Jete – Journal of Philosophy, Religious and Cultural Studies
ISSN: 3080-1281. eISSN: 3080-6895.

ФИЛОСОФИЯ – PHILOSOPHY – ФИЛОСОФИЯ

Scientific article
IRSTI 02.11.21

https://doi.org/10.32523/3080-1281-2026-155-2-19-35

NARRATIVE ALGORITHMS AND SUBJECT FORMATION: A PHILOSOPHICAL INQUIRY INTO STUDENT STORYTELLING IN THE AGE OF ARTIFICIAL INTELLIGENCE

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Abstract. The rapid integration of artificial intelligence into educational environments has transformed not only instructional practices but also the conditions under which subjectivity is formed. This article offers a philosophical reflection on student storytelling in the age of AI, examining how narrative algorithms influence processes of subject formation. Drawing on the philosophical tradition that understands narrative as a key mode of self-constitution, the study conceptualizes storytelling as a space where learners construct identity, agency, and moral positioning. The paper then analyzes the algorithm as a form of meaning-structuring, emphasizing mechanisms of algorithmic selection and digital mediation that shape available narrative patterns. In AI-assisted writing practices, student storytelling increasingly emerges as a form of human-machine co-authorship, resulting in a redistribution of agency between learner and system. While such collaboration may expand expressive possibilities, it also introduces risks, including the standardization of identity and the subtle normalization of culturally dominant narrative templates. The article argues that AI does not eliminate subjectivity but transforms its mode of emergence, shifting it toward hybrid and relational forms. The conclusion outlines directions for future empirical research aimed at examining how students negotiate authorship, responsibility, and ethical self-understanding within AI-mediated educational contexts.

Keywords: Artificial intelligence in education; narrative identity; subject formation; student storytelling; algorithmic mediation; human-AI co-authorship; digital agency; educational philosophy.

For citation:
Turarbekova, L., Saparova, D., & Kdyralieva, Zh. (2026). Narrative algorithms and subject formation: a philosophical inquiry into student storytelling in the age of artificial intelligence. Jete – Journal of Philosophy, Religious and Cultural Studies, 155(2), 19-35 https://doi.org/10.32523/3080-1281-2026-155-2-19-35

НАРРАТИВТІК АЛГОРИТМДЕР ЖӘНЕ СУБЪЕКТІНІҢ ҚАЛЫПТАСУЫ: ЖАСАНДЫ ИНТЕЛЛЕКТ ДӘУІРІНДЕГІ ОҚУШЫ СТОРИТЕЛЛИНГІНЕ ФИЛОСОФИЯЛЫҚ ТАЛДАУ

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АЛГОРИТМЫ НАРРАТИВА И СТАНОВЛЕНИЕ СУБЪЕКТА: ФИЛОСОФСКАЯ РЕФЛЕКСИЯ УЧЕНИЧЕСКОГО СТОРИТЕЛЛИНГА В ЭПОХУ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА

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Аңдатпа. Жасанды интеллекттің білім беру ортасына жедел интеграциялануы педагогикалық практикаларды ғана емес, сонымен қатар субъектіліктің қалыптасу шарттарын да өзгертуде. Осы мақалада жасанды интеллект дәуіріндегі оқушы сторителлингіне философиялық рефлексия ұсынылып, нарративтік алгоритмдердің субъектінің қалыптасу үдерістеріне қалай ықпал ететіні талданады. Нарративті өзін-өзі конституциялаудың негізгі тәсілі ретінде қарастыратын философиялық дәстүрге сүйене отырып, зерттеу сторителлингті білім алушылардың бірегейлікті, агенттілікті және моральдық ұстанымды құрастыратын кеңістігі ретінде тұжырымдайды. Бұдан әрі алгоритм мағынаны құрылымдаудың бір формасы ретінде талданып, қолжетімді нарративтік үлгілерді қалыптастыратын алгоритмдік іріктеу және цифрлық медиация механизмдеріне ерекше назар аударылады. Жасанды интеллектті пайдалана отырып жазу тәжірибелерінде оқушы сторителлингі барған сайын адам мен машинаның бірлескен авторлығының формасы ретінде көрініс табады, бұл білім алушы мен жүйе арасындағы агенттіліктің қайта бөлінуіне әкеледі. Мұндай өзара әрекеттестік экспрессивтік мүмкіндіктерді кеңейтуі мүмкін болғанымен, ол идентичтіліктің стандартталуы мен мәдени тұрғыдан үстем нарративтік үлгілердің жасырын нормализациясы сияқты белгілі бір тәуекелдерді де қамтиды. Мақалада жасанды интеллект субъектілікті жоймайтыны, керісінше оның қалыптасу тәсілдерін трансформациялап, гибридтік және реляциялық формаларға бағыттайтыны негізделеді. Қорытындыда жасанды интеллект арқылы медицияланған білім беру тәжірибелері жағдайында оқушылардың авторлықты, жауапкершілікті және этикалық өзін-өзі түсінуді қалай пайымдайтынын зерттеуге бағытталған болашақ эмпирикалық зерттеулердің бағыттары айқындалады.

Аннотация. Интенсивное внедрение искусственного интеллекта в образовательную среду трансформирует не только педагогические практики, но и условия формирования субъектности. В данной статье предлагается философская рефлексия ученического сторителлинга в эпоху искусственного интеллекта с целью анализа того, каким образом нарративные алгоритмы влияют на процессы становления субъекта. Опираясь на философскую традицию, рассматривающую нарратив как ключевой способ самоконституирования, исследование концептуализирует сторителлинг как пространство, в котором обучающиеся конструируют идентичность, агентность и моральную позицию. Далее алгоритм анализируется как форма структурирования смысла, при этом особое внимание уделяется механизмам алгоритмической селекции и цифровой медиации, формирующим доступные нарративные модели. В практиках письма с использованием ИИ ученический сторителлинг все чаще проявляется как форма соавторства человека и машины, что приводит к перераспределению агентности между обучающимся и системой. Хотя подобное взаимодействие может расширять выразительные возможности, оно также несет определенные риски, включая стандартизацию идентичности и скрытую нормализацию культурно доминирующих нарративных шаблонов. В статье утверждается, что искусственный интеллект не устраняет субъектность, а трансформирует способы ее возникновения, смещая их в сторону гибридных и реляционных форм. В заключении обозначаются направления будущих эмпирических исследований, направленных на изучение того, как учащиеся осмысляют авторство, ответственность и этическое самопонимание в условиях образовательных практик, медиированных искусственным интеллектом.

