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RESEARCH

Postdigital Marketization through AI Digital Textbook: EdTech Industry Assemblage in South Korea

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Abstract
This postdigital marketization study examines how South Korea's Artificial Intelligence Digital Textbook (AIDT) initiative formed, legitimized, and unevenly reconfigured an EdTech industry assemblage in public education. Drawing on Actor-Network Theory and ten semi-structured interviews with participants from the EdTech industry, it traces how this assemblage emerged through multiple interactions among human, non-human, material, and discursive actors, including government ministries, EdTech startups, textbook publishers, policies, documents, technologies, and regulations. The analysis identifies three overlapping phases in the process: pre-assembling in the post-Covid expansion of digital schooling; consolidation through the state-led materialization of AIDT; and reconfiguration through uneven authorization outcomes and classroom entry. It further shows how four key mediators—legal textbook status, speculative public funding, data governance, and personalization discourse—both enabled and destabilized the industry's access to public schools. Rather than presenting the AIDT initiative as a straightforward narrative of educational privatization or a complete story of policy failure, the study argues that it produced a contingent and contested process of postdigital marketization through which the EdTech industry gained partial, reversible, and fragile access to public education. By shifting attention from policy assemblage to industry assemblage, the article highlights the unstable mediations through which state ambition, commercial interest, and reform discourse became temporarily aligned.

Keywords Postdigital Marketization · Actor-Network Theory · EdTech Industry · AI Digital Textbook · Critical EdTech Studies

Extended author information available on the last page of the article

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Introduction

This study is part of a larger government-funded collaborative project that examines how a recent educational technology (EdTech) initiative to reform the public school system by developing 'artificial intelligence-powered digital textbooks' (or Artificial Intelligence Digital Textbook, AIDT) has unfolded in South Korea (Ministry of Education 2023). The project focuses on how the initiative has reshaped and transformed relationships among multiple stakeholders in the EdTech policy enactment. Drawing on postdigital sensibilities and Actor-Network Theory (ANT) informed methods, the project analyzes three key assemblages that emerge through the networks of human and non-human, material and discursive, and digital and analog entities: (1) teachers' classroom assemblage (Lee et al. 2026), (2) EdTech policy assemblage (Lee et al. 2025), and (3) EdTech industry assemblage. Among this trilogy, this paper addresses the last piece—the EdTech industry assemblage.

The development and distribution of AIDT to public schools was the signature educational initiative pursued by the Yoon government (2022–2025) in the context of post-pandemic digital transformation and the growing influence of AI (Ministry of Education 2023). In 2023, the government announced that AIDT would first be developed and introduced in major subjects by 2025 and then gradually expanded across the curriculum by 2028. The educational vision of AIDT was presented in a relatively straightforward way: personalized learning for all students. Compared with earlier forms of educational digitalization that mainly provided multimedia resources and standardized activities (Ministry of Education and Human Resources Development 2007; Ministry of Education, Science and Technology 2011), AIDT was expected to generate more automated and individualized feedback through algorithm-based learning analytics. In policy discourse, this promise was closely tied to a long-standing problem in Korean education—the widening educational gap (Lee 2026).

As discussed in our previous analysis of the AIDT policy assemblage (Lee et al. 2025), however, the policy did not unfold as initially planned. A compressed development timeline and strict governmental requirements limited the extent to which EdTech companies and textbook publishers could incorporate innovative designs into their products. At the same time, parent groups, teacher unions, and opposition lawmakers raised concerns over student data protection, digital addiction, and the broader appropriateness of AI-driven schooling. Infrastructure readiness, teacher training, and administrative support also remained unresolved. Although the first version of AIDT was released in 2025, it was not widely adopted in schools despite substantial financial and logistical investment. In March 2025, the nationwide adoption rate of public schools was only 37%, and it fell to 19% in the following semester (Yeo 2025). When the National Assembly reduced the legal status of AIDT from textbook to supplementary learning material in December 2025, its use became even more dependent on individual schools' choices (Sim 2025).

These outcomes do not mean that AIDT failed to produce significant effects. Rather, the emergence of AIDT—driven by the convergence of strong state intervention, rapid technological development, shifting public attitudes toward digital

learning, and large-scale public investment—enabled a new and powerful sociotechnical assemblage to take shape within the South Korean EdTech industry (Kim et al. 2025). One of the industrial visions circulated by the government during the development of AIDT was the cultivation of a domestic EdTech market for global competitiveness under the banner of 'K-EdTech' (Ministry of Education 2023). As this AIDT-oriented assemblage emerged, the EdTech industry, which had historically remained peripheral to public schooling, moved closer to the center of educational governance as a legitimate and state-funded actor.

The rapid entrenchment of private EdTech actors in public school contexts has sparked broader debates about the marketization of education (Komljenovic 2021; Moore et al. 2021). In South Korea, the government-led AIDT initiative offers a revealing case through which to examine how the EdTech industry entered public education not simply as an external market force, but through state-led reform, public funding, and policy legitimation (Lee and Lee 2024, 2025). Rather than treating this process as an intentional or inevitable outcome of policy implementation or digital transformation, this study problematizes it to capture the complex, relational, and contingent aspects of educational marketization. More specifically, this paper argues that the expansion of EdTech into the public education system should not be understood only as a linear process of privatization. Instead, it should be analyzed as a process of postdigital marketization in which public and private actors, technologies, policies, discourses, and infrastructures become entangled in unstable and evolving ways.

