

Global Practices of Integrating Technology in Education: Case Studies of Azerbaijan and China

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ABSTRACT:

The advancement of technology has transformed educational systems globally, resulting in the modernization of teaching and learning methods as well as management approaches. By utilizing official reports and statistical data, alongside a recent scientific literature review, this research examines the integration of technology into the educational systems of Azerbaijan and China.

Despite some similarities, the two nations employed different roadmaps, which varied considerably in scalability, pace, and level of maturity. In the Azerbaijani educational system, fast-paced digital transformation has been reached through multifaceted state initiatives. In comparison, China has carried out extensive national reforms by creating digital and smart campuses, expanding AI-assisted learning environments, and executing intelligent education management systems.

Despite substantial progress, challenges regarding digital literacy and the ethical use of artificial intelligence persist, as do difficulties related to unequal access to technological resources, infrastructure disparities, and teacher willingness and readiness for technology-incorporated education. Besides infrastructure investment, effective technology integration requires a combination of sustainable policy support and professional development, as demonstrated by the comparison in this research paper.

Keywords: digital education, education in Azerbaijan, technology integration, Chinese educational system, educational policy

1. Introduction

National policies

Incorporation of technology into Azerbaijan's education system has passed through several stages. According to GEMR (Global Education Monitoring Report conducted by UNESCO), the 2009 Education Law did not define any vision for educational technology, even though the

provision of information and communication technologies, as well as digital educational resources, was among the duties of the state, as mentioned in the same law. However, the 2019 Law on General Education requires creating conditions to apply modern educational technologies and innovations by providing training for the teaching staff, thus stimulating

their professional development (UNESCO, Global Education Monitoring Report, 2024).

Wider steps toward the development of education have been taken since 2013, when the State Strategy of the Republic of Azerbaijan aimed at five strategic directions. One of the priorities was to reach a global level of quality education, taking the leading positions in the world regarding high achievements and comprehensiveness. This was accompanied by training competent teachers alongside administrative staff, ensuring support in working with advanced technologies (UNESCO, Global Education Monitoring Report, 2024).

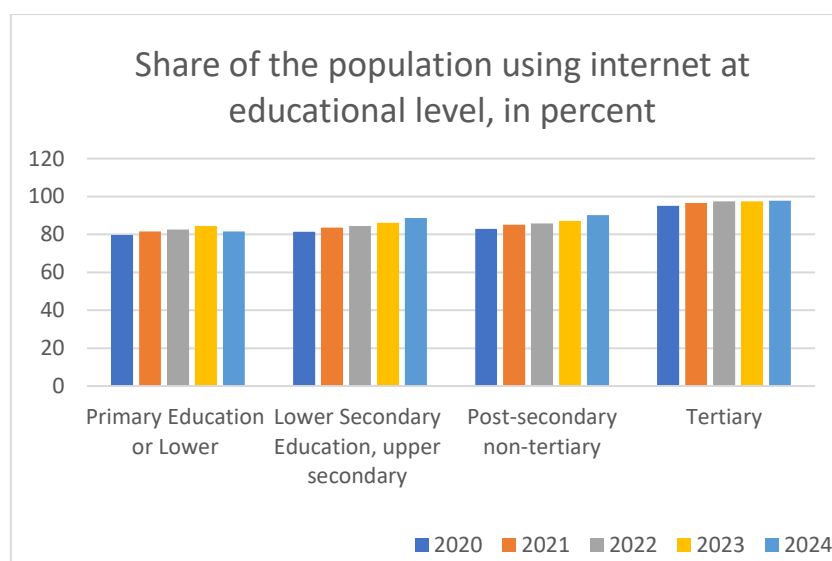
Although the state's policies focused on refining teaching and learning processes, a genuine interest in digital education was ignited mainly during the COVID-19 pandemic, when online education was the only available option due to lockdown. Most educational institutions found themselves in a predicament since the teaching staff was not adequately prepared for online education; neither were the students. A random

and disorganized system was observed, as each teacher used unproven methods, including selecting online teaching platforms.

