and children. Currently, AI systems do not consider user demographics, such as age, when producing interactive replies. Providing AI with training may be essential to safeguard young individuals throughout their interactions. It is very difficult to customise AI programmes and develop necessary rules without undertaking thorough study on how teenagers use AI for health-related purposes. Hence, it is essential for scholars to promptly initiate research on the utilisation of AI by teenagers and its potential effects on their well-being.

2.1 Research Gap

The above literatures tho have highlighted impacts of AI on mental health still there are few literature gaps that needs to be fulfilled. Thus, this research would highlight the experience of AI integration in terms of youth implications and the ways that AI can help the younger population to develop into the responsible members of society (Shank *et al*. 2019) [26]. Additional work has to be done in understanding the rights and wrongs about AI or the legal issues of AI and there has to be better control of AI technologies to eliminate the vices of AI to the new generation.

2.2 Research question

1. How does AI influence teenagers' mental health?
2. What are the advantages and disadvantages of AI on teenagers' mental development?
3. What would be possible developmental scopes for buiiding better AI for teenagers?

2.3 Importance of the study

This research is of utmost importance because it discusses the consequences of artificial intelligence (AI) in relation to several forms of mental health illness including intellectual disability, epilepsy, and neurodegenerative diseases. AI is rapidly growing into an important tool, and currently scientists promote its usage in mental health education, diagnostics and treatment. The book is on how AI could enhance the lives of those with mood disorders ASD and schizophrenia in regaining the ability to manage their emotions (D'alfonso *et al*., 2017) [6]. The paper explains the impact of the cultural differences while developing the AI solutions in the mental health sector and reveals the limitations of AI techniques. This points to the importance of employing mathematical models which can be easily rearranged, while at the same time recognizing the ability of systems based on artificial intelligence to create bias. The study also explores the ethical consequences implicated by the deployment of AI in mental health sector.

2.4 Research objectives

1. To elucidate the influence of AI teenagers' mental health.
2. To discuss advantages and disadvantages of AI on teenagers' mental development.
3. To recommend possible developmental scopes for building better AI for teenagers.

2.5 Scope and limitation

The paper is limited to the research of AI's influence on teenagers' critical thinking and decision-making abilities.

3. Research Methodology

3.1 Research Methods and Design

This work employs primary research techniques that directly collect information from the field to assess socioeconomic factors of desertification and drought in the Himalayan region. The data will be collected through structured questionnaires that entail both closed and open questions in order to get a full picture of the challenges affecting the people within specific communities. Likert-type survey questions will be employed to assess the participants' attitude, perceptions and experiences on these issues. To capture people in different vulnerable parts of the country affected by desertification and drought, purposive sampling will be employed. It will be an online survey and there will be some in-person personal surveys that will be done in mutual collaboration with local organizations. The analysis of collected data will be conducted both descriptively and quantitatively using themes for explanation of selected themes. The study will meet ethical standards i.e. it has to respect cultures and traditions of the societies under research.

3.2 Research approach

The research method used in this study is primary qualitative research which entails obtaining data from an original source of information. This particular aspect of data collection aims at collecting individual experiences directly from respondents in order to achieve validity and reliability of data.

Primary data is generated by administering structured questionnaires among the respondents. Comment: It may be clear that the questionnaire is constructed to provide long explanations on socio-economic effects of desertification, drought or other factors in the Everest area and other locations in the Himalayas.

Likert-type scales can be used to quantify responses given their view or perception of a particular experience. This method enables the evaluation of the effect of desertification and drought on different socio-economic components to deduce the severity of impact.

4. Analysis of study

4.1 Influence of AI on mental health

Artificial intelligence (AI) has changed many parts of contemporary society, including children's lives. Current youth, called digital natives, are growing up in a culture where AI is constantly present. AI is used in social media algorithms, virtual learning environments, mental health applications, and online gaming. The widespread use of AI presents both benefits and concerns for teenage mental health (Cao & Liu, 2022) [4].

Our area uses AI technology and methodologies behind the scenes. Due to their widespread usage, several AI-based methodologies and technologies are no longer respected. Technology may replace psychologists with AI-based

mental health monitoring tools like smartphone applications and wearable devices. It describes how AI can assess and treat patients and make judgements. Mental health and behavioural care are also benefiting from AI (5). Figure 1 illustrates AI for mental wellness (D'alfonso *et al*., 2017) [6].