Түйін сөздер: жасанды интеллект білім беруде; нарративтік бірегейлік; субъектінің қалыптасуы; оқушы сторителлингі; алгоритмдік медиация; адам мен жасанды интеллекттің бірлескен авторлығы; цифрлық агенттілік; білім философиясы.

Ключевые слова: искусственный интеллект в образовании; нарративная идентичность; становление субъекта; ученический сторителлинг; алгоритмическая медиация; соавторство человека и ИИ; цифровая агентность; философия образования.

Дәйексөз үшін:
Турарбекова, Л., Сапарова, Д., Қдыралиева, Ж. (2026). Нарративтік алгоритмдер және субъектінің қалыптасуы: жасанды интеллект дәуіріндегі оқушы сторителлингіне философиялық талдау. Jete – Journal of Philosophy, Religious and Cultural Studies, 155(2), .19-35 https://doi.org/10.32523/3080-1281-2026-155-2-19-35

Для цитирования:
Турарбекова, Л., Сапарова, Д., Қдыралиева, Ж. (2026). Алгоритмы нарратива и становление субъекта: философская рефлексия ученического сторителлинга в эпоху искусственного интеллекта. Jete – Journal of Philosophy, Religious and Cultural Studies, 155(2), 19-35 https://doi.org/10.32523/3080-1281-2026-155-2-19-35

Introduction

Research Relevance

The authors of this article proceed from the assumption that the widespread and accelerated integration of artificial intelligence technologies into educational practices leads to a transformation not only of teaching methods but also of the fundamental conditions of the learner's subject formation. In this process, digital environments based on algorithmic systems of text generation and processing become spaces where personal experience, self-understanding, and identity are constructed. In this context, Bernard Stiegler's observation that digital technologies constitute a "pharmakon" (both remedy and poison) is particularly illustrative. That is, they function simultaneously as a means of development and as a source of transformation of human consciousness, altering the modes of knowledge and experience production (Stiegler, 2010; 1998). According to Stiegler, the essence of digital technologies lies in their inherent ambivalence: their capacity to be both beneficial and harmful at the same time, and even inseparably.

In this context, student storytelling acquires particular significance as a practice of creating narrative texts that enable learners to interpret their own experiences, values, and life orientations. What is storytelling? It is a communicative and cultural practice of creating and transmitting narrative structures through which experience is interpreted, meanings are formed, and the subject's identity is constructed. Examples of storytelling include student essays, autobiographical narratives produced by learners, personal essays, digital stories, reflective journals, and narrative projects created within educational environments. In the selected context, storytelling refers to any story created with the assistance of artificial intelligence. Such stories are widespread in contemporary digital communication, including popular social media platforms. In a broader sense, storytelling is understood as the process of organizing events into a coherent narrative that possesses semantic unity, temporal continuity, and interpretative orientation.

In the humanities, storytelling is viewed not only as a means of transmitting information but also as a mechanism of the cultural construction of reality, since through narrative a person structures life experience, assigns meaning to it, and forms an understanding of oneself and the world. In the educational context, storytelling functions as a pedagogical practice that enables learners to reflect on their own experience, develop agency, and construct personal meanings through the creation of narrative texts.

From a philosophical perspective, storytelling can be interpreted as a form of narrative subjectivation, in other words, as a process in which the subject is constituted through the act of telling about oneself, integrating past experience, present condition, and possible projections of the future into a unified structure of meaning. Narrative has traditionally been considered in philosophy as one of the key mechanisms of subject formation, since it is through storytelling that a person organizes the temporality of experience, forms the coherence of biography, and defines one's position in the world. As Paul Ricœur emphasizes, "narrative identity can be understood as the story of a life" (1990, p. 147–148), because narrative connects life events into a meaningful whole and ensures the continuity of selfhood over time. A similar idea is expressed by Charles Taylor, who notes that a person "grasps our lives in a narrative" (1989, p. 47), and therefore self-identification is impossible outside the interpretation of one's life trajectory. Thus, narrative functions not merely as a form of expressing experience but as a fundamental mechanism of constituting the subject within the cultural space.

However, under conditions of digital transformation, education increasingly becomes mediated by algorithms that structure available models of meaning, shape forms of expression, and influence the character of interpreta-

tion. In this context, the position of Ted Striphas (2015) is particularly illustrative, as he notes that algorithms are becoming "cultural intermediaries" that shape the processes of production and circulation of meaning in digital environments. Algorithmic support for writing and the generation of texts by artificial intelligence create a new situation of human-machine co-authorship in which traditional understandings of authorship, agency, and responsibility of the subject are transformed. As Floridi et al. (2018) emphasize, interaction between humans and intelligent systems leads to the formation of "distributed agency," where actions are the result of the joint functioning of human and technological components.

Despite the growing number of studies in the field of artificial intelligence in education, the philosophical analysis of the influence of algorithms on processes of subject formation remains insufficiently developed. In particular, digital technologies create new forms of behavioral and cognitive shaping of the human being; however, the humanities-based understanding of these processes is still in its formative stage (Zuboff, 2019). All of the above determine the relevance of the present study.

The philosophical reflections developed in this article emerged partly from preliminary observations obtained within an ongoing pilot study conducted in Kazakhstan.

Scientific Novelty

The scientific novelty of the study lies in the development of a philosophical and methodological framework for analysing the transformation of subject formation under conditions of algorithmic mediation in digital educational environments. In the present article, subjectivation is understood as the process through which the subject is constituted via practices of interpretation, narration, self-reflection, and interaction with cultural and technological structures. Within this framework, student storytelling is interpreted not merely as an educational technique but as a specific space of subject formation in which narrative identity emerges through interaction between the learner and generative artificial intelligence systems.

A novel contribution of the study consists of the philosophical conceptualization of AI-assisted storytelling as a form of human-machine co-authorship characterized by the redistribution of interpretative and narrative agency between the human subject and the algorithmic system. The article substantiates the thesis that contemporary forms of subjecthood are increasingly transforming from predominantly autonomous configurations toward relational and hybrid forms shaped through technologically mediated processes of meaning production and self-interpretation. In the context of the present study, subjecthood refers to the subject's capacity for reflexive self-relation, self-interpretation, moral positioning, and the construction of narrative identity within cultural and technological environments.