To examine this process, this study draws on two theoretical approaches: postdigital sensibilities (Fawns et al. 2023; Jandrić and Knox 2022; Jandrić 2026; Jandrić and Forsler 2026) and ANT (Fenwick and Edwards 2010; Latour 2005). These approaches invite us to rethink familiar boundaries—between public and private, human and nonhuman, material and discursive, digital and analog—and to approach EdTech not as a singular industry with a coherent market logic, nor as a simple extension of top-down state power. Instead, the EdTech industry is conceptualized here as a complex assemblage composed of heterogeneous actors and entities with divergent, often conflicting interests, capacities, and objectives. From this perspective, what matters is not whether public education is simply 'taken over' by private actors, but how particular relations are assembled, stabilized, and reconfigured through specific mediating processes. Using this postdigital and relational lens, the study asks the following questions:

1. Under what conditions has the EdTech industry emerged as a powerful sociotechnical assemblage during the enactment of the AIDT policy in South Korea?
2. What key actors and mediating actions have enabled the EdTech industry to gain legitimacy and material presence within the public education sector?

Marketization of Education and EdTech

The marketization of education is one important dimension of the broader neoliberal reorganization of society and social life. Neoliberalism assumes that market-oriented approaches can solve social problems more efficiently than state-led

or collective arrangements. From this perspective, sectors such as healthcare, welfare, and education are increasingly evaluated through the values of choice, competition, and performance (Jones 2019; Robinson 2019). In education, neoliberalism has justified the expansion of market logics by framing efficiency and effectiveness as core public values, thereby opening educational institutions and practices to new forms of managerial and commercial intervention. Within this context, digital technologies have often been regarded as powerful instruments for advancing neoliberal agendas in education (Robinson 2019). EdTech products reflect the emphasis on efficiency, promising optimized learning experiences within limited time, labor, and resources (Cohen 2022; Gonzalez-Mingot and Marín 2025). In this sense, EdTech can operate as a mechanism through which educational actors and processes are reorganized according to market logic, thereby accelerating the marketization of education (Ball and Grimaldi 2022).

EdTech companies have also strategically mobilized what has been called 'technology solutionism' to frame long-standing educational problems, such as educational inequality and resource scarcity, as solvable through technical intervention (Teräs et al. 2020). Within this vision, personalized learning, automated feedback, and data-driven pedagogical decisions are presented as efficient solutions to structural educational challenges (Williamson 2019). In this discursive space, governments globally take up active roles in initiating EdTech-driven reform projects and building public–private partnerships that integrate EdTech into public schooling (Williamson 2021). Many educational stakeholders, including teachers and students, develop positive beliefs in EdTech as a tool for educational innovation and improvement (Gonzalez-Mingot and Marín 2025; Lee and Lee 2024). It is through the process of marketization that neoliberalism and technological solutionism converge to legitimize the adoption of EdTech and to rationalize the transfer of public resources into private-sector infrastructures and services (Nivanaho et al. 2024).

Throughout these processes, private EdTech companies have employed various strategies to expand the use of their technologies in education. During the Covid-19 pandemic, for instance, many companies offered free services as a way of cultivating future markets and securing longer-term users (Gonzalez-Mingot and Marín 2025). Recent studies have also emphasized the growing importance of data as a new form of capital in EdTech (Arantes 2024; Lai et al. 2024; Moore et al. 2021; Russell et al. 2018). Rather than designing products as isolated tools, companies increasingly build platforms that integrate administration, teaching, and learning into a single digital environment.

As these platforms collect and accumulate large volumes of user data, data becomes central to the commercial value of EdTech services and to companies' future competitiveness (Kerssens and Dijck 2021; Nichols and Thrall 2025). EdTech companies often justify extensive data collection by arguing that it supports student engagement, improves teaching and learning, and enables personalization (Macgilchrist 2019). However, such claims can obscure the fact that educational data also functions as a strategic asset through which companies refine products, strengthen market positions, and pursue future profit (Komljenovic 2021; Moore et al. 2021). In this sense, students' and teachers' data become part of the political economy of educational marketization.

Nevertheless, the entry of EdTech companies into public education cannot be understood simply as a linear expansion of private profit-seeking actors into a public domain. While EdTech companies are clearly for-profit actors, the process through which they enter, align with, and become embedded in public education is often nonlinear, unstable, and messy. It is at this point that postdigital sensibilities become analytically useful.

Postdigital Marketization of Education through EdTech

Postdigital scholarship challenges binary categories that have long been taken for granted in education research, such as digital/analog, human/non-human, biological/informational, and material/discursive, by showing how such distinctions do not adequately capture the complexity and incomprehensibility of social and educational practices. Alongside this postdigital perspective, this study further questions and blurs another familiar binary—the public versus the private—to fully grasp the complex entanglement of the EdTech industry and public school system that simultaneously constitute and are constituted through technology and policy enactment.

Existing critical EdTech studies often depict the relationship between EdTech and public education in two ways. One narrative emphasizes how EdTech rapidly marketizes public education, especially in moments such as the Covid-19 pandemic, when digital platforms expanded quickly across school systems. The other narrative highlights the role of the state in shaping, regulating, and controlling the scope and pace of EdTech's entry into public education. Both accounts are important, but neither fully captures the complexity of contemporary EdTech governance.

As the EdTech industry grows and its products diversify, as companies vary in size, history, and business model, and as public-sector governance itself becomes increasingly neoliberalized, it becomes harder to draw a neat line between public and private actors or between political and economic interests. Rather than a simple collaboration or confrontation between two separate spheres, EdTech policy enactment is better understood as a heterogeneous network in which multiple actors—including companies, publishers, ministries, documents, infrastructures, and funding arrangements—are assembled around the introduction of digital technologies into schools. In this sense, marketization is not simply a linear process of privatization or an outcome of private-sector expansion. Instead, postdigital marketization is a contingent process through which public education is reorganized through the mediation of heterogeneous actors with different interests.