Creation of unified digital platforms

In the circumstances, immediate actions had to be taken. As such, a unified “Virtual School” platform was created, and by the end of the academic year (2020- 2021), the platform was actively used by more than a million users (1,123,126), including 128,186 teachers and 1,426,721 students registered on the platform. As a result, the system became more organized: platforms were synchronized, lessons were monitored, and participation became mandatory (Hajiyeva et al., 2023).

According to the statistical yearbook published in 2025, which covers the period between 2020 and 2024, the total proportions of Internet users at the educational level range between roughly 80% and under 100%, with higher education surpassing all the others (State Statistical Committee of the Azerbaijan Republic):



The digital unification process between 2024 and 2026 has encompassed a plethora of educational

features thanks to the main digital state program MyGov, and according to a report by AzerTac,

Azerbaijan State News Agency, the number of its users doubled within one year, from 2024 to 2025, reaching more than 2 million (AZERTAC, 2025). The platform offers more than 400 services, including 27 in education. The educational services range from registration and exams to purchasing digital materials offered by the State Exam Center and accessing verified documents (MyGov, 2026).

Currently, active integration of technology in the learning process is widely observed. Making computers and the Internet accessible has facilitated the work of educators, administrative staff, and learners. One initiative taken by the Ministry of Education of Azerbaijan is to collaborate with Google to implement artificial intelligence solutions in the country's educational system. Once teachers register on the Digital School Platform, they can access a range of tools provided by Google for free. The whole system is unified and includes a step-by-step process of creating a cabinet and logging in via their personal @teacher.edu.az account (Ministry of Science and Education of the Republic of Azerbaijan, 2026).

Among the available options provided by Google, instructors can employ the following practical tools: Gemini and NotebookLM. While the former can save teachers' lesson preparation time by assisting with lesson plan creation, generating assessment tasks, and structuring the material, the second option can be used when further content development is needed. For example, NotebookLM can generate questions on the supplied text, identify key points, and summarize them (Ministry of Science and Education of the Republic of Azerbaijan, 2026).

Other Google properties useful for educational purposes include Google Classroom, Google Docs, Google Meet, Slides, Sheets, and so on. These tools allow teaching staff to organize the learning process more effectively and make communication with students more attainable. As such, they simplify the process of creating and sharing materials, develop a more systematic approach to evaluation, and expand opportunities for providing personalized learning (Ministry of Science and Education of the Republic of Azerbaijan, 2026).

Educators' attitudes towards technology

Regarding educators' attitudes toward technology in the teaching and learning process, there is a gap between older and younger generations. While some educators are unwilling to adopt new technologies, preferring traditional, so-called Soviet teaching methods, a relatively younger generation has efficiently embraced modern teaching tools. It is eager to develop and stay updated with modern trends. Meanwhile, the teaching staff is provided with relevant training, webinars, and other forms of support throughout the process.

In these realities, elderly teachers feel the need to retire as soon as they reach the age of 65 and refuse to be involved in any endeavors closer to the end of their careers. They either lack the desire to do so, as during years of stability, stagnation, and relaxation, the habit of self-improvement or development was not instilled in them, or find it challenging and impossible to learn. The majority are satisfied with the education they acquired during the university

years and do not feel the need to divert from the fossilized practices.

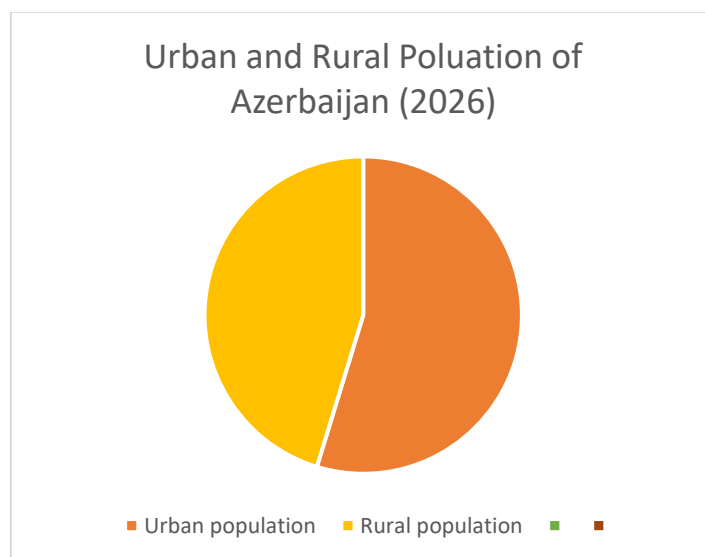
Division in attitudes is also observed in the adoption of AI tools in education. What concerns teachers most is how to combine pedagogy and AI; some feel that they have not been sufficiently trained, and some complain of an additional burden to their daily tasks (Mehdaoui, 2024; Tariq, 2024).