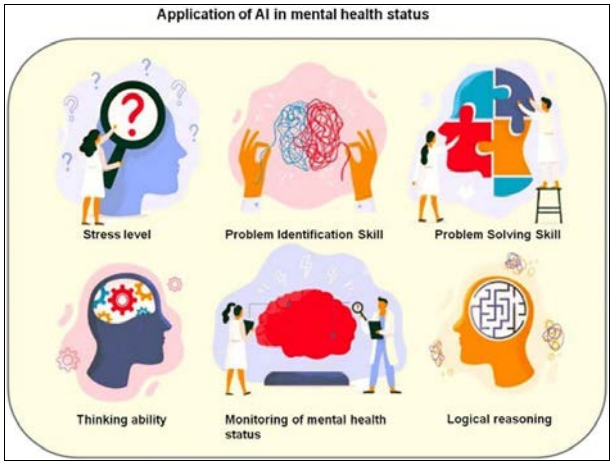

Fig 1: Application of AI in mental health status.

AI influences youth mental health, especially via social media. AI systems adapt broadcasts to viewer behaviour. Customisation may enhance user experience but pose risks. Frequently comparing oneself to well-chosen images and lives may bring inadequacy, misery, and despair These platforms' addictive nature, enhanced by artificial intelligence to engage users, may cause excessive screen time, disrupting sleep and worsening mental health issues (Rowe & Lester, 2020) [24].

AI has also improved teenage mental health assistance. AI-powered mental health applications and chatbots make seeking assistance for teenagers easy and discreet. These tools provide quick assistance, problem-solving solutions, and resources for folks who may be hesitant to seek help. AI can monitor mood, give mindfulness exercises, and advise people to seek professional aid for extreme mental suffering. To reach USD 14.89 Billion by 2033, the global AI in mental health market is estimated to grow. This increase compares to its 2023 forecast of USD 0.92 Billion. The study forecasts 32.1% CAGR from 2024 to 2033 (Alam, 2021) [1].

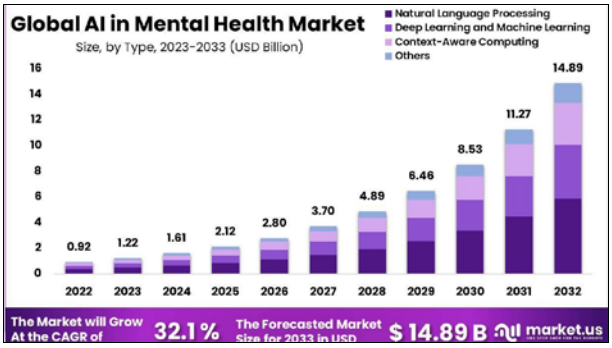

Fig 2: Global AI in Mental health statistics

Using AI for mental wellness has drawbacks. Despite their benefits, these technologies cannot substitute professional care. AI lacks human therapists' expertise and sensitivity, therefore misdiagnosis and incorrect therapy are inevitable. Breaches in mobile app data security might disclose sensitive information. With AI's effect, adolescent mental health is vital in school. AI-driven student-paced virtual learning environments provide personalisation. A customised approach may alleviate academic stress and enhance confidence (Mcnaughton & Bryen, 2007) [20]. Due to the COVID-19 pandemic, remote learning has emphasised the disadvantages of excessive screen time and lack of social interaction, which are crucial for teenagers' holistic development. Teen gamers are typically AI-influenced. AI challenges make games smarter and more adaptable. Gaming may be fun, but artificial intelligence-driven gaming can cause addiction, social isolation, and mental health difficulties (Isaacs *et al*., 2024) [17].

To overcome these limitations and maximise advantages, adolescent-specific artificial intelligence may be developed. First and foremost, AI development must involve ethical norms. AI systems should promote healthy usage habits like limiting screen time and taking breaks. AI-driven systems should also have strong data privacy regulations to secure user data. Psychologists, educators, and adolescents may help build more compassionate and effective AI technologies for teen mental health. The research calls for a resolution to rapidly establish a legislative mechanism to manage AI and robots that can anticipate and adapt to technological changes in the next years. Figure 1 shows the various legal and ethical challenges surrounding healthcare AI (Welk, Corbin, & Dale, 2000) [30].