Although empirical research on the EdTech industry remains limited, a growing body of work has begun to question the simplistic narratives of the marketization of education, illustrating how EdTech companies operate in complex and varied ways within distinctive educational settings. For instance, based on interviews with representatives of EdTech startups and universities, Komljenovic et al. (2024) show that although companies regard data collected in higher education as a valuable asset, its monetization is often constrained by tensions within educational institutions. This suggests that EdTech operates within a complex private–public network in which

commercial ambitions are mediated and limited by public values rather than simply realized and reinforced.

Similarly, Villalobos et al. (2024), in their research on EdTech companies in Chile, show that such companies function not only as technology producers but also as articulators and administrators within broader systems of digital educational governance. These roles point to a partial displacement of the state from some of its traditional educational functions, while also revealing the increasingly dense networks through which public education is governed. Furthermore, as market-oriented actors embedded in broader networks, EdTech companies and services introduce new actors and relations into educational systems. Ortegón et al. (2024), for example, identify the emergence of the 'EdTech broker' as a novel intermediary connecting public education policy and the private EdTech industry.

To unpack these complicated postdigital relationships beyond the private and public boundary in the current EdTech-mediated marketization of education, this study draws on ANT as an analytic tool. ANT's challenge to fixity and stability of human agency resonates strongly with postdigital critiques of linear, causal, and often developmental narratives of technological change. Utilizing the concepts of assemblage and translation, this study approaches the EdTech industry not as a collection of individual companies with a singular market logic, but as a multidimensional network of both public and private actors (Luke 2020). It further attends to the processes through which this assemblage is continually disassembled and reassembled as new actors enter the network and existing relations are transformed.

From this perspective, the formation and reconfiguration of the EdTech industry assemblage is inherently contingent rather than determined in advance by the intentions of either the state or private actors (Sperling et al. 2024). To examine these dynamics more closely, the study distinguishes between what Latour (2005) terms intermediaries and mediators. Intermediaries transport meaning and force without transformation, whereas mediators actively reshape the relations, meanings, and effects within the assemblage. Translation occurs when particular actors mediate and transform the network.

Within a postdigital framework informed by ANT, this study traces how the EdTech industry assemblage emerged and was reconfigured through the development and introduction of South Korea's AIDT policy. By following actors, and particularly mediators (Adams and Thompson 2016), the analysis shows how their interventions contributed to the formation, expansion, and reconfiguration of the assemblage. In doing so, the study argues that in the process of postdigital marketization of education, the boundaries between public and private or digital and analog remain contested and unstable. This perspective makes it possible to examine the complexity of private–public partnerships and the political economy of EdTech beyond simplified narratives of either state control or corporate takeover.

Methodology

This qualitative case study examines the emergence of the AIDT-related EdTech industry in South Korea as part of a broader collaborative project on the enactment of the AIDT reform. While the larger project traces three interconnected

assemblages—policy, industry, and classroom—this paper focuses specifically on the industry assemblage. In contrast to our previous postdigital study (Lee et al. 2025), which analyzed the policy assemblage using policy documents, media texts, and interviews with a broad range of stakeholders, the present study draws primarily on interview data from industry actors to examine how EdTech companies and related actors entered, navigated, and were repositioned within public education through the AIDT initiative.

The specific case was defined as the emerging AIDT-related EdTech industry in South Korea within the broader context of the government's national digital education reform. To keep the analysis focused and analytically manageable, the study was bounded temporally, examining developments between 2023, when the AIDT policy was formally announced, and 2024, when AIDT products were developed and evaluated through textbook authorization procedures. The unit of analysis was not an individual company but the sociotechnical assemblage of the industry—that is, the shifting network of human and non-human actors, technologies, discourses, and financial interests through which the industry was constituted and transformed.

Data Collection

The data for this paper consist of semi-structured interviews conducted with the ten industry participants after the main development and initial authorization process for AIDT had been completed. This timing allowed participants to reflect on the policy materialization process as a whole, including both expectations and outcomes. In several cases, the participating companies had failed to obtain authorization, and these accounts were particularly informative for understanding uncertainty, exclusion, and risk within the industry assemblage.

Interview participants were recruited using a combination of purposive and snowball sampling. The project team first reviewed companies involved in AIDT development and selected a set of companies to maximize variation in organizational type, business model, size, and institutional history. These included EdTech startups specializing in educational platforms and services, traditional textbook publishers with digital service units, and technology companies with advanced AI or large-scale data-processing capacities but limited prior experience in education. Five companies initially agreed to participate, and additional partner companies were subsequently recruited through interviewees' recommendations. In total, ten industry participants took part in the study (see Table 1). Most interviewees held senior or managerial roles and were therefore positioned to speak about organizational strategy, investment decisions, collaboration, and tensions surrounding AIDT development.

Interview questions were designed to elicit detailed accounts of participants' experiences and perceptions of AIDT development, as well as organizational strategies, partnerships, financial conditions, and expectations regarding its impact on public education. Following ANT-informed heuristics proposed by Adams and Thompson (2016), we sought to attend not only to participants'

Table 1 Participants

No	Participant #	Affiliation	Position within Organization
1	Participant 1	EdTech Startup	Chief Executive Officer
2	Participant 2		Content Producer
3	Participant 3		Content Producer
4	Participant 4		Content Producer
5	Participant 5	Textbook Publishing Company	Head of Division
6	Participant 6		Head of Division
7	Participant 7		Team Leader
8	Participant 8		Manager
9	Participant 9	Technology Company	Chief Technology Officer
10	Participant 10		Chief Executive Officer

perspectives but also to the effects of non-human actors, such as policy documents, technical specifications, textbook status, funding arrangements, and data infrastructures. All interviews were conducted in Korean during site visits to participants' workplaces, enabling the research team to develop a richer understanding of the companies' organizational settings and ongoing activities. Interviews lasted between 90 and 120 min, were audio-recorded, and were transcribed verbatim.

