

The Illusion of Understanding: Digital Empathy and Emotional Mimicry in AI-Driven Education

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Abstract. The phenomenon of increasing algorithmic comfort can be described as a process in which apparent security turns into a serpent embrace-like pressure, with increasing automation producing a tension between comfort and suffocation, as well as a dynamic of resistance, adaptation, and release. In the age when education is shaped according to code, the rule prevailed: “*no more endless hours creating something.*” Efficiency has become the new holy grail, but it is increasingly being forgotten that this convenience comes at a price – the loss of creative effort and human authenticity.

Within the Education 4.0 paradigm, contemporary education strives to develop the skills of the future – creativity, critical thinking, and digital literacy – while at the same time increasingly relying on large language models (LLMs) like ChatGPT. However, we cannot help but wonder if this approach, while opening up possibilities for new forms of learning, actually leads to a superficial automation of the process that ignores the key component of learning – the emotional dimension. The emotional mimicry that large language models achieve through imitating empathy and using apparently empathic phrases actually remains on the surface, as confirmed by research showing that students who use LLM tools record less cognitive effort, as well as a lower quality of reasoning – which indicates emotional shallowness and thought passivation.

The findings of a survey conducted on a sample of 60 students show that young users simultaneously recognize and support the practical benefits of AI tutors, yet express concerns about cognitive addiction and illusory empathy. This study examines the consequences of LLM tutor-based educational practices on thought identity, emotional depth, and confidence development. The findings, including the results of the survey, indicate that interaction with algorithmic tools reduces creative and semantic brain activity, encouraging superficial automatism and digital dementia, i.e., a decline in memory, concentration, and critical reasoning. In response, the paper proposes digital emotional literacy as a key pedagogical strategy and safeguard against the manipulation of empathy, the addictive reliance on tutors, and the substitution of emotional reality for algorithmic comfort.

Keywords: Artificial Intelligence in Education, Emotional Intelligence, Simulation of Empathy.

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1 Introduction

In the context of the growth of emotional mimicry and reliance on algorithmic tutors, the emergence of digital dementia is particularly worrying - a phenomenon of reduced memory, focus and critical reasoning due to the increasingly frequent delegation of thought processes to technology. We came to this phenomenon through the daily use of artificial intelligence and undermining its penetration into all segments of not only business, but also education. In this way, we created a symbiotic, increasingly unbreakable bond with smart tutors.

Due to the rapid penetration of generative AI systems into education, digital natives stand out among the most affected groups [1] - generations born after 1980, who grew up in the environment of the Internet and digital technologies. Although they are fluid in the use of technology, according to Prensky [1], their excessive reliance on digital tools can lead to lower emotional literacy, as it favors quick, superficial interactions instead of deep interpersonal connections, which limits the development of empathy and emotional depth. Those with less emotional and digital literacy in the group of digital migrants are the most vulnerable and always at greater risk [2].

The risk is reflected in the unpreparedness to face the challenges that artificial intelligence brings, and due to the lack of developed skills, they often find themselves in a foggy ability to distinguish simulated empathy from the real one. The explanation is simple: lacking these skills, they are less resistant to errors and illusions of understanding and less able to distinguish the simulated empathy of such algorithms from real empathy [2].

Various authors have warned that phenomena such as simulated empathy in AI carry the risk of emotional manipulation of the user. Although an advanced chatbot may appear empathetic, it has no real feelings behind the words which Kurian [2] describes as empathy gap, i.e. lack of emotional empathy, and even the opposite of empathy, due to the misleading effect on the user. Studies have documented cases of humans perceiving AI companions as friends or partners [3], which raises the ethical question of reciprocity - the relationship is always one-sided and inauthentic [4].

This can lead to a reduction in human interaction or an impairment in the understanding of real emotions [3]. Accordingly, in the next phase of AI development, the key question is how (and whether) machines can go beyond mere imitation and achieve some form of true emotional intelligence instead of programmed emotional performance [2]. If this is not possible, the imperative of transparency is imposed - the user must know how to communicate with the algorithm in order to avoid unethical manipulation of emotions [4].