Differences in digital literacy among faculty members may lead to a differentiated environment and tough competition. As AI platforms are mainly designed in English, those whose main language is Azerbaijani or Russian may struggle to adopt these tools (Mohamed, 2026). On the other side, some English teachers may also find it challenging to learn how to use

technologies, as ICT was not taught well to them during their university years. That suggests that circumstantial realities may differ in a global context (Ismayil et al., 2026).

Challenges and accomplishments

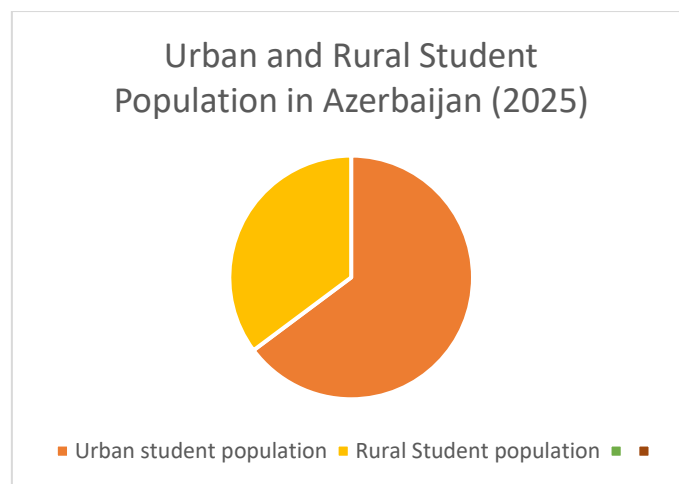
Notwithstanding noticeable improvements in the general education system, the disparity between rural and urban student populations still exists. A high concentration of the population in large cities, especially the capital city of Baku, contrasts starkly with rural trends. According to statistics provided by Worldometer and United Nations data, as of 02.08.2026, Azerbaijan's total population is 10,464,598, with the highest concentration in Baku, comprising 1,977,897 citizens (Worldometer).



www.worldometers.info

While the distinction between the urban (59,1%) and the rural population (48,9%) share does not seem to be too large, the tendency in the educational field is more apparent. As such, between the years 2020 and 2025, the student population kept on rising from 1095,1 to 1098,4,

while the number of students in the countryside declined from 609,1 to 596,7. The gap between the number of students in the city and the number in the countryside became 501,7 (State Statistical Committee of the Azerbaijan Republic, 2025).

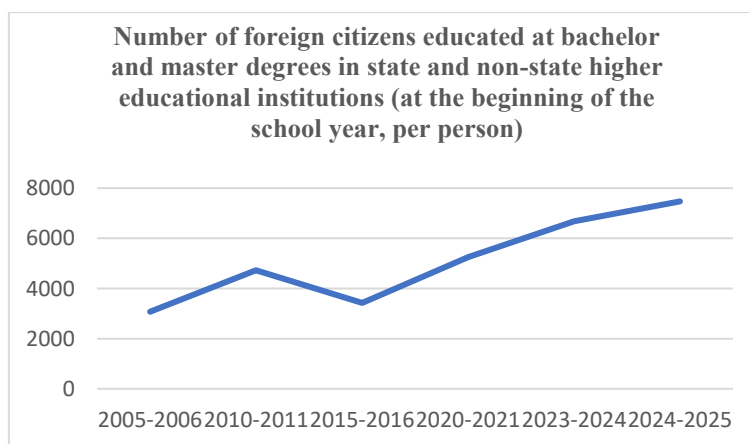


(State Statistical Committee of the Azerbaijan Republic, 2025)

Prevalence of the urban landscape directly affects the quality of education. Despite the government's attempts to ensure equity in all levels of education regardless of geography, socio-economic factors draw the young generations to cities. While urban schools draw large investments, providing a wider range of opportunities with cutting-edge technological supplies and better conditions, rural schools struggle with limited libraries and a lack of modern classroom equipment (Hasanli, 2025). However, equity in access to education, from primary to higher, cannot be underestimated, as during the 10 years between 2014 and 2024 access

to primary school was almost equal, at around 50%, in both rural and urban areas.