Data Analysis

Data analysis was guided by ANT-informed principles, with a particular focus on how the industry assemblage emerged, expanded, and was reconfigured through relations among heterogeneous actors. The analysis proceeded in three steps. First, we identified key events and conditions that shaped the formation and transformation of the assemblage during the enactment of the AIDT policy. Second, we traced the human and non-human actors involved in these moments and examined how they were connected, displaced, or reassembled. Third, we paid particular attention to mediators—actors that not only carry meaning or force, but also transform relations within the assemblage.

To support collaborative analysis, the research team developed and refined a shared codebook informed by ANT concepts (Yoo et al. 2025). Using this codebook, we conducted coding on Atlas.ti Web while remaining open to new categories emerging from the data. We then mapped relationships among actors through a collaborative visualization process, using a web-based design tool to draw and compare assemblages across different moments of transformation. Moving iteratively between coded transcripts and visual network maps, we developed the analysis presented in this paper of how the EdTech industry became embedded, though unevenly and contingently, within the public education sector through AIDT.

Tracing the EdTech Industry Assemblage through AIDT

This section traces how the EdTech industry in South Korea moved closer to, entered, and was unevenly repositioned within public education through the enactment of AIDT. Rather than treating this process as a linear policy rollout, we identify three overlapping phases in the emergence of the AIDT-oriented industry assemblage between 2023 and 2025 (see Table 2). These phases are intended as a temporal map of the assemblage's emergence and transformation.

Temporal Overview

Phase 1: Pre-Assembling and Incubating the AIDT Industry Network

The conditions for the AIDT industry assemblage were incubated in the aftermath of the Covid-19 pandemic, which rapidly expanded and normalized digital technologies in public schools. Emergency remote teaching drew EdTech companies, digital platforms, devices, cloud infrastructures, and data systems into everyday educational practice, bringing the industry closer to schools, teachers, and students than before. These connections, however, remained provisional and peripheral to formal curriculum governance. From an ANT perspective, this phase is best understood as one of loose and unstable associations rather than a coherent assemblage. Even so, these early alignments accumulated technical capacity, organizational experience, and expectations of ongoing and greater participation in public education (see Fig. 1).

Phase 2: Consolidating The AIDT Industry Assemblage Through Materializing AIDT

The announcement of the AIDT policy marked a turning point in the translation of the EdTech industry into public education. Through policy documents, matching events, development guidelines, and technical specifications, AIDT was transformed from a reform vision into a material project with concrete timelines and requirements. Previously dispersed actors, including traditional textbook publishers, EdTech startups, and technology firms, were drawn into a more tightly coupled network oriented toward developing authorized AIDT products. This consolidation, however, did not produce stability. Participation expanded under conditions of technical ambiguity, regulatory pressure, and financial uncertainty, making the assemblage increasingly dependent on mediating elements that could only temporarily align heterogeneous interests (see Fig. 2).

Phase 3: Reconfiguring The AIDT Industry Assemblage Within Public Education

The assemblage was reconfigured as AIDT prototypes moved through authorization and toward classroom use. Authorization outcomes unevenly differentiated actors, allowing some companies to advance into public education while excluding or delaying others. At the same time, controversies over data protection, political challenges to AIDT's legal status, and broader public debate over digital safety issues in education brought new actors into the network and exposed its fragility. Rather than

Table 2 Temporal Overview of the AIDT-Oriented Industry Assemblage in South Korea

Phase	Approximate timeframe	Key development
1. Pre-assembling and incubating the AIDT industry network	Post-Covid to Spring 2023	Growing proximity of EdTech to public schools
2. Consolidating the AIDT industry assemblage through materializing AIDT	Spring 2023 to Spring 2024	Policy-driven coordination around AIDT development
3. Reconfiguring the AIDT industry assemblage within public education	Fall 2024 to Spring 2025	Uneven authorization and contested public school entry

