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Digitalisation and Emotional Virtues:
Opportunities and Challenges of Artificial Intelligence and Virtual Reality

Digitalizacija i emocionalne vrline.
Prilike i izazovi umjetne inteligencije i virtualne stvarnosti

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Abstract

This article examines how digitalisation through artificial intelligence (AI) and virtual reality (VR) is changing our emotional lives and moral development, with a focus on adolescence. Digitalisation is understood not only as a technological change, but also as a socio-cultural change that reshapes knowledge, relationships, and identity. AI provides tools to simulate empathy, manage emotional regulation and support adaptive coping; while VR creates immersive environments that promote empathy, perspective-taking, and social sensitivity. Adolescence is highlighted as a particularly sensitive phase for these interventions, characterised by neurocognitive plasticity and the formation of a moral identity. Digital technologies can offer the opportunity to cultivate emotional virtues such as resilience, gratitude, and courage. At the same time, however, they harbour risks such as over-reliance on algorithms, emotional superficiality, and overwhelming virtual experiences. The article concludes that AI and VR should not replace human relationships but serve as complementary tools. A human-centred approach is essential to ensure that these technologies promote emotional virtues and contribute to human well-being.

Key words: digitalization, emotional virtues, artificial intelligence, virtual reality, adolescence

Sažetak

Ovaj članak ispituje kako digitalizacija pomoću umjetne inteligencije (UI) i virtualne stvarnosti (VR) mijenja emocionalni život i moralni razvoj, s naglaskom na vrijeme adolescencije. Digitalizacija se ne shvaća samo kao tehnološka promjena nego i kao

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sociokulturna promjena koja preoblikuje znanje, odnose i identitet. UI pruža alate za simuliranje empatije, upravljanje regulacijom emocija i podršku adaptivnom suočavanju, dok VR stvara imerzivna okruženja koja potiču empatiju, zauzimanje perspektive i društvenu osjetljivost. Adolescencija se ističe kao posebno osjetljiva faza za te intervencije, karakterizirana neurokognitivnom plastičnošću i formiranjem moralnog identiteta. Digitalne tehnologije mogu ponuditi priliku za njegovanje emocionalnih vrlina poput otpornosti, zahvalnosti i hrabrosti. Međutim, istodobno nose i rizike, poput prevelikog oslanjanja na algoritme, emocionalne površnosti i preopterećenja virtualnim iskustvima. U članku se zaključuje da umjetna inteligencija i virtualna stvarnost ne bi trebale zamijeniti ljudske odnose, već služiti kao komplementarni alati. Pristup usmjeren na čovjeka ključan je kako bi se osiguralo da te tehnologije promiču emocionalne vrline i pridonose ljudskoj dobrobiti.

Ključne riječi: digitalizacija, emocionalne vrline, umjetna inteligencija, virtualna stvarnost, adolescencija

Introduction

Digitalisation has led to profound changes in almost all areas of human activity, from communication and education to healthcare, administration, business, and even theology. This process refers not only to the conversion of analogue data into digital form, but to a broader socio-technical transformation in which digital technologies increasingly mediate the way people interact, think, work, and shape their identity. As digital infrastructures become embedded in everyday practises, they are reconfiguring social relationships and influencing how we perceive and interact with the world.

Among the numerous digital technologies, two stand out due to their rapid development and profound epistemological implications: artificial intelligence (AI) and virtual reality (VR). AI systems, particularly large-scale language models (LLM) and machine learning algorithms, are increasingly involved in tasks that were once considered the exclusive domain of human cognition, such as reasoning, prediction and even creative problem-solving (Olawade et al. 2024, 5-6). Additionally, VR technologies offer immersive experiences that can simulate complex environments, blurring the boundaries between the virtual and the real (Čekić 2025, 21). This makes AI and VR the most current and transformative expressions of digitalisation today.