The combination of that emotional insensitivity and digital credulity (trusting the algorithm) makes young people especially vulnerable. In short, "*empathy among algorithms*" is currently a one-way street: algorithms imitate empathy, and people (especially children) project it onto them. However, that illusion can cost a young person's development dearly if it is not addressed through education and protective measures.

Further in the paper, we consider the occurrence of emotional mimicry in AI tutors and its implications.

2 Literature Review

People inherently have tendency towards emotional mimicry by spontaneously imitating the expressions of feelings of others. For example, if the interlocutor seems sad or worried, we often adopt a similar facial expression or tone of voice ourselves. This unconscious imitation functions as a social "glue": by harmonizing emotions, communication participants confirm that they share a similar state, which strengthens empathy and trust [5]. Interestingly, research shows that people show similar reactions when their interlocutor is a machine. The theory "computers as social actors" [6] showed that users unconsciously apply social norms when interacting with computers. Despite knowing that a computer has no feelings, we respond to a kind voice or message with politeness and compassion, almost as if we were communicating with a person. This phenomenon - anthropomorphizing, i.e. attributing human characteristics to non-human entities - explains why a digital assistant that responds with "I understand, I'm here to help" can provide some comfort to the user. Children and teenagers especially easily perceive digital characters (chat-bots, voice assistants) as quasi-friends - they address them in a personalized way, trust them and expect understanding from them, often not making a clear distinction between simulation and real empathy [7]. The human brain responds to such "social signals"—a warm tone of voice or caring words—similarly whether they come from a human or an algorithm, as long as the signals are believable [6].

The phenomenon known as the "Google effect" or the so-called digital amnesia, indicates that the availability of information only a click away from us changes the way we remember it. When we know they are readily available, we are less likely to remember them permanently [8]. In an educational context, AI tutors further relieve students by taking on routine cognitive load, which can allow focus on more complex tasks [9]. However, research points out that with excessive reliance on such systems, cognitive dependence occurs, followed by a decrease in independent analytical and critical thinking [10].

German neurologist Manfred Spitzer [11] warned that such patterns lead to the phenomenon of digital dementia, a condition in which the excessive use of digital devices leads to impaired memory, poor focus and learning disorders, similar to the symptoms of dementia in old age. Recent research confirms that early and chronic exposure to screens can negatively affect the structure and function of the brain, increasing the risk of cognitive and emotional disorders in young people [12]. In other words, the brain accustomed to constant and fast digital stimuli becomes lazy in memory and focus, which further illuminates the risk of cognitive passivation and loss of autonomy in the era of AI tools.

Can AI "outdo" human empathy? Children as the most vulnerable digital natives who grow up in the center of the empathic gap - must learn where the alive ends and the algorithmic begins. Research shows that they often perceive chatbots as "quasi-friends" and trust them with their feelings, even though algorithms have neither a moral compass nor real empathy [2]. Dangerous examples from practice, such as Alexa or Snapchat AI, show that such trust can be risky [13]. The youngest members of society

are especially susceptible to these challenges. Their developing brains can be influenced by the increasing amount of time spent on digital devices. Increasing digital dementia - exposure to a large amount of information and distractions - has a negative impact on our ability to focus, think deeply and remember [14]. Paradoxically, sometimes AI responses are rated more empathetic than human responses [15, 16], which illuminates how easily we mix simulation and reality.

3 Methodology and results

The research was conducted through an anonymous online survey (Google Forms) [17], in September 2025. The sample consisted of 60 students of various study programs aged 20–25. All respondents had previous experience with AI tools, most often ChatGPT. The questionnaire combined closed and open questions where the quantitative data was analyzed descriptively, while the open answers were processed by thematic analysis.

Key findings

- **Frequency of AI use** - 47% of students use AI almost daily, 30% occasionally, 17% rarely, and only 7% never use it.
- **Experiencing AI empathy** - More than half (55%) rate AI messages as mechanical and without impact, while 35% admit that they still like them and find them [potentially motivating.
- **Comparison with lecturers** - 57% of students stated that at least sometimes the AI seemed more pleasant or understandable to them than the lecturer; only 27% say they have never felt it.
- **Trust in AI statements of understanding** - Half (47%) partly believe phrases like "I understand that it is difficult for you", but a third do not believe them at all, while only a small number perceive them as sincere.
- **Digital emotional literacy** - 67% of students think that education about emotional literacy should be introduced in the digital environment, while 22% remain undecided, and 8% think that it is not necessary. In the open answers, it was suggested that this topic should be included at least in a few lessons and that the lecturers should first develop these competencies themselves.