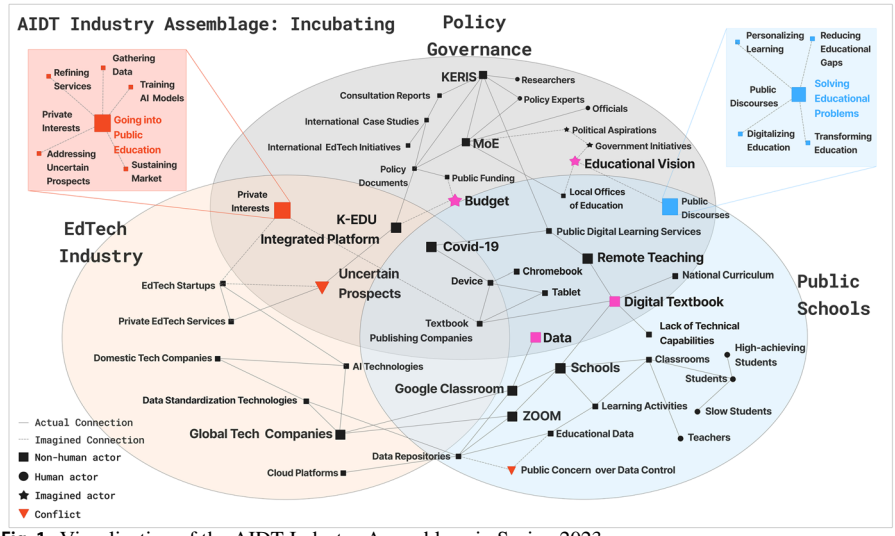

Fig. 1 Visualization of the AIDT Industry Assemblage in Spring 2023

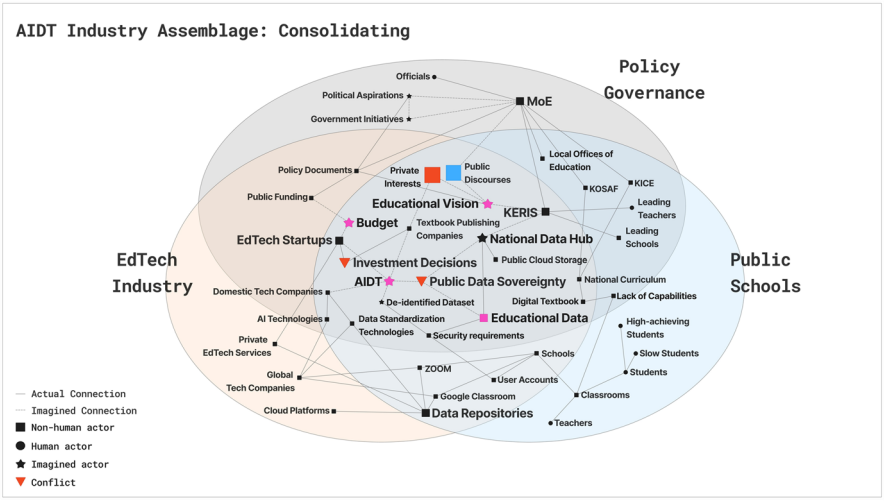

Fig. 2 Visualization of the AIDT Industry Assemblage in Spring 2024

consolidating into a stable market, the assemblage entered a phase of fragmentation in which entry into public schooling remained partial, contested, and reversible. This final phase shows that the industry's incorporation into public education was not completed by AIDT, but remained contingent on ongoing negotiations over legitimacy, funding, regulation, and public trust (see Fig. 3).

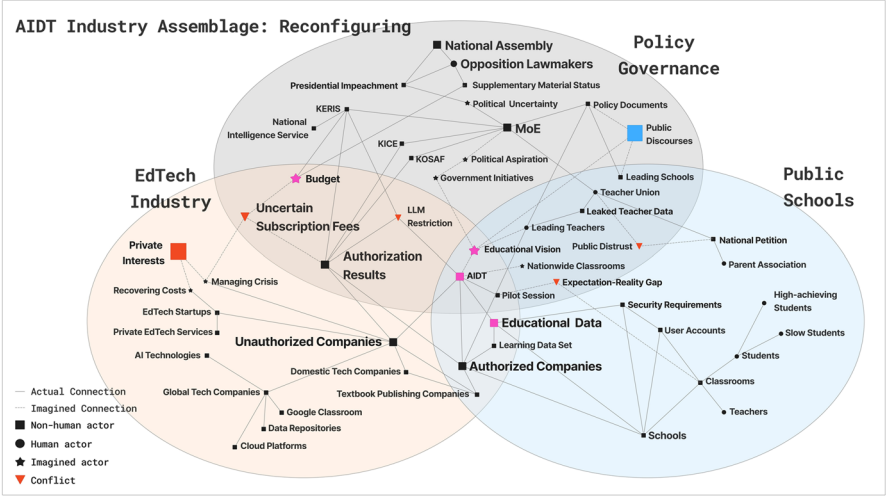

Fig. 3 Visualization of the AIDT Industry Assemblage in Spring 2025

Key Mediators

The following sections turn from this temporal overview to the key mediators that shaped the assemblage. Rather than revisiting the phases themselves, the analysis focuses on four mediators—legal textbook status, speculative public funding, data governance, and personalization discourse—to show how the EdTech industry's participation in public education was enabled, coordinated, and contested.

Mediator 1: Legal Textbook Status

Legal textbook status functioned as a key mediator as it linked curriculum authority, public funding, public classrooms, and teacher and student users. For industry actors, AIDT became consequential not simply as another EdTech product, but as a state-recognized textbook that could legitimately enter classrooms at scale. In this sense, legal status translated public education into a legible and potentially guaranteed market. That is, it signaled the possibility of nationwide adoption and state-backed revenue, thereby making participation in public education much more profitable and achievable for different industry actors.

This mediator mattered differently across the industry. For traditional textbook publishers, it extended an established institutional route and made participation appear almost obligatory. For EdTech startups and technology firms, by contrast, it created a rare and unusually direct pathway into public education that would have been difficult to secure through ordinary market channels. As one participant put it, textbook status meant 'a market with 100% coverage' because all schools use textbooks:

> The biggest reason for obtaining textbook status is that 100% of schools use textbooks … If it's just an optional platform, who would pay for it? In the end, it has to come from the government. (Participant 3)

Another participant explained:

> If this digital textbook policy hadn't existed, introducing AI technology into public education would have been extremely difficult. Convincing the Ministry of Education and local education offices on our own was almost impossible. (Participant 9)

What legal textbook status provided, then, was not simply recognition for pedagogical legitimacy, but an authorized channel through which heterogeneous industry actors could imagine themselves as legitimate participants in public schooling.

Nevertheless, the same mediator that opened access also narrowed and disciplined it. Once entry into public education was routed through textbook authorization, EdTech companies became dependent on state-defined procedures, evaluation criteria, and legal decisions over status itself. Legal textbook status thus operated not only as an enabling device but also as a gatekeeping one. It encouraged companies to reorganize teams, redirect capital, and invest in development, while simultaneously exposing them to uneven authorization outcomes and later legal and political reversals. Rather than stabilizing a straightforward expansion of the private sector, it produced a selective and contingent form of market access in which legitimacy and risk were tightly intertwined.

Mediator 2: Speculative Public Funding

Speculative public funding mediated the industry assemblage less as a fixed resource than as an anticipated future revenue. Public funding circulated through the AIDT initiative as a promise of large-scale reimbursement, subscription income, and market expansion, encouraging companies to commit resources in advance of concrete pricing or return-on-investment mechanisms. In this sense, the government did not simply finance private actors' participation; it helped call the assemblage into being by making future public demand appear credible enough to justify present investment.