1. Epistemological Shift

One of the most important effects of this ubiquitous digitalisation is its impact on epistemology. It raises fundamental questions about what knowledge is,

how it is generated or acquired, and how its validity is assessed in digitally mediated contexts. LLMs could contribute to a new, naturalised epistemology that combines empirical data, cognitive science, and computer models (Mugleston et al. 2025, 3). Whether this leads to a coherent epistemological framework remains an open question, but it is clear that digital technologies such as LLMs are reshaping the landscape of epistemological research. Increasing reliance on algorithmic systems and immersive environments challenges traditional human-centred models of knowledge by introducing new, technologically mediated ways of knowing. On the other hand, the question arises as to whether experiences in a simulated world can be regarded as genuine knowledge of reality. Even if VR-based platforms can significantly improve emotional regulation and increase the quality of interpersonal relationships in digital contexts (Čekić 2025, 21), the traditional epistemological viewpoint describes the creation of knowledge through direct, embodied engagement with the world.

The rise of LLMs challenges the classical model of knowledge as justified true belief, and calls for an expanded epistemological framework (Mugleston et al. 2025, 3-4). Although they lack awareness or explicit justification, LLMs can perform complex cognitive tasks such as summarisation, translation, and code generation. Nevertheless, they fail to make consistent deductive inferences, struggle with contextual shifts, and may »hallucinate« incorrect content. Their epistemological value therefore depends on how they are used and interpreted by humans. In light of recent developments, we have found that AI contributes to the development of a naturalised epistemology that integrates empirical data, cognitive science, and computational models that resemble natural cognition to some extent and reorient knowledge (Mugleston et al. 2025, 5).

VR technologies introduce simulated and embodied forms of knowledge. Immersive virtual experiences – such as first-person simulations – allow users to develop perspective-taking and empathy, which contributes to a deeper, experiential understanding of complex social realities (Fisher 2022, 2; Čekić 2025, 22-23). In this context, digital technologies do not merely serve as neutral tools; they actively shape the epistemic frameworks within which knowledge is produced and interpreted (Chen, Zhu, and Díaz del Castillo H. 2023, 100184).

We can assume that in AI and VR-supported environments, knowledge will no longer be generated by humans alone, but will increasingly be co-produced in human–machine partnerships. LLMs act as functional epistemic

agents that influence what is known and how it is known (Mugleston et al. 2025, 17). This challenges the anthropocentric model of epistemology by introducing non-human participants into the construction of knowledge. The »thinking« of LLMs, however, lacks the semantic content (Mugleston et al. 2025, 11; Searle 2002, 673), moral accountability (Strahovnik and Centa Strahovnik 2024, 8), and capacity for judgement (Mugleston et al. 2025, 15) that are crucial in many epistemic contexts. Their epistemological value should therefore depend on how people use and interpret them.

2. Emotional Virtues

Emotional virtues – such as empathy, gratitude, integrity, resilience, and emotional transcendence – are increasingly recognised as central to moral action, personal well-being, and social cohesion. Virtues relate to specific emotional patterns, with emotional virtues shaping how we perceive, value, and act in moral situations. Emotions are not merely reactions, but are integral to moral cognition and judgment (Roberts 2013, 1-24). Emotional virtues can be defined as a tripartite model comprising (1) idealized traits, (2) complex dispositions, and (3) higher-order capacities.

Idealised emotional virtues such as gratitude and compassion are fundamental qualities that promote empathy and morally oriented behaviour. These virtues facilitate interpersonal harmony and altruistic engagement, and often serve as emotional bridges that support prosociality (Karnaze, Bellettiere, and Bloss 2022, 8). Gratitude has been empirically linked to increased empathy and reduced aggression (Dewall et al. 2012, 238), while compassion promotes sensitivity to the suffering of others and motivates helping behaviour (Stevens and Taber 2021, 107925).