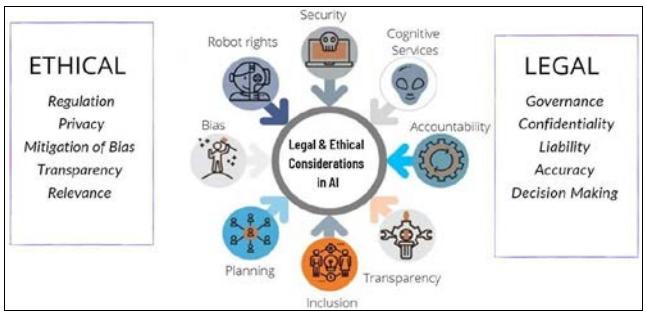

Fig 3: Healthcare AI ethical and legal issues.

AI offers interesting tools and platforms to promote adolescent mental health, but it also raises major issues. A comprehensive approach that prioritises ethical design, data security, and human engagement in mental health help is required to evaluate AI's pros and cons. This method may increase the possibility that AI will benefit teenage mental health in our digitalized world.

4.2 Advantages and disadvantages of ai on teenagers' mental development

Benefits of AI on Adolescent Cognitive Development

Several advantages of artificial intelligence for adolescents are thus as follows: Artificial intelligence offers customized learning, convenient access to knowledge, help in coping with various learning strategies, and problem-solving skills development for adolescents (Rowe & Lester, 2020) [24]. But, it is also true that the use of AI in education and learning has its demerits as well. Excessive use of AI also reduces original thinking and traditional problem solving skills, thereby confusing students and their authority in problem solving solutions. There is the question of privacy and ethics when it comes to gathering and analyzing data, including that of students; this impacts student trust in the use of AI technology (Isaacs *et al*. , 2024) [17].

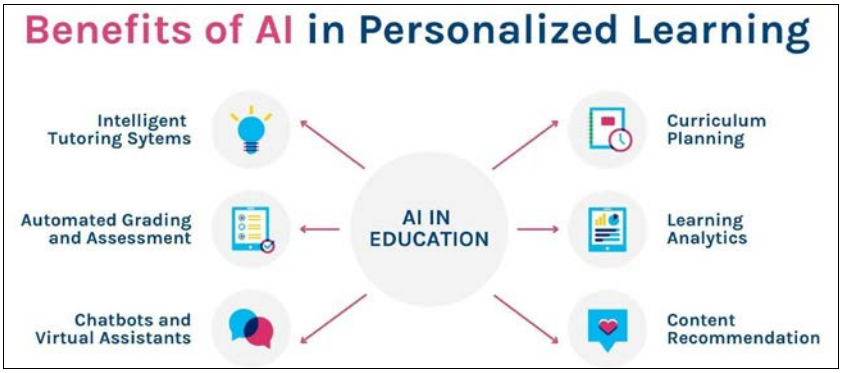

Fig 4: Benefits of AI in Personalized learning

AI-based educational solutions could also minimize socio-interaction, which is essential for adolescent's cognitive and emotional growth (Welk *et al*., 2000) [30]. This aspect suggests that reliance on AI in such processes may diminish such important interactions. Further, it has been pointed out that the inequality in the access to ICT in school-age children whereby the digital divide between needy and affluent adolescents may narrow their brain stalemate as a result of deprivation in an advanced AI gadget (Mcnaughton & Bryen, 2007) [20].

Lastly, AI may propagate wrong information, as AI may expose teens to a vast amount of data, and teach them how to look up information but the sources to get data from may not always be accurate. In conclusion, it is evident that the combination of pros demonstrated earlier implies that virtues can be gained while symbolically walking through the uncanny valley of Abdulfair; in essence, AI has tremendous advantages, however, it has its demerits with it and it is vital to make sure that the Americas apply AI correctly and proletariat to improve cognitive skills in adolescents. (Alam, 2021) [1].