The study further proposes an interpretation of the algorithm not solely as a technical instrument, but as a hidden hermeneutic structure participating in the selection, organization, and generation of meanings. From this perspective, algorithmic systems influence not only the linguistic form of narratives but also the conditions under which learners construct self-representations, articulate agency, and imagine possible futures. The novelty of the article also lies in introducing the problem of algorithmic mediation of student subject formation into the Kazakhstani academic context and in establishing a conceptual foundation for further interdisciplinary and empirical research at the intersection of philosophy, pedagogy, and artificial intelligence studies.

Research Aim and Objectives

The aim of the study is to provide a philosophical analysis of the influence of algorithmic systems on processes of subject formation in student storytelling practices within the context of the digital educational environment. In the present study, the digital educational environment is understood not merely as a technical infrastructure of online learning, but as a technologically mediated space of communication, interpretation, and knowledge production in which educational interaction increasingly occurs through algorithmic systems, digital platforms, and AI-assisted forms of textual and cognitive activity.

To achieve the stated aim, the following objectives are addressed:

- To analyze narrative as a philosophical form of the subject's self-constitution.
- To examine the algorithm as a cultural mechanism of structuring meaning.
- To identify the characteristics of student storytelling under conditions of interaction with artificial intelligence.
- To determine the transformations of agency and authorship in situations of human–machine co-authorship.
- To substantiate the risks of identity standardization and cultural normalization in algorithmically mediated narrative practices.

The research question is formulated as follows: how do the processes of subject formation change when a learner's narrative self-reflection is mediated by algorithmic systems?

Materials and Methods

The materials of the study include philosophical texts devoted to the problems of narrative identity and subjectivation, scholarly works in the field of digital culture and algorithmic media, as well as conceptual studies in the philosophy of education and artificial intelligence. The study also draws upon published empirical research on collaborative storytelling practices involving generative artificial intelligence in school and university education. In addition, the conceptual framework of the article is informed by materials from an ongoing pilot research project conducted by the authors in Kazakhstan and devoted to student storytelling practices involving generative artificial intelligence in educational settings. The project includes narrative texts produced by students both independently and in interaction with AI systems and is considered a preliminary empirical basis for philosophical reflection on the transformation of subjectivity, agency, and narrative identity under conditions of algorithmic mediation.

The methodological framework of the study is based on philosophical and hermeneutic analysis aimed at interpreting the semantic structures of narrative, as well as the method of conceptual reconstruction, which makes it possible to identify transformations of the category of the subject in the digital context. This is complemented by a comparative historical approach to the study of cultural forms of self-understanding, discourse analysis of digital practices, and interpretative methods of the philosophy of culture. The integrated application of these methods makes it possible to reveal the philosophical foundations of the transformation of subjecthood under conditions of algorithmic mediation of educational experience.

1. Narrative as a Form of Subject Formation

1.1 The Philosophical Tradition of Narrative Identity

In the philosophical tradition, narrative is considered not only as a form of representing experience but also as a fundamental mechanism of constituting the subject. Human experience possesses a temporal structure that requires interpretation and the meaningful integration of events into a coherent whole. It is a narrative that provides such organization, enabling a person to understand one's life as a sequence of interconnected events endowed with meaning and direction. In this sense, narrative functions as a means of structuring experience and as a form of symbolic integration of lived time. One of the most developed concepts of narrative identity is the philosophy of Ricœur, according to which personal identity is formed through a narrative that connects biographical events into a meaningful story. As the philosopher notes: "Time becomes human time to the extent that it is organized after the manner of a narrative" (Ricœur, 1984, p. 52).

Human time becomes meaningful through narrative articulation, and the identity of the subject is closely connected with the process of interpreting life experience. Another important aspect of the philosophical concept of narrative identity is the distinction between two dimensions of personal identity, *idem* (Latin "the same," "identical") and *ipse* (Latin "self," "itself"). By *idem*, Ricœur understands identity as the stability of the subject's characteristics, its permanence over time, whereas *ipse* denotes selfhood associated with the subject's capacity to remain faithful to oneself, make decisions, and assume responsibility for one's actions. According to Ricœur, "narrative identity holds together identity as sameness (*idem*) and identity as selfhood (*ipse*)" (1992, p. 148). That is, narrative provides the link between the variability of life experience and the continuity of personal identity. Through storytelling, the subject is able to integrate ongoing changes into a coherent understanding of one's own life while preserving a sense of selfhood despite transformations along the biographical path. Narrative identity thus unites the stability of the person and selfhood, allowing the subject to maintain continuity over time despite changes in lived experience.

Contemporary studies of digital culture confirm the relevance of Ricœur's understanding of narrative as a form of human temporality. Thus, analyzing transformations of storytelling in digital environments, researchers note that narrative remains "the primary instrument that enables a person to relate to time and to experience time within oneself," despite changes in media forms and technological conditions of its production. At the same time, the digital environment, characterized by acceleration, accessibility, and the effect of a perpetual present, enters into a tense

interaction with narrative structures, transforming the ways in which time and subjective experience are lived and perceived (Bouchardon & Fülöp, 2024).

An important contribution to understanding the narrative nature of the subject is also made by Taylor (1989), who considers human identity as rooted in moral and cultural horizons of interpretation. In his view, the person is constructed within a narrative, since self-identification presupposes understanding one's life as an unfolding story embedded in a system of values and meanings. In this context, narrative functions not merely as a form of telling about oneself but as a means of orientation within the space of moral meanings and cultural norms. If we consider, as an example, storytelling practices common in contemporary social media, we can observe that most narratives revolve around themes of norms and values. What matters to us is not only our "historical-political" identity, such as being a citizen of a country, a representative of a generation or epoch, or a speaker of a particular language, but also the norms and values that we communicate through our narratives. These are precisely the markers that allow us to identify ourselves more strongly than any formal affiliation.

Thus, the temporality and biographical coherence of the subject are directly connected with narrative structures. A person makes sense of the past, interprets the present, and projects the future through narrative schemes that ensure the continuity of self-understanding. The very process of telling about oneself functions as an act of reflection, in which the subject not only describes but also constructs one's own identity. In this sense, narrative can be understood as a space for the formation of agency, since it is through the interpretation of one's own experience that a person attributes responsibility, intentions, and goals to oneself.

Consequently, the philosophical tradition of narrative identity makes it possible to consider the subject not as a fixed entity but as a processual structure that emerges through the interpretation of lived experience. Such an understanding is particularly important in the context of contemporary digital practices, where forms of storytelling and the conditions of their creation undergo significant transformations under the influence of technological mediators. Under conditions of digital culture, however, the processes of narrative self-construction increasingly unfold within technologically mediated environments structured by algorithmic systems.