4 Discussion

The results show that students recognize the paradox of AI tutoring: on the one hand, they perceive AI as more approachable and patient than some lecturers, and on the other hand, they clearly distinguish programmed kindness from real human empathy. This

double awareness points to the existence of an intuitive digital emotional literacy - the ability to enjoy the benefits of AI, without fully trusting its "empathy". These findings can also be viewed through the concept of a digital 'filter bubble' [14], where algorithms shape our experience of reality so that it increasingly resembles what we already think and feel. This narrows the space for dealing with different perspectives, which further complicates the development of empathy and critical thinking.

Secondly, students are aware that AI reduces cognitive effort, but also the risk of passivation: it is easier to ask than to think. Such self-reflection is valuable - it shows that young people are aware of the "trade-off" effect of modern technology: they gain efficiency, but lose some of the exercise. These results strongly match the concept of cognitive unloading [18], and the theses of Spitzer [11], about the decline of motivation for deeper thinking.

Interestingly, even those skeptical of AI "empathy" see value in learning about it; their caution is precisely the argument that such literacy should be widely developed. Such attitudes are practically a call to action for the educational system. While digital literacy has traditionally been associated with technical skills, students clearly signal that education must also include the social-emotional dimension of digital intelligence.

In addition to quantitative findings, students' open-ended responses provide valuable insights into their attitudes and feelings. They supplement the figures with personal experiences, dilemmas and suggestions, revealing how young people perceive the presence of AI in learning – not only as a tool, but also as a phenomenon that changes their habits, expectations and way of thinking.

Qualitative insights from respondents

"AI-generated emotion makes the interaction more interesting, but I mainly use it for practical purposes."

"AI is effective on its own in many areas. I believe it supports both creative and empathic work."

"I believe that we rely too heavily on AI and that it may negatively affect certain professions."

"It can be addressed in one or several classes, but it should not take too much time away from core courses."

"We should learn how to use AI—for example, as a tool for information gathering—but its analyses should not be taken for granted, and critical thinking should never be abandoned."

"Lecturers need to be trained in emotional simulation and interface psychology in order to prepare students for digital reality."

"Illusion is a sufficiently accurate, yet incomplete term. Its meaning depends on numerous factors, which is why even this concept may feel like an illusion today."

Graphical representation of results

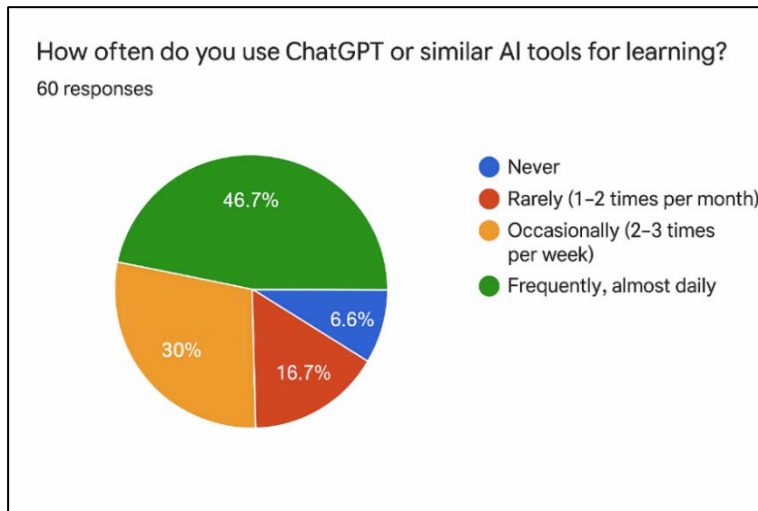


Fig. 1. Frequency of AI tutor use among students (N = 60). The majority report daily or occasional use, while only 7% have never used AI.