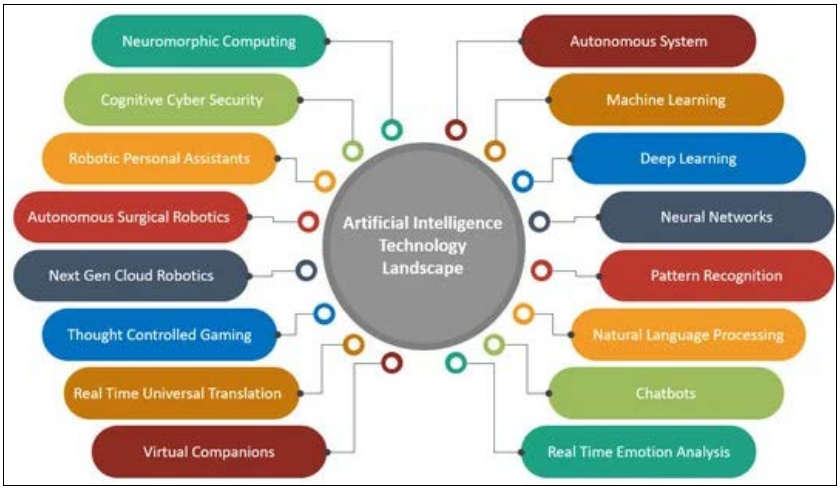

Fig 5: The Landscape of AI technology.

Disadvantages in Adolescent Cognitive Development

Over reliance to AI by the teens in their education has severe consequences that hinders their decision making and critical thinking skills (Cao & Liu, 2022) [4]. Privacy and ethical issues can be an issue when using students' data for analysis for either discounted prices or AI technology adoption impacting their confidence. They also deny social relations since group participation and interaction are vital for the cognition and feelings of young people (Alam, 2021) [1]. By this, it means that inequality in accessing information technology may reach a point where poor adolescents cannot compete with the rich adolescents because they lack sophisticated machine intelligence to support their thinking skills. Moreover, it noted that AI may contribute to the spread of misinformation and thereby may influence teenagers to delete the distinction between accurate and fake information, resulting in misconceptions (Isaacs *et al*., 2024) [17] and (Mcnaughton & Bryen, 2007) [17, 20]. Thus, it turns into a great concern to pay attention to these issues and maintain the adequate AI usage in learning environments.

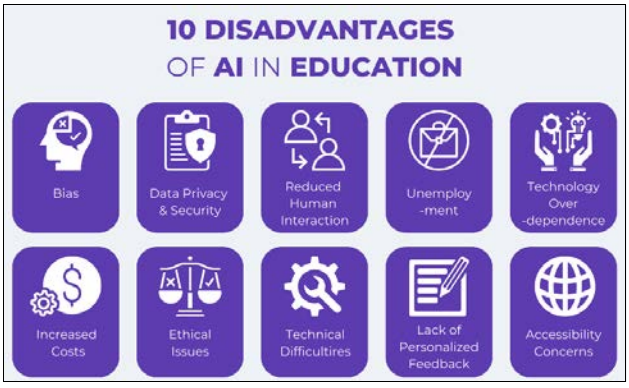

Fig 6: Disadvantages in Adolescent Cognitive Development

The integration of AI in various fields has led to the emergence of various changes in the social, academic, and governance spheres, including education and mental health. The effective use of AI in teenagers' lives can benefit all

aspects of human development issues, cognitive and emotional, as well as social and moral, that are in their active process of adolescence. Thus, by enhancing the effects of artificial intelligence, it is possible to create tools and environment that not only encompass the needs of teenagers in terms of education, but also help in their psychological development and personality as a whole. This paper reviews the proactivity of AI in enhancing teen development, as well as understanding the methods to enhance the potential of AI in helping these youths (McNaughton & Bryen, 2007) [20].

4.3. Developmental scopes for building better ai for teenagers

The incorporation of AI in education enables the student to get the kind of program that will suit him/her in any way they would want. Adaptive learning solutions employing AI are capable of identifying a student's strengths, weaknesses, and learning slope, which allows them to adapt the activity's difficulty levels, maintaining interest while challenging the user appropriately. It does not only enhance students' mastery of knowledge and information processing ability, but also strengthens interest in learning.

It can also have a positive impact socially and psychologically, especially given the gender and age, during which adolescents go through numerous emotional changes. Self-help solutions via AI, chatbots aligned to the need for a quick solution or talking to mental health apps can supplement help to those hesitant teens. This can operate to destigmatize mental health services and to make them more readily available to the population.