1.2 Narrative and Practices of Subjectivation

Contemporary philosophy of the subject tends to consider the person not as a predetermined entity but as the result of historically and culturally conditioned practices that shape the modes of perception, thinking, and action of the individual (Bourdieu, 1977; Foucault, 1988; Taylor, 1989). In particular, Pierre Bourdieu demonstrates that social experience is embodied in the form of habitus (Latin *habitus* – "appearance," "condition"), that is, a system of durable patterns of perception and behavior that structure the subject's actions and interpretations. As the scholar notes, habitus consists of "systems of durable, transposable dispositions, structured structures predisposed to function as structuring structures" (Bourdieu, 1977, p. 72), thereby emphasizing that practices and social structures are internalized in individual experience and reproduced in behavior. Similarly, Michel Foucault (1988) considers subjectivity as the result of practices of subjectivation and "technologies of the self," through which a person forms a relation to oneself and one's own identity. Taylor (1989), in turn, emphasizes the cultural conditioning of self-understanding, which is formed within horizons of moral and value orientations. Thus, the subject can be understood as a dynamic structure that emerges through the assimilation of cultural norms, social practices, and the interpretation of one's own experience.

One of the key mechanisms of subject formation is narrative, which enables a person to make sense of one's life, structure experiences, and form an understanding of oneself as an acting and responsible agent. This approach to understanding the subject as the result of practices of subjectivation, as mentioned above, was further developed in the works of Foucault. He regarded subjectivity as a historically changing form of the individual's relation to oneself. In his view, the subject emerges through "technologies of the self," that is, practices of self-reflection, self-interpretation, and self-regulation. Through such practices, the individual forms one's own identity and moral position. In this context, narrative can be considered one of the most important technologies of subjectivation, since telling about oneself and the world involves not only the description of experience but also its evaluation, interpretation, and integration into a system of personal meanings.

Toward the end of his life, while planning an unwritten work on the "technologies of the self," Foucault distinguished four types of technologies in his seminars devoted to this question: technologies of production, technologies of sign systems, technologies of power, and a fourth type, technologies of the self. According to his definition,

"Technologies of the self (…) permit individuals to effect by their own means or with the help of others a certain number of operations on their own bodies and souls, thoughts, conduct, and way of being, so as to transform themselves" (Foucault, 1988, p. 18).

It can be argued that through practices of self-reflection and self-interpretation, as well as through the interpretation of the surrounding world, the individual forms one's own identity and moral position. Self-reflection, in turn, carried out through narrative, is closely connected with the formation of the subject's moral stance. By narrating one's actions and life events, a person inevitably assigns meaning to them, evaluates them in terms of values and norms, and determines one's own responsibility for what occurs. As Taylor emphasizes, human identity is formed within horizons of moral orientation that provide the framework for understanding what is considered significant and worthy. In his words,

"To know who you are is to be oriented in moral space, a space in which questions arise about what is good or bad, what is worth doing and what is not, what has meaning and importance for you and what is trivial and secondary" (Taylor, 1989, p. 28)

Thus, narrative becomes a space in which the subject relates one's own experience to a system of values and forms a personal ethical position.

An important aspect of narrative subjectivation is the formation of agency as the subject's capacity to perceive oneself as the source of actions and decisions. Through narrative, a person not only reconstructs past events but also attributes intentions, goals, and responsibility to oneself, thereby constructing an image of oneself as an acting subject. Contemporary studies of narrative identity confirm that life stories function as dynamic structures that influence psychological development and human behavior over time:

"Narrative identities are not only a product of lived experiences, but also predict new experiences and developmental outcomes over time" (van Doeselaar & Reitz, 2023, p. 18).

Narrative functions as a space in which the sense of authorship of one's own life is formed, since it is precisely in the process of storytelling that the subject connects individual events into a causal sequence that gives actions a meaningful direction. Contemporary psychological studies of agency in life stories demonstrate that themes of agency constitute a stable component of personal narratives and are associated with motivation and goal orientation (Kemper et al., 2024). In addition, in philosophical and cultural studies, narrative agency is understood as the subject's capacity to orient oneself within cultural narrative environments and to construct one's own interpretations of experience (Meretoja et al., 2022). Thus, storytelling becomes not only a form of interpreting the past but also a mechanism for the formation of subject position, responsibility, and personal authorship.

We arrive at the conclusion that narrative can be understood as a cultural practice of subjectivation that connects self-reflection, moral interpretation of experience, and the formation of agency. Such an understanding of the subject as emerging through processes of narrative self-construction acquires particular significance in the context of digital culture, where forms of self-representation and the conditions of narrative creation are increasingly mediated by technological systems. It is precisely in this context that the need arises to analyze how algorithmic environments influence processes of subjectivation and redistribute agency between the human and the technology. In contemporary digital environments, these practices of subjectivation increasingly occur through interaction with algorithmic infrastructures capable of participating in processes of interpretation, recommendation, and narrative generation.

2. The Algorithm as a Form of Meaning Structuration

2.1 Algorithmic Selection and Cultural Filters

In the context of digital culture, algorithms increasingly function not only as technical tools for information processing but also as mechanisms for structuring the semantic space. Generative artificial intelligence systems based on large language models (such as ChatGPT, Claude, Gemini, Copilot, Perplexity AI, and others), which are now widely used, do not merely sort and deliver information, but they generate it. This means that they participate in the selection, ranking, and presentation of content, thereby influencing ways of perceiving reality and interpreting experience. In this sense, the algorithm can be understood as a cultural form of meaning selection that determines which meanings become accessible to the subject and which remain invisible. As researchers of algorithmic culture note, algorithms are transforming into a kind of "cultural intermediaries" that shape the processes of meaning production and circulation in the digital environment (Striphas, 2015).

Algorithmic selection is characterized by a high degree of invisibility for the user, which amplifies its influence on cognitive and cultural processes. The user interacts with an already filtered informational environment, without having direct access to the mechanisms of its formation, which creates an effect of naturalness and neutrality of algorithmic decisions. Contemporary research shows that large language models are characterized by a high degree of algorithmic opacity, since their internal mechanisms of information processing and decision-making remain hidden both from users and from developers (Heersmink, 2024; Wu et al., 2024). Such opacity increases the influence of algorithms on cognitive processes and the interpretation of information, since the subject's interaction occurs with an already formed result, without access to the logic of its construction. As a consequence, algorithms function as hidden structures of prioritization that not only organize access to information. This situation creates an effect of visible naturalness and neutrality of algorithmic decisions, although in fact they are based on specific logics of prioritization embedded in technical systems. In a philosophical context, this makes it possible to speak of algorithms as hidden structures of interpretation that shape the field of possible meanings and limit the range of available interpretations of experience. Researchers of algorithmic culture emphasize that algorithms function as mechanisms of selection and visibility, determining which data becomes perceivable and meaningful for the user (Bucher, 2018; Gillespie, 2014). In a broader social context, automated systems are capable of influencing "what we are able to know" and which possibilities become available to the subject, thereby shaping new forms of algorithmic power (Lazar, 2024).