The second level consists of complex emotional dispositions – such as resilience, grit and mindfulness – that enable individuals to cope with adversity and maintain their ability to self-regulate over time (Duckworth et al. 2007, 1098). Empirical evidence supports the assertion that resilience and mindfulness enhances well-being by promoting a growth-oriented response to stress and enabling individuals to bounce back from adversity with greater psychological strength (Yasmeen et al. 2024, 843–845). In addition, the construct of mental toughness, which includes grit, emotional control, and engagement, has been shown to be a more robust predictor of happiness than grit, resilience, or self-efficacy alone. Key components such as engagement, self-confidence, and emotional control have been shown to be particularly important

for improving subjective well-being (St Clair-Thompson and London 2024, 4-5) and also promoting coping strategies.

The highest level includes virtues such as courage and emotional transcendence, which help the individual to override immediate affective impulses and act in accordance with enduring moral obligations. In particular, practical wisdom has been shown to be the strongest predictor of effective emotional regulation (Kim et al. 2024, 6), guiding emotionally-charged decisions through balanced judgement. These virtues represent integrative abilities that bring together affective and cognitive processes in the service of emotional regulation.

Emotional virtues play an indispensable role in the digital age. By categorising them into a three-part model – idealised traits (e.g. gratitude and compassion), complex dispositions (e.g. resilience, grit, and mindfulness) and higher-order skills (e.g. courage, practical wisdom, and emotional transcendence) – we can apply the potential changes that AI and VR technology will bring to the promotion of empathy, coping strategies, and emotional regulation in humans.

3. The Role of Artificial Intelligence in Promoting Empathy, Coping Strategies and Emotional Regulation

We can begin with a deceptively simple but conceptually complex question: »Is artificial intelligence (AI) intelligent?« This query invites not only a technical analysis of the capabilities of machines, but also a philosophical reflection on the nature of intelligence itself. In the discourse on AI, the term »intelligence« is often given multiple meanings which are contradictory at times, being defined as a functional ability to perform tasks associated with human cognition, a philosophical category, and as a moral or autonomous property of action.

According to the traditional definition (Sternberg 1985), intelligence is the ability to learn from experience, adapt to the environment, and solve problems. We can see that large LLMs not only learn from large data sets, but also adapt to new tasks and outperform humans in areas such as pattern recognition, language processing, and optimisation (Mugleston et al. 2025, 11). But we must also consider Searle's (1980) famous »Chinese Room« argument, which questions the assumption that computer models entail understanding, stating that even if the model successfully imitates human conversational behaviour, it remains without intentionality or consciousness. Similar limitations can be observed with emotional intelligence. Although AI can recognise emotional

cues in texts or voices, this remains more a form of pattern recognition than an embodied or affective understanding. Additionally, the AI has no values of its own and cannot be held accountable, unlike moral agents (Strahovnik and Centa Strahovnik 2024, 8). Therefore, what AI exhibits might better be described as »synthetic performance« rather than actual intelligence, since syntactic processing alone is not sufficient for genuine semantic understanding (Searle 2002, 674). In this sense, AI can be considered intelligent in use, though not necessarily intelligent in being.

But even so, we can describe some aspects of promoting empathy, coping strategies, and emotional regulation with the help of AI systems. Although AI lacks affective consciousness, recent research shows that it can be purposefully designed to foster environments that encourage empathic engagement and interpersonal understanding. AI offers the potential to improve empathy, especially in educational and therapeutic settings. AI-powered tools have been shown to stimulate empathic thinking by simulating emotionally-intelligent responses and promoting pro-social behaviour in children (Tanod and Rachmadtullah 2025, 3) and have been used to cultivate emotional literacy and help students reflect on their own values, prejudices, and moral responsibilities (Amini et al. 2025, 6). Expressive AI agents have proven valuable for interventions in mental health and elderly care, where social isolation is widespread, as such agents using gestures and voice modulation can simulate emotional presence and build rapport, even in non-verbal scenarios (Du et al. 2025, 8).