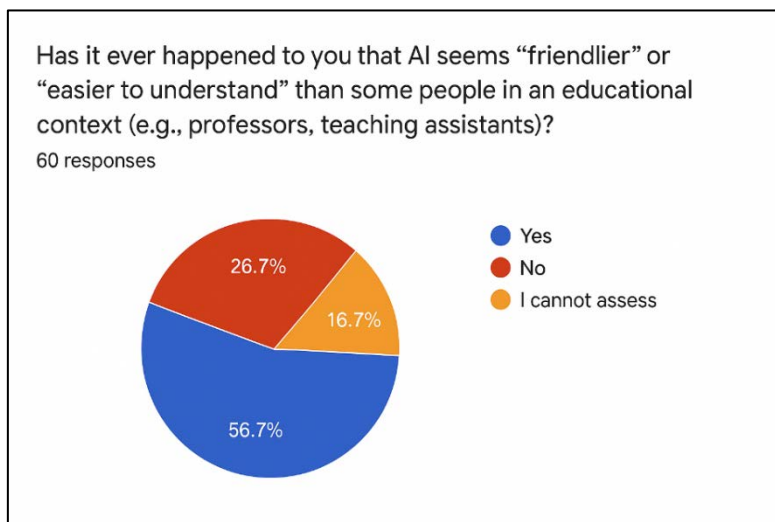


Fig. 2. Perceptions of AI empathy compared to lecturers. More than half of the students state that AI has sometimes appeared more pleasant or understanding.

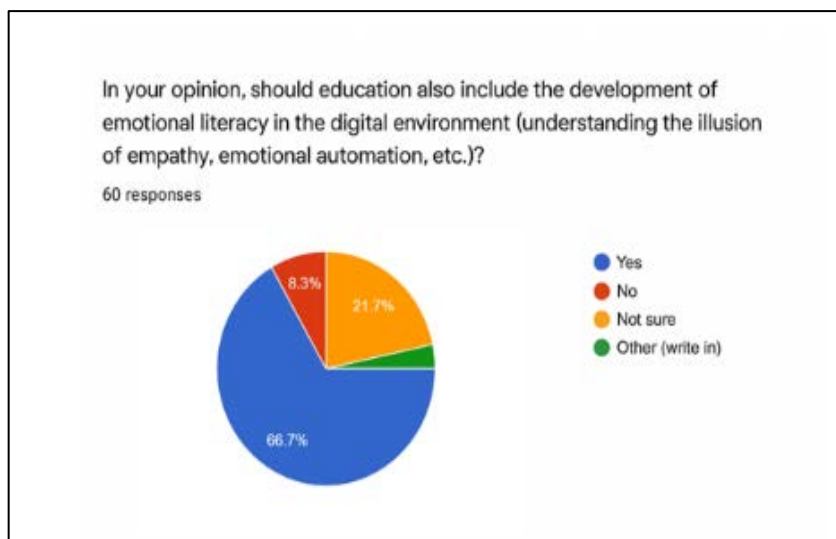


Fig. 3. Attitudes toward introducing digital emotional literacy. Approximately two-thirds of students support this initiative.

5 Conclusion

Our mini-research in the form of a survey showed that students have already recognized both the strengths and weaknesses of artificial intelligence in learning. AI helps them progress through the syllabus more quickly, but it often encourages shortcuts and reduced effort. Paradoxically, many perceive the “empathy” of chatbots as more pleasant than human empathy, even though they are aware that it is only an algorithmic illusion.

This double awareness, simultaneous trust and doubt, opens up an important space for education to assume a new responsibility: developing digital emotional literacy and introducing training on how to use AI without losing one’s own thinking and emotional capacities. Continued research and practice in this area are essential. Empathy, creativity, and authenticity must remain at the core of education, as these are priceless human skills that no algorithm will ever be able to fully replicate.

If neglected, there is a risk that younger generations will become hostages of “digital dementia”—accustomed to the numbing comfort of quick answers, but increasingly weakened in memory, attention, and critical thinking. The algorithmic “filter bubble” further deprives us of emotional expression and contributes to a weakening of empathy. If students grow up in such a closed environment, we risk raising a generation that will find it increasingly difficult to engage in independent thinking.

Therefore, it is crucial that the educational system does not turn into a uniform army of AI pioneers, but instead into a space of free choice and critical inquiry. Not all ease is beneficial: sometimes it is precisely the difficulty of the path that shapes our authenticity. If we forget this, we risk becoming mere pieces on the board of technological

progress pawns moved by someone else's rules, rather than active players with our own value and meaning.