From the perspective of cultural theory, algorithms function as new forms of symbolic power, since they determine the visibility of information and direct user attention. Researchers of algorithmic culture emphasize that algorithms perform the selection and ranking of data, shaping the conditions of access to information and its interpretation: "algorithms select what is considered most relevant from a corpus of data" (Gillespie, 2014, p.167).

That is, algorithms establish the frames through which digital reality is perceived. At the same time, algorithms are not neutral instruments; they are embedded in social values and relations of power (Bucher, 2018), functioning as cultural intermediaries of the production and circulation of meanings (Striphas, 2015).

Similar to the symbolic power described by Bourdieu, and understood as the capacity to impose meanings and present them as legitimate while concealing the underlying relations of power (Bourdieu & Passeron, 1977), algorithmic systems shape the cognitive and behavioral dispositions of users, influencing ways of perceiving and interpreting reality. They not only reflect existing cultural preferences, but also reproduce them in practices of interaction with information, thereby participating in the construction of the subject's social experience. They not only reflect cultural preferences but also reproduce them, creating stable patterns of interaction with information.

Algorithmic selection acquires particular significance in the context of narrative practices, where it influences the formation of permissible narrative templates, since algorithms participate in the selection, reproduction, and standardization of cultural forms and linguistic patterns underlying digital storytelling (Manovich, 2019; Striphas, 2015; Bender et al., 2021; Heersmink, 2024). Text generation algorithms, recommender systems, and digital platforms establish certain models of narration, plot structures, and stylistic norms that may be reproduced by users. We have all encountered storylines created in TikTok and Threads style. As a result, a space of "algorithmically

expected" narratives is formed, that is, types of stories that correspond to the logic of technical systems and the cultural preferences embedded in their architecture.

In the context described above, the algorithm functions not only as a data processing tool but also as a cultural filter that structures the semantic space and influences processes of subjectivation. Understanding algorithms as mechanisms of meaning selection makes it possible to consider them as new forms of mediators between the subject and culture, establishing the frames for the interpretation of experience and shaping the conditions for the construction of narrative identity in the digital environment.

2.2 Digital Mediation and the Transformation of Hermeneutics

The proliferation of digital technologies and generative artificial intelligence systems leads to a transformation of classical mechanisms of interpretation, which makes it possible to speak of the emergence of a new, mediated hermeneutics (Ihde, 1990; Capurro, 2017; Heersmink, 2024). If in the traditional cultural situation interpretation was understood as the result of the interaction between the subject, the text, and the cultural context, then in the digital environment, an algorithmic intermediary increasingly appears between them. In this sense, the algorithm functions as a mediator of interpretation, influencing ways of understanding information, its structuring, and its semantic organization. Researchers note that digital systems do not merely provide access to knowledge, but actively participate in its construction, shaping the conditions for the perception and interpretation of reality (Kitchin, 2017; Heersmink, 2024).

In this study, algorithmic mediation is understood as the process through which algorithmic systems participate in the selection, structuring, interpretation, and generation of meanings, thereby influencing cognitive practices, narrative construction, and forms of self-understanding. It can be assumed that algorithmic mediation leads to a redistribution of epistemic power between the subject and the technological system, since algorithms participate in the formation of available knowledge and interpretations of reality. Epistemic power is understood as the capacity to influence the beliefs and cognitive processes of the subject (Fricker, 2007; Heersmink, 2024), which in the digital environment is increasingly exercised through algorithmic systems. The user interacts not directly with information, but with its algorithmically processed version, which changes the nature of the cognitive process. Conceptually speaking, this makes it possible to consider large language models as epistemically opaque systems (the so-called black box) (Burrell, 2016; Adadi & Berrada, 2018; Bommasani et al., 2021; Humphreys, 2009), whose internal mechanisms remain hidden from the user, despite a high degree of trust in the generated results (Heersmink, 2024). Such a situation transforms the traditional understanding of epistemic authority, since algorithms begin to perform the functions of cognitive intermediaries, influencing the formation of the subject's beliefs, interpretations, and decisions.

Another important aspect of digital mediation is the transformation of the temporal characteristics of interpretation and narrative construction. The digital environment is characterized by the acceleration of information processing, the immediacy of access to data, and the reduction of time intervals between a request and the receipt of a response. Such acceleration influences the ways narratives are formed, since storytelling is increasingly created under conditions of real-time interaction with algorithmic systems. Contemporary socio-philosophical studies of digital society note that algorithms are capable of transforming the experience of time, creating regimes of a constant present and accelerated responsiveness (Hassan, 2020; Rosa, 2013). In the context of generative models, this is manifested in the possibility of instantaneous text construction, which transforms the process of narrative thinking and self-reflection.

Such digital temporality also affects the structure of narrative, contributing to the fragmentation of storytelling and increasing the role of iterative processes of text editing and generation. Narrative becomes the result of successive interactions between the subject and the algorithm, which changes the traditional understanding of authorship and the temporal duration of the creative process. Under conditions of algorithmic mediation, interpretation acquires the character of a joint cognitive activity of the human and the technological system, forming new hybrid forms of understanding and meaning-making (Hayles, 2017; Clark & Chalmers, 1998; Heersmink, 2024; Manovich, 2019).

In summary, digital mediation transforms hermeneutic processes, altering the distribution of epistemic power, the temporal parameters of interpretation, and the mechanisms of narrative construction. Algorithms function not only as tools for information processing but also as active participants in meaning-making, influencing processes

of subjectivation and the formation of narrative identity in the digital educational environment.

3. Student Storytelling in the Context of Artificial Intelligence

3.1 Human-Machine Co-Authorship

The proliferation of generative artificial intelligence systems in the educational environment leads to a transformation of student writing and storytelling practices, forming new modes of human-machine co-authorship. Interaction between the learner and the algorithmic system increasingly takes on the character of collaborative text production, in which ideas, formulations, and structural decisions emerge through a dialogue between the human and the technology. Under such conditions, the text ceases to be exclusively the result of individual cognitive activity and becomes a product of distributed interaction between the subject and a digital tool.