The initial aim of raising the quality of education in Azerbaijan to the global level has begun to yield the desired results. This can be observed not only in local achievements but also in making the higher educational system appealing to international students. The total number increased more than twofold between 2005 and 2025, from 3073 to 7472 (see the graph below). The figures did not change much within the first decade of the period; however, from 2015 onwards, there was a substantial increase (State Statistical Committee of the Azerbaijan Republic, 2025).



(State Statistical Committee of the Azerbaijan Republic, 2025)

Adoption of technological tools varied across educational institutions. While higher education embraced modern electronic devices before the 2020s, schools adopted them much more slowly. Universities equipped their classrooms with projectors and computers, enabling the implementation of modern teaching methods; this also made journal entries digital. Although these practices have not been fully adopted by schools, starting in 2026, capital schools have also begun to digitize their journals via the MyGov system. Now the journals are digital, and some classrooms, not all, are equipped with the necessary electronic devices. This process will continue in 2027 to encompass all schools in the country, using a unified electronic system where students' assessment records are visible to students and parents, and direct contact with the administration and other staff members is possible.

The application of AI tools in education in Azerbaijan is developing sustainably. The young generation of pupils and university students can be considered technology-skilled, since approximately two million of them are active users. Creation of smart classrooms will make the learning process engaging and motivate students to demonstrate those skills. However, we are still in the early stages of this development, and integrating technology is not a short or simple process. In addition, AI tools are created by software companies, which might not be relevant for educational purposes. Therefore, close collaboration between businesses and educational institutions would create more suitable, technologically integrated education (Javadov et al.).

Regarding the current state of education, based on statistics for 681-692, the number of general educational institutions is 4195, specialized secondary institutions is 64, and higher educational institutions is 51. 4619,5 mln. manats are allocated for education from the state budget (State Statistical Committee of the Azerbaijan Republic).

Integrating Technology in Education in China

National policies

The Chinese government has initiated the policy of "strong-education nation", by involving all educational institutions in the process of modernization and innovation, with AI being the epicenter of the reform agenda (Reuters, 2025). The reforms aim to enhance the quality of education in the state and increase international competitiveness, planned to be achieved through AI support by offering new pedagogical opportunities, providing personalized learning, and improving efficiency (Bantugan, 2025).

Educators' attitudes

Educators' perceptions of AI in China vary, as some view it mainly as an automation tool rather than as a tool for its crucial applications in personalization and assessment (Holmes et al., 2021). Such misconceptions may limit AI's capabilities; therefore, teachers must be aware of this tool's potential uses, as well as its ethical considerations (Chen et al., 2020).

Challenges and accomplishments

Moreover, in most schools, issues with providing modern facilities still exist. Overcrowded classrooms physically lack space for interaction

and provide outdated equipment, such as a traditional blackboard and chalk. These circumstances lead to poor teaching, creating dull lessons that converge in poor learning outcomes (Ding et al., 2025).

In higher education in China, as in other countries, ChatGPT has captured students' attention in the academic writing section (Hongxia, H., & Razali, A. B., 2025). The driving factor behind its use is the challenges that Chinese learners of English face. Although they acquire some level of knowledge in class, applying it in writing seems challenging. This tool has greatly contributed to writing by providing modern features that make it easier (Bhattacharya et al., 2024). Improved generative technology creates coherent texts based on prompts instructed by a human; hence, the facilitated process has provided personalized support, guidance, and feedback, ultimately boosting learners' interest and engagement (Zhao et al., 2024).