AI can also enhance the overall creativity and critical thinking skills of teens by use of instruction games and simulation through interaction with the teaching AI. They discover that it is these kinds of practical exposures that are essential for honing such high order skills as critical thinking and problem solving skills. Other AI technologies, such as musical instruments and Digital Painting, can also help to unleash creativity in people.

However, to avoid compromising social and professional standards, practical application of AI for teens must remain ethical and responsible. Several solutions have been proposed: data privacy must be considered, one needs to have time offs, and limited technology usage. This interaction can involve the engagement of psychologists and educators, in addition to teenagers, to create supportive, efficient, and youth-responsive technologies.

Addressing the digital divide, which divides people with and without access to modern technologies, is also crucial. AI-driven teaching tools should be made available to all teens, regardless of socioeconomic status, by providing inexpensive gadgets, internet, and digital literacy training.

5. Results

From the above analysis the results state that Artificial intelligence (AI) has revolutionized mental health and social media, with tools like smartphones and wearable devices replacing psychologists. However, AI has drawbacks like misdiagnosis and incorrect therapy. The COVID-19 pandemic has highlighted the need for adolescent-specific AI, incorporating ethical norms, data privacy regulations, and human engagement in mental health support. AI can offer personalized instruction, information accessibility, problem-solving skills improvement, and varied learning methods. However, overuse can hinder critical thinking, privacy and ethics concerns arise from data collection, and AI may spread inaccurate information. AI in education can offer customized learning experiences, improve cognitive growth, and promote mental well-being. Collaboration between psychologists, educators, and teens is crucial for creating compassionate AI technologies and addressing the digital divide.

6. Conclusion

Concluding this study and explaining the importance of AI for teenagers' cares, values, considerations, and effects on their mental health, the presented study reveals the positive and negative outcomes of applying AI for enhancing critical thinking and decision-making skills. On the positive side, AI can always increase the cognitive skills of individuals and also provide a great source of education but on the other side, it can reduce the mechanical skills of the individual, affect solo thinking abilities and can give rise to many health issues. It is important to remember that sometimes it's better not to over rely on the AI and preserve the good old methods of learning at schools, colleges and universities to make teens develop both cognitive and emotional skills**.**

6.1 Future scope

Further research needs to focus on the longitudinal outcome of the use of AI in the lives of teens, and the best strategies to counteract any possible detrimental effects on their development and wellbeing.

6.2 Suggestions

- There should be close attention paid to AI uses by educators and parents,
- Variety of the learning experiences should be encouraged,
- Teenagers should engage in activities that exercise their emotions and thoughts.

7. References

1. Alam A. Should robots replace teachers? Mobilisation of AI and learning analytics in education. In: 2021 International Conference on Advances in Computing, Communication, and Control (ICAC3); c2021 Dec; [place unknown]: IEEE; c2021. p. 1-12.
2. American Society of Radiologist Technologies. Artificial Intelligence Survey; c2019.
3. Batty M. Artificial intelligence and smart cities. Environ Plan: Urban Anal City Sci. 2018;45(1):3-6.
4. Cao XJ, Liu XQ. Artificial intelligence-assisted psychosis risk screening in adolescents: Practices and challenges. World J Psychiatry. 2022;12(10):1287.
5. Chi OH, Denton G, Gursoy D. Artificially intelligent device use in service delivery: A systematic review, synthesis, and research agenda. J Hosp Mark Manag. 2020;29(7):757-786.
6. D'alfonso S, Santesteban-Echarri O, Rice S, *et al*. Artificial intelligence-assisted online social therapy for youth mental health. Front Psychol. 2017;8:796.
7. Desouza KC, Dawson GS, Chenok D. Designing, developing, and deploying artificial intelligence systems: Lessons from and for the public sector. Bus Horiz. 2020;63(2):205-213.
8. Duckworth AL, Grant H, Loew B, Oettingen G, Gollwitzer PM. Self-regulation strategies improve