Educational practices represent one of the most intensive contemporary spaces in which processes of algorithmic mediation of narrative and subject formation become observable in everyday interaction. In this sense, student storytelling provides a particularly illustrative context for analysing the transformation of authorship, agency, and narrative identity under conditions of human-artificial intelligence interaction.

Pedagogical research shows that generative models can function as supportive cognitive tools in the educational process, facilitating the performance of routine aspects of writing and reducing students' cognitive load (Kasneci et al., 2023; Zhai, 2023). In philosophical analyses of human-artificial intelligence interaction, such systems are considered cognitive partners participating in processes of idea formulation, content structuring, and linguistic expression (Heersmink, 2024).

Human-machine co-authorship is associated with the partial delegation of cognitive functions to a technological system. The user may transfer to the algorithm tasks of information search, formulation generation, text editing, and even the conceptualization of arguments. Such delegation does not eliminate the role of the subject, but changes the structure of cognitive activity, transforming it into a distributed process. In the context of the theory of extended cognition, this makes it possible to consider digital tools as external cognitive resources participating in the formation of human thinking processes (Clark & Chalmers, 1998). Generative artificial intelligence systems, in this sense, function not merely as tools but as active participants in cognitive interaction, influencing the formation of ideas and interpretations.

As a result of this process, a form of hybrid subjectivity emerges, understood in the present study as a mode of subject formation arising through the redistribution of cognitive, interpretative, and narrative functions between the human subject and the algorithmic system. Under such conditions, the boundaries between individual authorship and technological mediation become increasingly blurred. Although the subject retains intentionality and responsibility for the produced narrative, the very process of meaning construction becomes partially mediated by algorithmic mechanisms participating in the generation, structuring, and interpretation of textual content.

It should be noted that "predictions" about the likely strengthening of human-machine interaction (in our case, between humans and large language models), up to the transformation of the very nature of the human being and personal identity, appeared quite a long time ago. Thus, Donna Haraway (1991), in her well-known "Cyborg Manifesto," considered the human as a hybrid of the biological and the technological, arguing that the boundaries between human and machine are gradually blurring, and that contemporary subjectivity acquires a cybernetic character. A similar understanding of the subject corresponds with the concept of human-technology hybrids proposed by Bruno Latour (2006), according to which contemporary social reality is formed within networks of interaction between human and non-human actors, representing "hybrids of nature and culture." The authors of the present article have also devoted several studies to this issue (Turarbekova et al., 2024; Turarbekova, 2022; 2022a). Hybrid subjectivity now manifests itself in the distribution of cognitive operations between the human and the system, while narrative becomes the result of their joint interaction. The situation that has emerged transforms traditional understandings of authorship, since the text is created under conditions of constant interaction with an algorithmic intermediary, which makes it possible to speak of new forms of co-authorship between humans and artificial intelligence (Floridi et al., 2018; Heersmink, 2024).

Naturally, in the educational context, human–machine co-authorship acquires particular significance, since it influences not only the quality of texts, but also the processes of formation of students' thinking, self-reflection, and

identity. Student storytelling under conditions of artificial intelligence use becomes a space in which the subject masters new forms of cognitive interaction, learns to distribute responsibility, and develops an understanding of their own authorship within a hybrid digital environment. This makes it possible to consider interaction with generative artificial intelligence systems not only as an instrumental practice, but also as a factor in the transformation of subjecthood in the educational process.

3.2 Redistribution of Agency

Thus, we arrive at the conclusion that the use of generative artificial intelligence systems in student storytelling practices leads to a redistribution of agency between the subject and the technological system. It should be noted that traditionally, educational writing was considered the result of the learner's autonomous cognitive activity, implying individual authorship and responsibility for the created text. However, school teachers today are faced with the fact that under conditions of algorithmic support, the process of narrative creation increasingly acquires the character of a distributed activity, in which part of the cognitive functions is transferred to the artificial intelligence system. Interaction with the algorithm does not eliminate the learner's subjectivity, but transforms it, placing the subject in an intermediate position between autonomy and technological mediation.

Such a redistribution of agency is associated with the transformation of the learner's cognitive process under conditions of interaction with generative artificial intelligence systems. Research shows that the use of AI assistants influences cognitive engagement, thinking strategies, and higher-order cognitive skills of students, including critical, creative, and reflective thinking (Essel et al., 2024; Wang et al., 2025). At the same time, a phenomenon of cognitive delegation is observed, in which learners transfer the performance of complex intellectual operations to the system, which changes the structure of cognitive activity and redistributes cognitive functions between the human and the technology (Chen et al., 2025). Generative models are capable of performing functions of idea generation, argument formulation, content structuring, text editing, and stylistic adjustment, which leads to the partial delegation of intellectual operations to the technological system (Kasneci et al., 2023; Zhai, 2023).

Alongside the potential advantages of using generative artificial intelligence systems in education, contemporary research also identifies a number of negative effects. In particular, a significant negative relationship has been established between the frequency of AI tool use and the level of students' critical thinking, mediated by the phenomenon of cognitive delegation of intellectual operations to the system (Gerlich, 2025). Moreover, regular use of generative models may be accompanied by decreased cognitive engagement and the weakening of intellectual habits, forming the effect of "cognitive debt" (Choudhuri et al., 2026). The cited studies also point to the risk of deterioration in the development of higher-order cognitive skills when there is excessive reliance on artificial intelligence responses. These results indicate that the integration of AI into the educational process is accompanied not only by the expansion of learning opportunities but also by the transformation of learners' cognitive activity, which requires critical pedagogical and philosophical reflection.

As a result, returning to the strictly philosophical meaning of the described phenomenon, cognitive activity ceases to be an exclusively internal process of the subject and acquires the character of externally mediated interaction, in which thinking is formed in dialogue with an algorithmic tool. This makes it possible to consider human-artificial intelligence interaction as a form of distributed agency, in which action becomes the result of the joint functioning of human and technological components (Floridi et al., 2018). Thus, the subject's agency does not disappear, but is transformed, acquiring a hybrid character and forming through interaction with an algorithmic intermediary.

The transformation of agency is directly related to changes in the understanding of authorship. If the traditional model of authorship was based on the idea of the text as a product of individual creativity, then under conditions of interaction with generative systems, a situation of co-authorship between human and technology emerges. Studies show that the use of artificial intelligence can blur the boundaries of individual authorship and lead to a reconsideration of the role of the subject in the process of text creation (Kasneci et al., 2023). In the educational context, this is manifested in the need to redefine the criteria of originality, independence, and the learner's creative contribution.