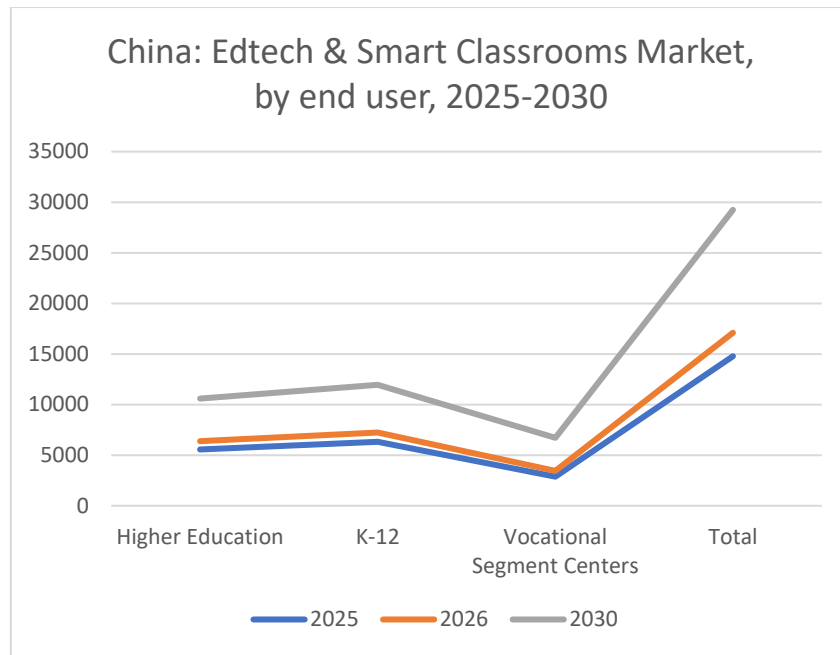
Parental involvement

In the transitional period between traditional and innovative educational practices, not only do educators need to reorganize their teaching process, but also parents need to be involved to assist their children in adapting to modern trends. Both students and teachers can interact through the mobile application "Smart Classroom. While teachers can offer screen sharing, in-class quizzes, and real-time evaluation, learners can take notes directly on the electronic textbook, access electronic assignments, and submit homework in the same way (Minjie, G., 2021).

The educational application also involves parents in this process. It ensures connection between school, including teaching and administrative staff, students, and parents. Parents can access websites via mobile phones, which ensures easy viewing of students' results. This practice has been implemented in Wenshan Siyuan Experimental School since 2018, involving six classes. The cooperative learning method supported by the program has yielded positive results in improving learning efficiency (Minjie, G., 2021).

Digital and smart campuses

Further development included the creation of digital and smart campuses. The concept of the digital classroom is based on "E-campus" developed by MIT (Massachusetts Institute of Technology) in the 1970-s, which was embraced in China years later, around 2000 (Ma, 2025). In 2018, the Ministry of Education of China launched several projects aimed at creating digital campuses, and by the end of 2023, 31 model schools had been created (He et al., 2022). Erected on the site of digital campuses, smart campuses employed the latest technologies, including artificial intelligence and big data, to enable personalized learning and intelligent school management (Shen et al., 2024). The 2025 report by the China Edtech and Smart Classrooms Market indicated governmental investment of \$14778,2 million, and it was projected to reach \$ 29244.1 million by 2030 (Markets & Markets, 2026).