On the other hand, we must also consider the possible dehumanising tendencies of AI. There is growing concern that over-reliance on AI for emotional labour could undermine human sentience and moral agency (Udom and Ekpo 2024, 2). We can observe a persistent emotional divide between human and machine expression, as research shows that readers consistently feel more empathy for stories written by humans than those generated by AI, even when they are unaware of authorship (Shen et al. 2024, 5-6). We can assume that empathy can be enriched – but not supplanted – by technology. AI has the ability to simulate empathy and even foster it under certain conditions, but it does not enable a shared human experience.

AI-powered systems are being developed and tested to help people cope with mental stress, trauma, and uncertainty (Stade et al. 2024, 5). These technologies offer personalised coping suggestions, track users' emotional states, and support decision-making. However, their effectiveness often depends on user trust, transparency, and emotional design. Recent research emphasises

a shift from protective, control-based AI systems to resilience-based systems that enable users – especially young people – to make considered decisions and build coping skills (Wisniewski and Park 2025, 1). AI models encourage active reflection and support rather than passive risk avoidance, and show that AI can support coping if it respects users' agency and social context (Wisniewski and Park 2025, 2). However, problems remain when AI systems are perceived as impersonal or lacking contextual sensitivity. As noted in the critique of algorithmic moderation, such systems can obscure agency and remove the relational elements crucial to psychological coping (Ma and Su 2025, 5).

Emotional regulation is a dynamic, multi-stage process through which individuals modulate their emotional experiences and expressions. It comprises the following strategies: situation selection and modification, attentional deployment, appraisal or cognitive change, and response modulation (Gross and Thompson 2007, 5). Contemporary AI systems aim to support emotional regulation in these phases. For example, AI-driven wellness applications assist with situational choices by recommending stress-reducing activities or environments based on biometric and contextual data (Kaklauskas et al. 2011, 14016). Situational adaptation is enhanced by AI in adaptive learning platforms that adjust the difficulty of tasks to minimise frustration and maintain emotional engagement. These digital companions offer continuous, non-judgemental interactions that help users cope with loneliness, stress, and emotional challenges. Users reported benefits such as emotional relief and increased well-being through conversations that often resemble therapeutic interactions (Savic 2024). Cognitive changes are supported by AI algorithms that have been trained on the basis of cognitive-behavioural principles (Ghosh et al. 2023, e41005). Finally, modulation of responses can be facilitated by AI-integrated biofeedback systems that recognise physiological signals and offer real-time interventions to regulate emotional arousal (Jeethu and Judy 2024, 169).

While AI can simulate empathy or suggest regulatory strategies, it does not yet embody the experiential understanding or contextual sensitivity required for nuanced emotional development (Searle 2002, 674). To advance AI-enabled emotional regulation, future systems must not only emulate the mechanics of Gross's stages, but also incorporate human-centred design and ethical frameworks that reflect the complexity of emotional life. Such a framework should not position AI as a substitute for human relationships, but as a complementary tool that enhances emotional virtues.

On the one hand, AI-powered platforms can create personalised and adaptive environments that help young people develop coping strategies, self-awareness, and reflective practises. Recent studies show that resilience-based AI systems encourage young people to make considered decisions and build coping skills rather than relying on passive, risk-avoidant protection (Wisniewski and Park 2025, 1-2). AI tutors and expressive agents can also cultivate empathy and moral sensitivity by encouraging value-orientated reflection and promoting emotional literacy (Amini et al. 2025, 6; Tanod and Rachmadtullah 2025, 3). These interventions are particularly promising during adolescence, a time of heightened neurocognitive plasticity and moral development, when guided digital tools can significantly influence prosocial behaviour and emotional regulation (Amini et al. 2025, 7). On the other hand, while AI offers new ways to strengthen emotional virtues in adolescence, its use must be carefully planned and critically evaluated. The integration of practical wisdom, which has been identified as the strongest predictor of adaptive emotional regulation (Kim et al. 2024, 6), is particularly important. Only by consciously aligning technological capabilities with human virtues can AI serve as an ally in fostering authentic empathy, resilience, and emotional transcendence in the formative years of moral development.