Under conditions of redistributed agency, the question of responsibility and the ethical dimension of human-artificial intelligence interaction acquires particular significance. Despite the participation of the algorithm in the

process of text creation, responsibility for its content and consequences remains with the human as a moral agent. At the same time, the problem of delimiting responsibility between the subject and the technological system arises, especially in situations where algorithmic recommendations significantly influence the final result. Philosophical research emphasizes that interaction with intelligent systems requires the formation of new ethical norms and practices of responsibility that take into account the distributed character of agency (Floridi et al., 2018).

Thus, the use of artificial intelligence in student storytelling leads to the transformation of traditional understandings of subject autonomy, authorship, and responsibility. The learner's agency does not disappear, but acquires a relational character, forming within the space of interaction between the human and the algorithmic system. This creates the need for philosophical reflection on new forms of subjectivity and for the development of ethical approaches to educational practices mediated by artificial intelligence.

3.3 Risks of Algorithmic Normalization

Alongside the expansion of possibilities for self-expression, the use of generative artificial intelligence systems in student storytelling is associated with a number of risks that can be described as processes of algorithmic normalization. Algorithmic normalization is understood as the tendency toward the formation of standardized modes of expression and interpretation under the influence of algorithmic systems that reproduce statistically dominant cultural patterns, as described by a number of authors (Gillespie, 2014; Striphas, 2015; Bender et al., 2021). Since generative systems are trained on large corpora of texts reflecting dominant cultural and discursive patterns, they tend to reproduce the most probable linguistic structures and narrative schemes, which may lead to the unification of narrative forms. Researchers note that language models often generate "average" responses reflecting the dominant norms of the data on which they were trained (Bender et al., 2021).

It can be assumed that in the educational context, this may manifest itself in the standardization of learners' identity, since the formulations, arguments, and plot structures suggested by the algorithm become a kind of template for self-expression. Students relying on algorithmic recommendations may unconsciously reproduce typical narrative models, which reduces the degree of individual variability in storytelling. Such a tendency corresponds with broader studies of algorithmic culture showing that algorithms are capable of shaping users' preferences and cultural practices by directing attention and interpretation within certain frames (Striphas, 2015; Gillespie, 2014).

A particular problem here is the cultural asymmetry of algorithms, related to the fact that the training data of generative models predominantly reflect the cultural contexts of the Global North and dominant linguistic communities. This may lead to the hidden normalization of particular values, narratives, and modes of interpreting experience, while alternative cultural perspectives remain less represented. As a result, learners' interaction with generative systems may reinforce cultural homogenization and reproduce epistemic inequalities, which have already been noted in research on algorithmic bias and language models (Bender et al., 2021; Noble, 2018).

Algorithmic normalization also affects the uniqueness of the subject's narrative experience. Narrative traditionally functions as a space for the individual interpretation of lived experience, allowing a person to construct their own biographical coherence and moral position. However, with the active use of generative systems, there is a risk of a shift from personal experience toward statistically probable forms of expression, which may weaken the connection between storytelling and the subject's individual experience. Such effects can already be observed when reading texts on popular internet platforms, such as social networks, advertising slogans, comments on various publications, and so on. Here we encounter sets of template-like speech formulas that conventionally signal certain feelings and experiences of the subject regarding practically any issue. In this case, narrative acquires the features of a composition formed under the influence of algorithmic patterns rather than a unique interpretation of lived experience.

Thus, the use of artificial intelligence in student storytelling is accompanied not only by the transformation of agency and authorship but also by the risks of algorithmic normalization, including the standardization of identity, cultural asymmetry, and the potential loss of the uniqueness of narrative experience. Understanding these processes requires a philosophical analysis of the role of algorithms as cultural mediators influencing the formation of subjectivity in the digital educational environment.

Discussion

The theoretical results obtained make it possible to consider algorithms not only as technical tools for information processing, but also as a new cultural technique of subjectivation. Similar to writing, printed text, or digital media of previous eras, generative artificial intelligence systems become a means of shaping the ways in which the subject understands and expresses itself. However, unlike traditional cultural tools, algorithmic systems possess the capacity to actively participate in the process of meaning-making, offering ready-made interpretations, structural solutions, and linguistic forms. This leads to a transformation of the relationships between the subject, the text, and culture: the text increasingly emerges as the result of interaction between the human and the algorithm, while cultural meanings are formed within the space of a mediated cognitive process.

This situation raises the question of the boundaries of subject autonomy under conditions of algorithmic mediation. On the one hand, generative systems are capable of expanding learners' cognitive capacities, supporting creative thinking, and facilitating the expression of complex ideas. On the other hand, there is a risk of a gradual shift from autonomous thinking toward algorithmic dependence, in which the subject increasingly relies on solutions proposed by the system. A tension emerges between the expansion of possibilities and the standardization of thinking, as well as between the enhancement of creativity and the potential reduction of independent intellectual activity. Empirical studies already document phenomena of cognitive delegation and reduced depth of information processing under conditions of excessive reliance on generative systems, which may be accompanied by a weakening of students' critical thinking and cognitive engagement (Gerlich, 2025; Choudhuri et al., 2026).

The philosophical implications of hybrid subjectivity also require separate consideration. Interaction between the human and the algorithmic system forms new modes of distributed agency, in which cognitive processes and interpretive operations are partially externalized beyond the boundaries of individual consciousness. This does not imply the disappearance of the subject, but rather indicates a transformation in the ways it is constituted: the subject increasingly emerges as a relational structure formed within networks of interaction with technological mediators. In the long term, such changes may influence conceptions of personal responsibility, authorship, and autonomy, since the boundaries between human and technological contributions become less clearly defined.

Particular attention should be paid to the potential negative consequences of algorithmic mediation for the educational process. In addition to the risk of cognitive dependence, there is a probability of the standardization of narrative forms and cultural models of self-expression, conditioned by the statistical nature of generative algorithms. This may lead to a reduction in the variability of individual experience and a weakening of the reflective function of storytelling as a space for identity formation. In multilingual and culturally specific societies, such processes may be accompanied by an intensification of cultural asymmetry, since algorithmic systems predominantly reproduce dominant global discourses. As a result, there emerges a risk of partial loss of the cultural uniqueness of learners' narrative experience.