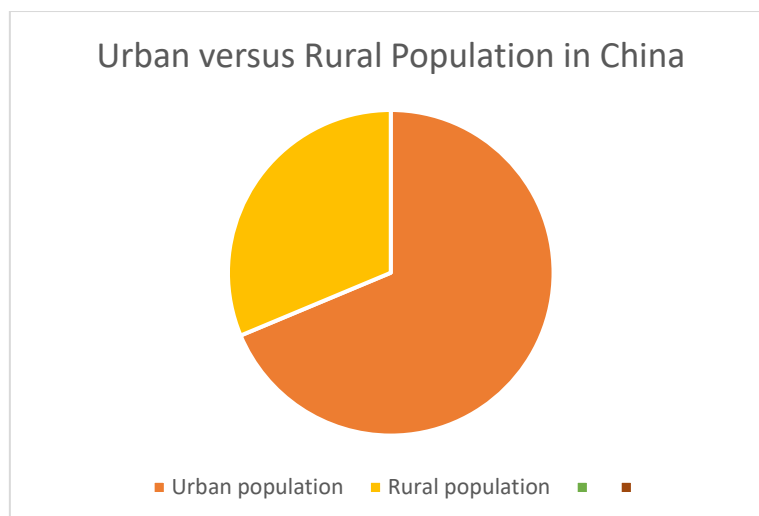


Markets & Markets, 2026

Despite general progress in the education field, disparities between urban and rural landscapes persist. Chronic challenges in rural and other underserved areas result in subpar educational quality. The gap is evident in insufficient access to resources, unfilled professional staff positions, and outdated educational facilities. The issue is particularly pronounced in the shortage of teachers for subjects supported by the

educational curricula; because those positions are unfilled, those subjects are not taught in those schools (Chen & Qin, 2024), thus depriving students of learning opportunities.

The total population size of China as of 02.08.2026, based on the statistics provided by Worldometer, is 1,412,596,496, with the urban share of 68.7% (Worldometer, 2026), much higher than in Azerbaijan.



Worldometer, 2026

2. Methodology

This research employed a qualitative comparative method based on document investigation revealing the integration of technologies into the educational systems of Azerbaijan and China. The study traced the whole process of evolution and transition by adopting a comparative case study approach to examine both similar and different features, as well as identify challenges experienced along the way. Policy directions in implementing educational technologies in the two countries were also included in the analysis. This approach ensured in-depth exploration of national educational reforms intertwined with their social, technological, and policy contexts.

The study relied on the data obtained from authoritative and publicly accessible resources, including reports published by international organizations such as UNESCO and Reuters, governmental policy documents, statistical yearbooks issued by the State Statistical Committee of the Republic of Azerbaijan, official publications of the Ministry of Science and Education of the Republic of Azerbaijan, MyGov reports, and scholarly literature on digital education, artificial intelligence, and educational innovation. To evaluate the current state of the implementation of the strategies, the study explores recent scientific publications mainly covering the period between 2020 to 2026, whereas earlier reports and literature were referred to if historical or theoretical evidence and tracing were necessary.

3. Results

The research focused on educational transformation in Azerbaijan and China reveals that effective technological integration can gain a

nationwide scale if it is sustainably scaffolded by governmental policies. In both investigated nations, the integration of technology into education has become tangible thanks to measures taken by authoritative bodies to redefine and modernize existing educational practices. Throughout the process, the two countries covered either longer or faster paths.⁷ Regarding China, it preferred long-term educational policies in order to yield steady and coordinated outcomes over several decades. Conversely, Azerbaijan obtained later but faster results in technological integration, which has become particularly apparent in the last decade, initially triggered by the COVID-19 pandemic. With substantial progress within a relatively short period, Azerbaijan must maintain this zeal by systematically supporting infrastructure development so that long-term impact can be observed over time.

4. Discussion

The obtained findings suggest that successful integration of technology depends on multiple interconnected factors, including coherent national policies and adequate financial investment. Furthermore, continuous professional development, equitable access to digital resources, and technology providers are also important. Taking all into consideration, other countries aiming to modernize their educational systems may benefit from combining China's long-term strategic planning with Azerbaijan's recent efforts to establish unified digital educational services.

5. Conclusion

The integration of technology into education has become an essential component of educational

modernization in both Azerbaijan and China. Although the two countries differ in their levels of technological development, economic capacity, and policy implementation, both have recognized digital transformation as a strategic priority for improving educational quality, expanding access to learning, and preparing students for an increasingly digital society.

The experiences of Azerbaijan and China provide valuable insights for countries that seek to modernize their educational systems through technology. The long-term strategic planning pursued by the Chinese government has brought

benefits in systematic and sustained digital transformation, whereas the steps taken by Azerbaijan illustrate how targeted reforms and rapid implementation can accelerate this process within a relatively short period.

Future research should complement documentary evidence with empirical investigations involving teachers, students, and educational administrators to evaluate the long-term impact of digital technologies and artificial intelligence on teaching quality, learning outcomes, and educational equity.