This promissory function was especially important in the post-pandemic context, when many EdTech companies were searching for more stable and institutionalized forms of demand after the volatility of emergency remote teaching. One participant recalled that the launch of major government digital education initiatives marked the moment their company formally entered public education and eventually joined AIDT development:

> The very first thing the new minister did was launch the one million digital talent initiative. They poured around 120 billion won [$87 million] over three months. … That's when we formally launched K–12 services. It hadn't been our core business before. Through matching days, we met publishers, signed contracts, and eventually joined the AIDT development. (Participant 1)

Participants shared the clear sense that the scale and speed of the AIDT project and associated public funding were unprecedentedly huge. It was also described how the government repeatedly encouraged industry actors to proceed with development first and leave pricing discussions until later. As one participant put it, companies were reassured that there would eventually be 'hundreds of billions, even trillions of won' in the future (Participant 2). Another participant described the uncertainty surrounding development costs and pricing:

> From the start, we kept asking about investment costs. The government basically told us to go make it first. But we didn't know how much we were supposed to invest … We kept raising this issue, but the Ministry said pricing would only be discussed after completion. Now, we're still negotiating. (Participant 7)

Public funding, therefore, operated as a speculative coordinating force; the 'promised budget' generated trust, expectation, and organizational commitment without fully clarifying the economic terms of participation. This mediator is especially useful for the argument of postdigital marketization because it blurs, rather than simply separates, the boundary between public and private. EdTech companies entered a government-led reform through private investment, internal capital reallocation, and sometimes external financing, all on the basis of anticipated public expenditure. When textbook status became politically contested, and authorization outcomes sharply reduced the number of viable products, those expectations became fragile. For industry actors who had invested heavily based on the previous government's promises, this moment intensified concerns over cost recovery and long-term viability. Participants shared the frustration with the financial burden:

> Small publishers were extremely angry. The ministry made it seem like everyone would pass. Companies invested, thinking the public education market had opened. But in the end, everything fizzled out. (Participant 3)

> Publishers are stalled. They've invested heavily, but now the question is whether they can recover those costs. Subscription fees haven't even been set yet. The issue isn't about making good EdTech anymore. It's about managing this crisis. (Participant 4)

This mediator was closely related to the legal textbook status. Participants repeatedly suggested that the central issue was not 'whether it's called a textbook or not' but whether sufficient public budget would follow to make their participation sustainable. Speculative public funding thus mediated a fragile mode of postdigital marketization in which private participation depended on politically contingent public promises.

Mediator 3: Data Governance

Data governance emerged as a key mediator in part from a post-Covid policy concern that educational data had been flowing through global Big Tech platforms, such as Google Classroom and Zoom, beyond public control. Thus, the governance of AIDT data was initially shaped by a retrospective effort to reclaim data sovereignty

after the unprepared pandemic expansion of digitalized and platform-based schooling. However, data governance quickly became a contradictory mediator that both attracted industry actors to public education and constrained what they could do once they entered it. For EdTech companies, particularly AI-oriented technology firms and startups, public education represented not only a potential market for economic profit but also a valuable site of data generation. Access to 'real classroom interaction' promised opportunities to train models, refine products, and demonstrate technical capability. One participant explicitly explained that entry into public schools was mainly driven by the need to gather data:

> Honestly, I had always been interested in education, but I hadn't seriously considered doing business specifically within the public education system. … Initially, my goal was to conduct research, but I realized I didn't have any data. So, I thought, 'I need to gather data first.' That's why I deployed our service in public schools completely free of charge. (Participant 1)

From the industry perspective, data was therefore an enabling condition for 'research', subsequent service development, and future competitiveness.

Once AIDT moved into formal development, however, data was increasingly governed as a protected public asset rather than a private resource. Technical documentation, government-run infrastructures, and security rules were designed to keep educational data within publicly monitored systems and to limit its commercial reuse. For industry actors, this meant that the very data that drew them toward public education became increasingly inaccessible, uncertain, and politically sensitive. Participants also described not knowing what forms of de-identified data, if any, would eventually be returned to them, while also facing explicit warnings against the use of public educational data for private-sector purposes. For instance, participant 9, a tech company representative, mentioned: 'the government harshly emphasized that if any of this data is used in private education, they will pursue criminal charges', while also complaining: '[the government] says they'll eventually provide de-identified data back to the publishers, but we don't even know what form it will take'.

Under these conditions, data governance did not simply regulate innovation from the outside; it redefined the limits of permissible innovation within the assemblage itself. This shift turned out to be a significant matter for companies that had entered the AIDT initiative not necessarily for a profit-oriented purpose but with a long-term business-oriented goal, expecting to use classroom data to improve their capability.

Data governance also shaped the technical specifics of AIDT. Data sovereignty and security requirements affected which infrastructures, external tools, and AI models developers could use. For example, the National Intelligence Service (NIS) was enrolled as a critical actor, mandating that student data remain within domestic, government-managed cloud storage. Participants noted that restrictions on foreign large language models (LLMs) limited the kinds of services that developers could realistically build; subsequently, many developers faced a huge discrepancy between their original AIDT design with a range of advanced and useful features and their outcome with much less:

> Everyone expects ChatGPT-level AI capabilities, but the NIS has blocked the use of foreign LLMs. … Very few companies have been able to develop proper alternatives under these conditions. (Participant 7)

At the same time, some participants pointed to loopholes around particular forms of interaction data that might remain under private control, indicating that data governance was never fully settled in practice.