4. Virtual Reality as an »Empathy Machine« in Adolescence

Within the broader epistemological and ethical framework of digitalisation, it is instructive to focus on one of the most sensitive and promising areas of application – the impact of virtual reality on adolescents. Adolescence, as a stage of profound neurological, emotional, and moral development, provides a unique context in which the immersive qualities of VR can significantly shape empathy, emotional regulation, and social responsibility. In this developmental period, we can observe how the philosophical and theological questions of knowledge, emotional virtues, and human dignity in the digital age acquire real pedagogical and pastoral significance.

Virtual reality (VR) is increasingly becoming a subject of research interest and a pedagogical tool, as it enables deep and interactive experiences. Although VR affects various demographic groups, adolescents are a group that, due to intense neurological changes, identity formation, and moral orientation, are particularly sensitive to the effects of immersive media. Adolescence thus represents fertile ground for studying the impact of VR on the develop-

ment of empathy, a key element of emotional literacy and social responsibility (Blakemore and Mills 2014, 189).

However, when studying empathy, it is important to consider two distinct yet interconnected dimensions: cognitive empathy, defined as the ability to understand another's perspective, and emotional empathy, characterised by the capacity to share another's feelings.

In this developmental context, technologically mediated experiences based on embodied perspectives have the potential to act as catalysts for deep emotional learning. Consequently, this study will focus on the specific reasons why the use of VR among young people requires particular consideration while exploring its potential applications in educational contexts – including both formal educational institutions and extracurricular activities – and in the promotion of empathy as a key component of emotional literacy and social responsibility.

Recent studies have investigated the potential of virtual reality (VR) to promote empathy in adolescents. These studies have concluded that VR, combined with machine learning, can help adolescents to recognise and distinguish between different forms of empathy more clearly, such as emotional and cognitive empathy (Vargas et al. 2022, 3). They have also found that VR experiences can lead to greater engagement and empathy, especially when the content is emotionally powerful (Schutte and Stilinović 2017, 709).

However, further research suggests that while VR can increase emotional empathy, it does not necessarily improve cognitive empathy (Martingano, Hererra, Konrath, and McNamara 2021, 25). A review study (Čekić 2025, 23) found that digital communication typically supports cognitive empathy (understanding and interpreting textual and visual cues) better. Moreover, affective empathy (emotional resonance) is often weakened due to the absence of non-verbal cues, such as facial expressions, voice, and body language.

Barbot and Kaufman (2020, 9) emphasise that VR only promotes empathy if the user truly immerses themselves in the experience, which depends on their perception of the virtual body as their own and their ability to control the situation.

Together, these findings suggest that VR has the potential to strengthen empathy in adolescents. However, the careful design and content of the VR experience are crucial. It should also be used in a safe educational and pastoral environment and accompanied by dialogue, reflection, and a focus on real relationships.

5. Adolescence as a Developmentally Sensitive Period: Implications for Educational and Pastoral Work

Adolescence is a critical developmental phase involving intense changes in neurocognitive maturation, personal identity formation, and moral sensitivity (Blakemore and Mills 2014, 188; Sawyer et al. 2018, 224; Baird and Matthews 2025, 463). In this context, empathy plays a significant role in shaping prosocial behaviour and interpersonal relationships (Decety 2010, 260). Research in neuroscience confirms that this period is associated with increased sensitivity to social and emotional stimuli (Levy, Goldstein, and Feldman 2019, 2; Blakemore and Mills 2014, 189).