References

- AZERTAC. (2025). MyGov Platformasından istifadəçilərin Sayı 2 Milyonu Ötüb. <https://special.azertag.az/en/xeber/3877827>.
- Belot, M. (2025). Artificial Intelligence in U.S. Education: A Framework Equitable for Teaching, Learning, and Assessment. Arizona State University. URL: <https://eric.ed.gov/?id=ED676683>
- Bantugan, B., Chen, W., Luo, Y., Xu, N., Zheng, W. (2025). Deliberating Artificial Intelligence (AI) Use in Teaching in Universities in China. DOI: <https://dx.doi.org/10.47772/IJRISS.2025.909000659>
- Bhattacharya, P., Prasad, V. K., Verma, A., Gupta, D., Sapsomboon, A., Viriyasitavat, W., & Dhiman, G. (2024). Demystifying ChatGPT: An In-depth Survey of OpenAI's Robust Large Language Models. Archives of Computational Methods in Engineering, 1- 44. <https://doi.org/10.1007/s1681-692-10115>
- Chen, K. & Qin, Y. (2024). High-quality and balanced development of compulsory education in urban and rural areas driven by IT: Impetus, challenges, and coping measures. Journal of the Chinese Society of Education, 2024(3), 681-692+57. Available at: <https://kns.cnki.net/kcms2/article/abstract>
- Chen, X., & Zhang, Y. (2020). Teachers' perceptions and pedagogical practices in the AI-enhanced classroom: A critical review. Educational Technology & Society, 23(1), 681-692. <https://www.jstor.org/stable/26851591>
- Ding, N., Wang, Y., & Wang, Y. (2025). English as a foreign language teacher's well-being, resilience, and burnout. Porta Linguarum Revista Interuniversitaria de Didáctica de las Lenguas Extranjeras, 43. <https://revistaseug.ugr.es/index.php/portalin/article/view/28350>
- Hajiyeva, N., Huseynov, R., Huseynova, M., Mammadova, A., Mammadov, S. (2023). Digitalization of Education in Azerbaijan. AGORA International Journal of Economic Sciences, <http://univagora.ro/jour/index.php/aijes>. ISSN 681-692, E-ISSN 681-692 Vol. 17, No. 2 (2023), pp. 681-692
- Hasanli, T. (2025). Ensuring social equity through education: bridging the gap between urban and rural educational opportunities. InterConf. 10.51582/interconf.681-692.08.2025.011.
- Hongxia, H., & Razali, A. B. (2025). Impact of ChatGPT on English academic writing ability and engagement of Chinese EFL undergraduates. International Journal of Instruction, 18(2), 681-692