As AIDT moved toward classroom use, data governance became a focal point of public debate and political tension. A leak of personal data from about 10,000 teachers in the government's Leading Teacher program, although not directly caused by AIDT, intensified public anxiety about whether educational data could be securely governed at scale. Parent associations, teacher unions, and opposition lawmakers used these concerns to question the legitimacy of AIDT and the subsequent expansion of data collection in public education. For industry actors, this meant that participation in public schooling unfolded under intensified scrutiny, uncertain rules, and shifting public trust. What data governance mediated, then, was not only a dispute over privacy or ownership, but the conditions under which AIDT could be imagined, developed, and justified in public education.

Mediator 4: Personalization Discourse

Personalization discourse functioned as a powerful discursive mediator that made EdTech industry participation in public education publicly defensible. Unlike the aforementioned mediators—legal textbook status, speculative public funding, data governance—it did not provide industry actors with direct access, immediate (more precisely, promised) revenue, or long-term benefits. Nevertheless, it played a critical role in holding the AIDT industry assemblage together and providing it with the legitimacy to exist and enter the public sphere by translating AIDT from an economically and commercially promising product into a morally and pedagogically recognizable project. The promise of 'personalized education for all students' smoothly linked state ambition, educational demand, and industry activity within a shared language of democracy and improvement, allowing the expansion of EdTech into public schooling as a needed response to persistent educational problems such as educational inequality, classroom diversity, and the limits of teacher capacity.

This naturally 'right' and relatively 'open' discourse was extremely effective as industry actors did not enter the AIDT initiative with a single pre-determined pedagogical commitment. As discussed earlier, some were responding to post-pandemic market instability, others to technological opportunity, and the others to the opening of a state-backed market. Personalization discourse provided a flexible public language through which these different motivations could be rearticulated as contributions to educational reform. Participants acknowledged that the meaning of personalization itself remained unclear; nevertheless, they themselves frequently adopted this language, describing AIDT as a way to respond to diverse student needs or to supplement the practical limits of classroom teaching:

> I think the AIDT direction is right. Because there are so many different levels of students. … We need learning content or teaching and learning meth-

> ods that are adapted to each student. There are definitely areas that are hard to cover with just [paper-based] textbooks. (Participant 2)

> One teacher cannot handle 30 students. … There's currently no way to solve the problems that offline education has. The only ways would be to spend enormous amounts of money or, realistically, to go with EdTech. Whether the AIDT policy did it well or not, I think it's a solution. (Participant 4)

In this sense, personalization discourse helped assemble and align heterogeneous actors by making their involvement naturalized within the normative language of educational policy. At a more practical level, the discourse also did not prescribe a single fixed pedagogical model. Companies, subsequently, translated the idea of personalization differently according to their own relationships with schooling and organizational and technical capacities. Some moved toward adaptive and activity-based student learning:

> For high-achieving students, they just solve problems … For slow students, it has to be fun. That's why we decided on activity-centered learning design. We incorporated a lot of additional activities alongside the basic learning framework. (Participant 8)

Others, however, questioned whether it can be directed by students themselves and emphasized the need to develop effective teacher tools for lesson planning and classroom orchestration:

> We, of course, designed personalized learning in AIDT, but when we actually thought about the concept from students' perspective, it didn't quite make sense … We thought it was necessary to go in a direction where teachers can teach effectively by being equipped with tools for lesson planning and classroom orchestration. (Participant 7)

Its conceptual openness or looseness was part of its mediating power that enables industry actors with different interests to stay together in the AIDT assemblage without reaching consensus on what personalization should concretely mean in practice.

As the AIDT initiative reached the final phase of authorization and classroom use, personalization discourse continued to justify participation even as legal status, public funding, and data governance became increasingly unstable. Despite the political controversy over public investment and public concerns over data sovereignty, EdTech companies did not seem to lose the belief in their products and services for providing 'personalized' (or at least 'individualized') learning opportunities. Positive feedback on their products from leading teachers who had participated in pilot sessions reinforced technology-oriented reform efforts and helped sustain their commitment:

> A teacher gave us really good feedback. The teacher moved from the front to the back of the classroom. The teacher can pull out only the struggling students to work with them individually … This is AI's complete positive function. (Participant 1)

What personalization discourse mediated, then, was not a settled design consensus, but the moral and pedagogical legitimacy through which industry participation could continue to be justified within public education, even though it was financially uncertain, technically constrained, and politically challenged.

Discussion

This study contributes to critical EdTech studies by showing that the expansion of EdTech into public education in South Korea is better understood as a process of postdigital marketization than as a straightforward case of privatization. Existing work on the marketization of education has shown how neoliberal values such as efficiency, competition, and innovation enable the transfer of public resources into private infrastructures and services (Ball and Grimaldi 2022; Nivanaho et al. 2024). Our findings support this critique, but they also suggest that the relationship between public education and the EdTech industry is more contingent and relational than such accounts sometimes imply.

EdTech policy enactment is not simply a confrontation between two separate spheres, public and private, but a heterogeneous network assembled around digital technologies, funding arrangements, policy documents, and institutional actors with multiple often conflicting interests (Komljenovic et al. 2024; Luke 2020; Ortegón et al. 2024; Villalobos et al. 2024). The South Korean case extends this argument by showing that the EdTech industry neither strategically entered schools on its own means nor was simply inserted by outside forces. It was assembled through complex arrangements of multiple discursive and material actors that were legal, financial, and technical.

This study adds to emerging research on the EdTech industry by demonstrating that industry participation in public education depends on mediators that simultaneously enable and destabilize market access. Komljenovic et al. (2024) show that data monetization in higher education is constrained by tensions internal to educational institutions, while Villalobos et al. (2024) describe EdTech companies as not only technology producers but also articulators and administrators within broader systems of digital governance. Our findings even more clearly show the ambivalent positionality of industry actors when negotiating their entry into public education.