Neurocognitive changes include the restructuring of self-processing mechanisms, increased susceptibility to peer influence, and the development of cognitive skills, such as understanding another's perspective, and processing emotional expressions–all of which are crucial for social learning (Sebastian, Burnett, and Blakemore 2008, 441; Evans et al., 2021, 2). At the neurobiological level, adolescence is characterised by the limbic system, which regulates emotional responses, maturing faster than the prefrontal cortex, which is responsible for executive functions such as reflection, self-regulation, and ethical judgement (Blakemore and Choudhury 2006, 297). As emotional regions mature earlier, adolescents often exhibit impulsivity and a limited ability to regulate intense emotional states (Castaneda et al. 2017, 454; Crone 2018, 35; Konrad et al. 2013, 428).

This developmental asymmetry means that adolescents are particularly sensitive to emotionally powerful stimuli and susceptible to media influence (Silvers et al. 2012, 12–13; Ratliff et al. 2023, 2). However, neurobiological plasticity also means they are highly responsive to interventions that enhance empathy and reduce the risk of negative psychosocial outcomes, such as peer violence or internal distress (Kral et al. 2018, 2; Poon, Thompson, and Chaplin 2022, 34).

6. VR as a Tool for Emotional and Moral Learning

Virtual reality (VR) facilitates interactive, sensory-rich, first-person simulations, offering users an embodied experience of another's perspective. Empirical research has demonstrated the efficacy of first-person immersive simulations (FPIMS) in fostering both cognitive and affective empathy (Chen and Ibasco 2023, 2). Within an educational framework, VR emerges as a transformative tool, enhancing emotional literacy, comprehension of diversity, and critical thinking skills concerning social issues.

Despite its considerable potential, it is important to acknowledge that VR can also pose certain risks. Emotionally intense content, such as experiences of war, trauma, loss, or displacement, has been shown to overwhelm the emotional systems of adolescents, whose emotional regulation abilities are not yet fully developed (Kaimara, Oikonomou, and Deliyannis 2022, 698–699). The consequences of such experiences can include emotional withdrawal, resistance, or even a lasting aversion to the topics covered (Crone 2018, 37; Kourtesis et al. 2019b, 2).

Adolescents have been shown to be particularly sensitive to emotionally intense stimuli, yet often lack the fully developed mechanisms for effective emotional processing that adults possess (Kourtesis et al. 2019a, 2; Konrad and Uhlhaas 2013, 426; Crone 2018, 36). Exposure to overly stressful content has been demonstrated to result in emotional withdrawal or resistance, which is at odds with the objective of promoting empathy (Crone 2018, 37). This increased susceptibility is attributable to the unique intertwining of rapidly developing socio-affective centres in the brain, and enhanced capacity for emotional experiences during this period of development (McLaughlin, Garrad, and Somerville 2015, 404). Adolescents frequently report experiencing more intense and unstable emotional states than adults. This phenomenon has been associated with the ongoing neurobiological maturation of brain circuits that regulate emotional responses (Silvers et al. 2012, 1243–1244; Ratliff et al. 2023, 3). The neurobiological framework posits that the reward and aversion systems, which are critical for inhibitory control, and the regions activated by emotional stimuli undergo significant transformations during adolescence. This has been shown to engender a normative level of risky behaviour and increase susceptibility to media influences (Walker et al. 2017, 10856–10858). Inappropriately designed content can trigger stress responses, reduce learning motivation, or even lead to long-term resistance to the topic.

Furthermore, social media algorithms frequently generate closed networks of content, also known as »echo chambers«, where users are exposed predominantly to their own perspectives and those of similarly-minded individuals. This can result in selective empathy (empathy limited to one's own group) and reduced openness to diversity (Čekić 2025, 13).

The heightened emotionality of adolescents, combined with the ongoing maturation of neural circuits involved in emotional regulation, underscore the importance of effective emotional regulation strategies during this period (Young, Sandman, and Craske 2019, 2). Consequently, difficulties in regulating emotions during adolescence are strongly associated with the emergence or

worsening of symptoms focused on the internal self. This highlights the need to identify new interventions to improve emotional health in this age group. Despite the increased need for emotional regulation in adolescence, typical strategies such as cognitive reappraisal are less effective for this age group compared to adults, mainly due to the ongoing development of the relevant neural areas (Sahi, Eisenberger and Silvers 2023, 3-5). This makes adolescents more vulnerable to inappropriate emotional responses and underscores the necessity to explore alternative or complementary methods to promote emotion regulation during this pivotal period of development (Young, Sandman, and Craske 2019, 10; Daly et al. 2015, 1).