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References

1. Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, 9(5), 1–6. <https://doi.org/10.1108/10748120110424816>
2. Kurian, N. (2023). AI's empathy gap: The risks of conversational Artificial Intelligence for young children's well-being and key ethical considerations for early childhood education and care. *Contemporary Issues in Early Childhood*, 26(1), 1–8. <https://doi.org/10.1177/14639491231206004>
3. Ta, V., Holländer, A., & Krämer, NC (2021). Too much information? Exploring the relationship between information disclosure and the development of parasocial relationships with virtual agents. *Computers in Human Behavior*, 120, 106756. <https://doi.org/10.1016/j.chb.2021.106756>
4. Scheutz, M. (2012). The inherent dangers of unidirectional emotional bonds between humans and social robots. In P. Lin, K. Abney, & GA Bekey (Eds.), *Robot ethics: The ethical and social implications of robotics* (pp. xx–xx). MIT Press.
5. Chartrand, T. L., & Bargh, J. A. (1999). The chameleon effect: The perception–behavior link and social interaction. *Journal of Personality and Social Psychology*, 76(6), 893–910. <https://doi.org/10.1037/0022-3514.76.6.893>
6. Nass, C., & Moon, Y. (2000). Machines and mindlessness: Social responses to computers. *Journal of Social Issues*, 56(1), 81–103. <https://doi.org/10.1111/0022-4537.00153>
7. Rutledge, P. B. (2025, June 24). Kids and chatbots: When AI feels like a friend. *Psychology Today*. <https://www.psychologytoday.com/intl/blog/positively-media/202506/kids-and-chatbots-when-ai-feels-like-a-friend>
8. Storm, BC, Stone, SM, & Benjamin, AS (2017). Using the internet to access information inflates future use of the internet to access other information. *Memory*, 25(6), 717–723. <https://doi.org/10.1080/09658211.2016.1210171>
9. Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education: Promises and implications for teaching and learning*. Boston, MA: Center for Curriculum Redesign.
10. Roll, I., & Wylie, R. (2016). Evolution and revolution in artificial intelligence in education. *International Journal of Artificial Intelligence in Education*, 26(2), 582–599.
11. Spitzer, M. (2012). *Digitale Demenz: Wie wir uns und unsere Kinder um den Verstand bringen*. München, Germany: Droemer Knaur

12. Kanbaj, A., Demir, H., & Yilmaz, F. (2025). Digital dementia: Early exposure to digital media and cognitive risks in adolescents. *Journal of Neurological Sciences*, 42(1), 55–67.
13. Paul, K. (2023, May 3). Snapchat's My AI chatbot offers unsafe advice to teens, investigation finds. *The Guardian*. <https://www.theguardian.com/>
14. Vučenović, T., & Stojanović, M. (2024). *Digital Communications: Management, Marketing Strategies and Practical Examples*. Novi Sad: Academic book.
15. Ayers, JW, Poliak, A., Dredze, M., Leas, EC, Zhu, Z., Kelley, JB, Faix, DJ, Goodman, AM, Longhurst, CA, & Hogarth, M. (2023). Comparing physician and artificial intelligence chatbot responses to patient questions posted to a public social media forum. *JAMA Internal Medicine*, 183(6), 589–596. <https://doi.org/10.1001/jamainternmed.2023.1838>
16. Chen, D., Leung, C., Chen, B., Miao, C., & Barnes, B. (2024). Physician and artificial intelligence chatbot responses to cancer patient questions posted on a social media forum: A comparison of empathy and quality. *JAMA Oncology*. Advance online publication. <https://doi.org/10.1001/jamaoncol.2024.0836>
17. <https://docs.google.com/forms/d/e/1FAIpQLSc6SDCNyuF5xGg3o3eXcqNI7EtiAn-jVoopWvBMGvBXk7-S6w/viewform>
18. Sparrow, B., Liu, J., & Wegner, D. M. (2011). Google effects on memory: Cognitive consequences of having information at our fingertips. *Science*, 333(6043), 776–778. <https://doi.org/10.1126/science.1207745>