A combination of mediators of different natures (legal textbook status, speculative public funding, data governance, and personalization discourse) created a selective and unstable mode of access in which companies were drawn into public education by rhetorical legitimacy and promised scalability, while simultaneously being subjected to authorization risk, uncertain funding, and technical restriction. This case, therefore, illustrates that marketization is not simply the expansion of privatization in pursuit of economic values, but the politically and discursively mediated postdigital space without clear public–private boundaries.

This study also develops and advances the authors' own claims in the previously published postdigital policy study in this journal (Lee et al. 2025). There, AIDT policy enactment was conceptualized as a contingent process of translation in which

multiple assemblages emerged, intersected, and destabilized one another, rather than unfolding in a linear or pre-determined way (Lewis 2021; Mol 2010; Savage 2020). Our postdigital policy paper further argued that political contestation, legal changes, and data-related controversies generated 'collateral realities' that reshaped the reform as it moved across contexts (Law and Singleton 2014). The present study extends that analysis by shifting attention from the policy assemblage to the industry assemblage. What becomes visible from this fresh angle is that these same contingencies not only affected policy enactment; they simultaneously or subsequently reorganized the conditions under which industry actors could enter, remain in, or withdraw from public education. In other words, what appeared in the AIDT policy assemblages as instability in the policy translation and implementation appears here as instability in industry participation.

Another important implication concerns the role of discourse (Lee 2026). The literature on critical EdTech studies has highlighted how EdTech companies and governments mobilize technology solutionism to present long-standing educational problems as solvable through digital intervention (Teräs et al. 2020; Williamson 2019, 2021). Our postdigital policy study similarly showed that the AIDT initiative was sustained by sociotechnical imaginaries and policy visions that framed AI as a route to 'personalized learning for all students', even as policy enactment became increasingly unstable (Fawns et al. 2023; Jandrić and Knox 2022; Jasanoff 2015).

This study deepens this point by stressing that personalization discourse functions as a key discursive mediator for the industry assemblage. Unlike other mediators that were more clearly connected to immediate benefits and access points, personalization discourse indirectly but much more fundamentally rendered commercially oriented and thus politically contested industry participation morally and pedagogically defensible within public education. Its conceptual openness allowed different actors to remain aligned without agreeing on a single pedagogical model, which helps explain why the AIDT initiative could continue to be justified even when its legal, financial, and technical foundations were increasingly fragile.

These findings suggest that postdigital marketization should be understood as a changing mode of educational governance rather than as a fixed mechanism of educational privatization. What matters is not simply that private companies enter public schools and classrooms, but how their entry is assembled, under what conditions it is legitimized, and why it remains unstable. The South Korean case shows that the state remains central to this process; it creates legal routes of entry, circulates speculative funding, defines the boundaries of acceptable data collection and utilization, and sustains reform through solutionist and democratic discourse (Kim et al. 2025). However, the same state-led arrangements also produce political conflicts, fragile conditions, and ultimately uncertain outcomes of inclusion and exclusion. This is where the new concept of postdigital marketization is analytically valuable, as it allows us to move beyond simplistic narratives of either state control or corporate takeover in the current EdTech phenomena. That is, it offers a useful lens to examine how public and private actors become entangled through contingent sociotechnical arrangements.

Conclusion

This study has argued that South Korea's AIDT initiative should be approached as a process of postdigital marketization through which the EdTech industry was assembled, legitimized, and unevenly repositioned within public education. Rather than depicting AIDT as a straightforward case of privatization or a simple story of policy success or failure, the analysis has shown that industry participation was mediated through legal textbook status, speculative public funding, data governance, and personalization discourse. This case demonstrates that the expansion of EdTech into public schooling is neither linear nor complete, but a contingent process in which state actors, private companies, technical infrastructures, legal arrangements, and reform discourses become temporarily aligned while remaining unstable and contested. We, therefore, argue that postdigital marketization offers a useful analytic lens for understanding how public education is reorganized not only through economic interests, but through shifting sociotechnical relations that blur the boundary between public and private.

Importantly, the postdigital marketization sheds light on the grey areas that seem to be limitedly accessed, understood, or even mistaken by postdigital policy research and critical EdTech studies. The political economy of EdTech reform is assembled through unstable multiple mediations rather than determined in advance by either neoliberal intentionality or technological inevitability. However, it is worthwhile to emphasize that postdigital marketization should not be treated as an alternative to critiques of neoliberal marketization, but as a way of making sense of those processes more politically nuanced and empirically sophisticated. Even when AIDT faced legal contestation, funding uncertainty, and public distrust over data governance, the broader solutionist belief that digital technologies could solve persistent educational problems remained powerful. Future EdTech reforms may therefore continue to emerge through similar assemblages, even if particular initiatives remain partial, reversible, or unsuccessful. For this reason, critical EdTech research needs to attend not only to private-sector expansion itself, but also to the mediating conditions, public justifications, and unstable partnerships through which such expansion becomes possible in the postdigital era.

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Author Contribution K.L. conceived and designed the study, supervised the research process, and led the writing of the manuscript and visualization. S.S. contributed to data collection, conducted data analysis, visualization, and manuscript writing. C.K. conducted the primary data collection, analysis and prepared figures and tables, and manuscript writing. IC.J. contributed to the theoretical framing of the study, provided critical feedback throughout the research process, and reviewed and edited the manuscript. All authors reviewed and approved the final manuscript.

Data Availability The qualitative data generated and analyzed during this study are not publicly available due to ethical restrictions protecting participant confidentiality but are available from the corresponding author on reasonable request.

Declarations

Ethics Approval This study was reviewed and approved by the Internal Review Board (IRB) of the authors' institution, under approval number IRB No. 2410/003–005.

Consent to Participate All human participants were adults. They were informed of the aims and procedures of the study and were assured of confidentiality, anonymity, and their right to withdraw at any time without consequences. Each participant provided explicit written consent to participate.

Competing interests The authors declare no competing interests.

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