Virtual reality offers a promising avenue for such interventions, as it enables immersive and interactive environments that can facilitate the development of essential regulatory skills by creating complex social and emotional scenarios (Hadley et al. 2019, 426-427).

A balanced approach is therefore imperative in the design of VR content, ensuring that positive experiences with topics such as environmental protection are complemented by carefully crafted exposure to complex social issues. This approach is crucial in fostering cognitive empathy without inducing emotional overload (Castaneda et al. 2017, 454; Konrad 2013, 426).

7. Educational Opportunities and Ethical Challenges of Using VR with Adolescents

There is increasing recognition in the education sector of the potential for integrating VR technologies into formal and informal learning contexts. Simulations that enable adolescents to experience otherness first-hand (e.g. as a refugee, a disabled person, or a victim of discrimination) appear to promote social sensitivity, self-reflection, and intercultural awareness. However, such applications also raise important questions about the ethical framework for using VR. Potential risks include emotional overload, the creation of false or superficial empathy, and a failure to change behaviour after the simulation ends. To ensure a lasting, reflective effect, it is crucial that VR experiences for adolescents take place in a safe, structured environment with professional support from teachers, psychologists, or mentors.

For empathy to develop into compassion and ethical action, free will, decision-making, and an attitude that transcends the virtual experience are required. Therefore, VR should never replace real community but should serve as a tool to prepare young people for authentic interactions with others.

It is important to emphasise that a teacher's capacity for empathy is a key skill in creating a positive learning environment with young people, as defined in standard frameworks worldwide. This complex skill involves experience sharing, mind reading, and mentalisation (Swan and Riley 2015, 224). Research shows that teachers play a pivotal role in fostering cognitive empathy in adolescents. Vandenbroucke et al. (2018, 129) emphasise the importance of teacher–student interactions in promoting executive functions closely related to empathy. Chan et al. (2021, 4) highlight the effectiveness of mindfulness and experiential learning programmes in strengthening empathy and other social and emotional competencies. In the classroom, empathy can facilitate deeper learning and enhance student engagement. Overall, the findings suggest that teachers can promote cognitive empathy skills in adolescents through positive interactions, mindfulness practices, experiential learning, and social and emotional learning programmes. Nurturing empathy in education is crucial for fostering a supportive learning environment and facilitating the holistic development of students (Weinberger 2017, 192).

In addition to the opportunities that VR brings to education, it is essential to consider the ethical framework for its use, identify risks, and ensure safe implementation among adolescents. The same applies to artificial intelligence, which offers the potential to enhance human capabilities but simultaneously raises questions of risk and ethical evaluation (Centa Strahovnik 2024, 772). VR technology provides a novel way to experience immersion and has significant potential in various fields, including education, pastoral care, therapy, and social interaction (Scurati et al. 2021, 2). However, the promising use of VR, particularly among adolescents, requires a critical examination of its ethical implications and potential risks (Kaimara, Oikonomou, and Deliyannis 2022, 698).

Furthermore, prolonged exposure to digital content may result in empathic desensitisation and diminished empathy for the suffering of others. Additionally, the algorithms that shape young people's experiences in digital environments often create 'echo chambers', where they are primarily exposed to their own beliefs, reducing their openness to diversity (Čekić 2025, 12).