self-discipline in adolescents: Benefits of mental contrasting and implementation intentions. Educ Psychol. 2011;31(1):17-26.
9. Edwards C, Edwards A, Stoll B, Lin X, Massey N. Evaluations of an artificial intelligence instructor's voice: Social Identity Theory in human-robot interactions. Comput Hum Behav. 2019;90:357-362.
10. Giovanelli A, Rowe J, Taylor M, *et al*. Supporting adolescent engagement with artificial intelligence–driven digital health behavior change interventions. J Med Internet Res; c2023 .p. 25.
11. González Tigrero RO. Advantages and disadvantages of artificial intelligence in the learning process in teenagers. [Bachelor's thesis]. La Libertad: Universidad Estatal Península de Santa Elena; c2024.
12. Good C, Aronson J, Inzlicht M. Improving adolescents' standardized test performance: An intervention to reduce the effects of stereotype threat. J Appl Dev Psychol. 2003;24(6):645-662.
13. Goralski MA, Tan TK. Artificial intelligence and sustainable development. Int J Manag Educ. 2020;18(1):100330.
14. Guo Y, Hao Z, Zhao S, Gong J, Yang F. Artificial intelligence in health care: A bibliometric analysis. J Med Internet Res. 2020, 22(7).
15. Gupta D, Singhal A, Sharma S, Hasan A, Raghuwanshi S. Humans' emotional and mental well-being under the influence of artificial intelligence. J ReAttach Ther Dev Divers. 2023;6(6s):184-197.
16. Inkster B, Sarda S, Subramanian V. An empathy-driven, conversational artificial intelligence agent (Wysa) for digital mental well-being: real-world data evaluation mixed-methods study. JMIR Mhealth Uhealth. 2018, 6(11).
17. Isaacs N, Ntinga X, Keetsi T, *et al*. Are mHealth interventions effective in improving the uptake of sexual and reproductive health services among adolescents? A scoping review. Int J Environ Res Public Health. 2024;21(2):165.
18. Jakhar D, Kaur I. Artificial intelligence, machine learning and deep learning: Definitions and differences. Clin Exp Dermatol. 2020;45(1):131-132.
19. Kaplan A, Haenlein M. Rulers of the world, unite! The challenges and opportunities of artificial intelligence. Bus Horiz. 2020;63(1):37-50.
20. Mcnaughton D, Bryen DN. AAC technologies to enhance participation and access to meaningful societal roles for adolescents and adults with developmental disabilities who require AAC. Augment Altern Commun. 2007;23(3):217-229.
21. Muro M, Maxim R, Whiton J. Automation and artificial intelligence: How Machines are Affecting People and Places; c2019.
22. Musikanski L, Rakova B, Bradbury J, Phillips R, Manson M. Artificial intelligence and community well-being: A proposal for an emerging area of research. Int J Community Well-Being. 2020;3(1):39-55.
23. Pedro F, Subosa M, Rivas A, Valverde P. Artificial intelligence in education: Challenges and opportunities for sustainable development. Paris: UNESCO; c2019.
24. Rowe JP, Lester JC. Artificial intelligence for personalized preventive adolescent healthcare. J Adolesc Health. 2020, 67(2).
25. Schwalbe N, Wahl B. Artificial intelligence and the future of global health. Lancet. 2020;395(10236):1579-1586.
26. Shank DB, Graves C, Gott A, Gamez P, Rodriguez S. Feeling our way to machine minds: People's emotions when perceiving mind in artificial intelligence. Comput Hum Behav. 2019;98:256-266.
27. Siontis KC, Noseworthy PA, Attia ZI, Friedman PA. Artificial intelligence-enhanced electrocardiography in cardiovascular disease management. Nat Rev Cardiol. 2021;18(7):465-478.
28. Topol EJ. High-performance medicine: The convergence of human and artificial intelligence. Nat Med. 2019;25(1):44-56.
29. Unicef. Policy guidance on AI for children. New York, NY: UNICEF Office of Global Insight and Policy; c2021.
30. Welk GJ, Corbin CB, Dale D. Measurement issues in the assessment of physical activity in children. Res Q Exerc Sport. 2000;71(sup2):59-73.
31. Williams R, Park HW, Breazeal C. A is for artificial intelligence: the impact of artificial intelligence activities on young children's perceptions of robots. In: Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems; c2019; [place unknown]: ACM; c2019. p. 1-11.