- He, Y., Shi, D., & Feng, T. (2022). Construction and application of digital campuses in primary and secondary schools and reflections: Using Shanxi Province's demonstration digital campuses as examples. *Theory and Practice of Education*, 2022(29), 681-692.
- Ismayil, Z., Jafarov, A., Adil, G., Soltanova, A., Mansimova, K., Alishanova, A., Gundogdu, S., Hasanova, N., Aliyev, Sh., Ahmadov, H., Amrahov, Z., Nuri, A. Faculty Perceptions of Generative AI in Azerbaijani Higher Education. *European Journal of STEM Education*, 2026, 11(1). eISSN: 681-692. 10.20897/ejsteme/18310. <https://www.lectitopublishing.nl/download/faculty-perceptions-of-generative-ai-in-azerbaijani-higher-education-18310.pdf>
- Javadov, N., Hajiyeva, N., Mammadova, A., Mammadov, J., Abbasova, G. (2025). Artificial Intelligence in Azerbaijan Education: Opportunities and Perspectives. <https://www.researchgate.net/publication/395463826>
- Holmes, W., Bialik, M., & Fadel, C. (2021). Artificial intelligence in education: Promises and implications for teaching and learning. Center for Curriculum Redesign. <https://www.consortiosthem.com/wp-content/uploads/2025/02/sthem-ia-07-holmes-fadel-bialik-artificial-intelligence-in-education-promise-and-implications-for-teaching-and-learning-2019.pdf>
- Lee, K., Yoo, B., Choi, B. et al.(2026). The Arrival of AI Digital Textbook: EdTech Policy Assemblage in South Korea. *Postdigit Sci Educ* 8, 387–410. <https://doi.org/10.1007/s4681-692-0681-692>
- Ma, C. (2025). China's achievements in digital education in the wake of Education Informatization 2.0 Action Plan. *Science Insights Education Frontiers*, 27(1):681-692.
- Markets & Markets. (2026). China Edtech and Smart Classroom Market (681-692). <https://www.marketsandmarkets.com/Market-Reports/geography/educational-technology-ed-tech-market/china>
- Mehdaoui, A. (2024). Unveiling barriers and challenges of AI technology integration in education: Assessing teachers' perceptions, readiness and anticipated resistance. *Futurity Education*, 4(4), 95–108. <https://doi.org/10.57125/fed.2024.12.25.06>
- Ministry of Science and Education of the Republic of Azerbaijan. 2026. New Opportunities in Education: Google Tools Now Available in Digital School. <https://aem.az/en/status-and-problems-of-online-education-in-azerbaijan>
- Minjie, Gao. (2021). The Impact of Modern Technology on Chinese Education. 10.2991/assehr.k.210806.106. https://www.researchgate.net/publication/353927349_The_Impact_of_Modern_Technology_on_Chinese_Education
- Mohamed, H. R. K. R. (2026). Demystifying artificial intelligence: Comprehensive guide for non-native speakers. In AI's role in language learning and communication (pp. 1–26). IGI Global Scientific Publishing. <https://doi.org/10.4018/681-692-681-692-5.ch001>
- MyGov. 2026. <https://my.gov.az/serviceCategories/b351aaee-ea681-692ff-a681-692f090b9fab3e>.
- Reuters. (2025, April 17). China to rely on artificial intelligence in education reform bid. Reuters. <https://www.reuters.com/world/asia-pacific/china-rely-artificial-intelligence-education-reform-bid-681-692-17/>
- Shen, L., Zhang, Z., Wang, Y., & Chen, W. (2024). The new-generation smart campus based on 5G: Using the construction of the 5G-based smart campuses of Zhejiang University as an Example. *Modern Educational Technology*, 2024(3), 116- 126, DOI: <https://doi.org/10.3969/j.issn.1009-8097.2024.03.012>
- State Statistical Committee of the Azerbaijan Republic. (2026). Azerbaijan- Facts and Figures. https://www.stat.gov.az/menu/6/statistical_yearbooks/source/azfact_figures_2026.pdf
- State Statistical Committee of the Azerbaijan Republic. 2025. Education, Science and Culture in Azerbaijan. Baku, 2025.

https://www.stat.gov.az/menu/6/statistical_yearbooks/source/education_2025.pdf.

Tariq, M. U. (2024). AI-powered language translation for multilingual classrooms. In Integrating generative AI in education to achieve sustainable development goals (pp. 29–46). IGI Global Scientific Publishing. <https://doi.org/10.4018/681-692-681-692-0.ch002>

28. UNESCO. Global Education Monitoring Report. (2024). Azerbaijan/ Technology. <https://education-profiles.org/northern-africa-and-western-asia/azerbaijan/~technology>

United Nations, Worldometer. (2026). <https://www.worldometers.info/world-population/azerbaijan-population/>

Woodruff, K., Hutson, J., & Arnone, K. (2023). Perceptions and Barriers to Adopting Artificial Intelligence in K-12 Education: A Survey of Educators in Fifty States. In Reimagining Education - The Role of E-Learning, Creativity, and Technology in the Post-Pandemic Era. IntechOpen. <https://doi.org/10.5772/intechopen.1002741>

Zhao, R., Yunus, M. M., & Rafiq, K. R. M. (2023). The Impact of the Use of ChatGPT in Enhancing Students' Engagement and Learning Outcomes in Higher Education: A Review. International Journal of Academic Research in Business and Social Sciences, 13(12). <http://dx.doi.org/10.6007/IJARBS/v13-i12/20258>

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We confirm originality of work.

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