For the effects of VR experiences on adolescents to be sustainable and reflective, it is essential that they occur in a safe, structured environment with professional support from teachers, psychologists, or mentors (Southgate et al. 2018, 1). This cautious approach is especially important given this early stage of VR technology development and its potential to have unforeseen emotional, cognitive, and behavioural effects on young users. Ethical considerations extend beyond individual psychological effects to include broader societal is-

sues, such as the potential for virtual violence and its impact on real-world behaviour, especially when the distinction between virtual and actual harm becomes blurred (Kaimara, Oikonomou, and Deliyannis 2022, 699).

Therefore, robust ethical guidelines and pedagogical frameworks are needed to mitigate risks and enable the responsible use of VR's transformative potential (Southgate et al. 2018, 2).

This emphasises that VR and other digital technologies must always be supplementary, never substituting real, authentic, and ethical encounters with others.

In pastoral and educational work, the synergy between technology and real relationships is crucial. VR can open the door to understanding diversity, but empathy only becomes a path to love, solidarity, and responsibility in a live relationship with a teacher, parent, peer, or mentor.

In this sense, a deeper goal emerges – technology should serve human dignity, not overshadow it. Virtual reality and other digital technologies should always remain supplementary tools, never substitutes for authentic, ethical encounters with others (Čekić 2025, 13).

In conclusion, epistemological reflections on artificial intelligence and VR, together with pedagogical insights into adolescent experience, reveal both the opportunities and the risks of digitalisation. Digital technologies can enhance human understanding, cultivate empathy, and facilitate new avenues for dialogue and community-building. However, these interactions also carry the risk of superficiality, emotional overload, and the replacement of authentic human encounters with simulated ones. From a Catholic standpoint, the pivotal consideration is that technology ought always to serve human dignity and authentic relationships. The Church particularly emphasises the need for ethical regulation of artificial intelligence so that it remains in the service of humanity (Šegula 2024, 900). Virtual reality and artificial intelligence have the potential to serve as valuable instruments in educational settings and pastoral practices. However, it is important to acknowledge that these technologies cannot substitute for the complex and nuanced processes that occur within a living community, where empathy evolves into love, solidarity, and moral responsibility.

Conclusion

The analysis has shown that digitalisation, particularly through AI and VR, is bringing about profound changes in the way knowledge is generated, emo-

tions are regulated, and virtues are cultivated. These technologies are neither neutral tools nor mere extensions of human capabilities; they are actively reshaping epistemological frameworks and emotional landscapes (Mugleston et al. 2025, 3-5). While AI can simulate empathy, provide regulatory strategies, and promote resilience; and VR can enhance perspective-taking and moral sensitivity through immersive experiences (Čekić 2025, 21-23), both technologies remain limited in their ability to embody authentic emotional understanding or moral responsibility (Strahovnik and Centa Strahovnik 2024, 8).

For adolescents, a developmentally sensitive group, the promise of AI and VR lies in their potential to strengthen coping strategies, emotional competence, and empathy at a critical stage of neurocognitive and moral formation (Blakemore and Mills 2014, 188). At the same time, the risks of emotional superficiality, over-reliance on algorithmic mediation, and exposure to overwhelming virtual content caution against uncritical adoption. These ambivalences underline the importance of a human-centred approach.

Such an approach requires that AI and VR not be designed and implemented as substitutes for interpersonal relationships, but as complementary tools that enhance human wellbeing. Ethical frameworks must ensure that technologies serve as facilitators of emotional virtues- gratitude, compassion, resilience, courage and practical wisdom - and not as substitutes for the lived complexity of human experience (Roberts 2013, 1-24; Kim et al. 2024, 6). By embedding these systems in educational, pastoral, and therapeutic contexts that emphasise dialogue, reflection, and community, it becomes possible to harness the strengths of digital technologies while preserving human dignity.

Ultimately, the cultivation of emotional virtues in the digital age will not depend solely on the sophistication of algorithms, but on our commitment to harmonising technological progress with the moral and relational dimensions of human life. AI and VR can indeed become allies in the pursuit of empathy, resilience, and transcendence, provided they remain firmly anchored in a human-centred vision of education, ethics, and care.

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