At the same time, the prospects of education in the age of artificial intelligence are not limited to negative scenarios. When used with pedagogical awareness, generative systems can contribute to the development of reflective skills, critical-reflective abilities, and analytical capacities, transforming from a source of ready-made answers into a tool of intellectual dialogue. The key factor is not the technology itself, but the ways in which it is integrated into educational practices. This requires the development of new pedagogical approaches oriented toward learners' conscious interaction with algorithmic systems, the formation of digital responsibility, and an understanding of the boundaries of technological support.

For the Kazakhstani scientific context, the issues outlined represent a new and promising field of research emerging at the intersection of philosophy, pedagogy, and artificial intelligence studies. Despite the active digitalization of the educational environment, questions concerning the influence of generative algorithms on processes of identity construction, narrative self-interpretation, and the formation of subjecthood remain insufficiently explored. The conceptual reflections developed in this article are also informed by an ongoing Kazakhstan-based pilot research project devoted to AI-assisted student storytelling practices in educational settings. The project focuses on autobiographical and future-oriented narratives produced by students both independently and in interaction with generative AI systems, thereby providing a preliminary empirical horizon for the philosophical analysis of algorithmic

mediation and hybrid subjectivity. In this sense, educational storytelling practices may be regarded as a particularly illustrative manifestation of broader transformations affecting narrative culture, self-interpretation, and forms of subject formation in the digital age.

Preliminary observations from the pilot project indicate that students interacting with generative AI systems often adopt more standardized narrative structures and technologically optimistic narrative patterns, particularly in future-oriented autobiographical storytelling tasks. At the same time, AI-assisted narratives frequently demonstrate reduced variability of narrative voice and increased reliance on algorithmically suggested formulations. These tendencies suggest that algorithmic systems may influence not only the linguistic form of narratives but also the ways in which learners construct self-representations, imagine the future, and articulate personal agency within digitally mediated environments.

At the current stage, the pilot project remains in the process of analytical and interpretative elaboration. The final empirical results of the study will be presented in subsequent publications after the completion of the necessary analytical and interpretative procedures applied to the collected materials. In this regard, the present article should primarily be understood as a theoretical and methodological framework for the philosophical analysis of student storytelling under conditions of algorithmic mediation.

Thus, the novelty of the study lies in the philosophical interpretation of algorithms as mediators of subjectivation and in the formulation of the problem of the transformation of learners' subjecthood under conditions of algorithmic mediation, which opens prospects for further interdisciplinary and empirical research. Against this background, the discussion of the role of artificial intelligence in student storytelling reveals a complex tension between the expansion of cognitive possibilities and the risks of algorithmic normalization. Understanding this tension becomes one of the key tasks of the philosophy of education in the digital age and determines the need for further research on hybrid subjectivity and the cultural consequences of human-artificial intelligence interaction.

Conclusion

The philosophical analysis conducted here makes it possible to conclude that the proliferation of artificial intelligence in the educational environment does not eliminate the learner's subjectivity, but transforms the ways in which it is formed. Under conditions of algorithmic mediation, the subject emerges not as a fully autonomous cognitive unit, but as a relational structure formed through interaction between the human and the technological system. Here, subjectivity acquires a hybrid character, combining individual intentions and algorithmically mediated cognitive processes. Student storytelling under these conditions becomes a particular space of hybrid subjectivity, where the formation of identity, agency, and moral position occurs in the context of human–machine co-authorship. Narrative retains its function as a means of self-understanding and the construction of biographical coherence, however the ways in which it is created are transformed under the influence of algorithmic tools. Interaction with generative systems leads to a redistribution of cognitive functions, the transformation of authorship, and the emergence of new forms of responsibility of the subject for the created text.

In philosophical terms, algorithms may be considered hidden hermeneutic structures of cultural experience, since they participate in the selection of meanings, the structuring of interpretations, and the formation of available narrative models. Algorithmic mediation becomes a new level of interaction between the subject and culture, establishing the frames of meaning-making and influencing processes of identity formation in the digital educational environment.

At the same time, the identified risks of algorithmic normalization, the standardization of identity, and the potential reduction of the autonomy of cognitive processes demonstrate the need for critical reflection on the role of artificial intelligence in education. These risks are not inevitable in nature; they require the development of pedagogical and ethical approaches that ensure learners' conscious and responsible interaction with generative systems.

The results obtained indicate the need for further empirical research on learners' interaction with artificial intelligence. A promising direction is the analysis of student texts created with the use of generative models in order to identify features of narrative identity formation and cognitive strategies. Of particular interest is the conduct of comparative cultural studies that would make it possible to assess the influence of algorithmic mediation in different

linguistic and cultural contexts, including the educational environment of Kazakhstan. Another important direction is the development of pedagogical models of critical interaction with artificial intelligence oriented toward preserving the autonomy of thinking, developing reflection, and forming responsible digital subjectivity.

Although the present article primarily focuses on educational practices and student storytelling, the proposed theoretical and methodological framework may also be applied more broadly to the analysis of algorithmic mediation in contemporary digital culture. The philosophical problems discussed in the study, including hybrid subjectivity, distributed agency, narrative normalization, and the transformation of self-interpretation under conditions of human-AI interaction, extend beyond pedagogy and are relevant to wider discussions concerning the impact of artificial intelligence on the humanities, cultural practices, and forms of human self-understanding in the digital age.

Thus, the philosophical reflection on student storytelling in the age of artificial intelligence opens a new interdisciplinary field of research at the intersection of philosophy of education, pedagogy, and digital technology studies. The analysis of learners' hybrid subjectivity makes it possible to reconsider the question of the boundaries of human autonomy, the cultural consequences of algorithmic mediation, and the prospects of education under conditions of the rapid development of artificial intelligence.

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Funding. This research was funded within the framework of the initiative research project of the Institute "Pedagogy, Business and Law" of Almaty University of Humanities and Economics, entitled "Digital Pedagogy Tools for Developing Student Storytelling: An Experience of Using AI by School Students in Kazakhstan," registration number 0126RKI0129.

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Saparova D. R. – literature review, editing.

Kydyralieva Zh. B. – writing the manuscript, technical formatting.

Conflict of interest. The authors declare no conflict of interest.

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Мақала туралы ақпарат / Информация о статье / Information about the article.

Редакцияға түсті / Поступила в редакцию / Entered the editorial office: 06.04.2026

Рецензенттер мақұлдаған / Одобрено рецензентами / Approved by reviewers: 10.06.2026.

Жариялауға қабылданды / Принята к публикации / Accepted for publication: 30.06.2026