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ПРЕОБРАЗУЮЩЕЕ ВЛИЯНИЕ ТЕХНОЛОГИЧЕСКИХ ИННОВАЦИЙ И ПЛАТФОРМ ОНЛАЙН-ОБУЧЕНИЯ НА КИТАЙСКОЕ ОБРАЗОВАНИЕ В ИНФОРМАЦИОННУЮ ЭПОХУ

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Аннотация. Изучаются изменения в образовательной сфере Китая, происходящие под влиянием цифровых решений, ключевую роль в которых играют сервисы *Tencent Classroom* и *XuetangX*, облачные сервисы компании *NetEase*. Основное внимание уделяется авторской идее цифрового цзюнь-цзы – образцового студента нашего времени, который воспитывается с помощью интеллектуальных алгоритмов искусственного интеллекта и конфуцианских представлений о человечности, ритуалах и пути к совершенству. Отмечается, что Китай опережает другие страны в использовании цифровых технологий в исследованиях: более 16 млн людей являются активными пользователями услуг массовых открытых онлайн-курсов благодаря распространению опыта в зоне реализации инициативы «Один пояс – один путь», которая разрушает рамки традиционной системы образования Китая.

Ключевые слова: цифровой цзюнь-цзы; синтез конфуцианства и технологий; услуги массовых открытых онлайн-курсов; искусственный интеллект; образование; гуманность; ритуал; самосовершенствование личности; цифровой Китай.

THE TRANSFORMATIVE IMPACT OF TECHNOLOGICAL INNOVATION AND ONLINE LEARNING PLATFORMS ON CHINESE EDUCATION IN THE INFORMATION AGE

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Abstract. The presented article is devoted to changes in the educational sphere of China under the influence of digital solutions, where services such as *Tencent Classroom* and *XuetangX*, *NetEase* cloud services play a key role. The focus is on the author's idea of digital junzi – a sample student of our time, who is brought up by smart artificial intelligence algorithms along with Confucian ideas about humanity, rituals and the path to perfection. China is ahead of the curve in introducing numbers into studies, as evidenced by the scale: over 16 mln active users of massive open online course services, with the promotion of experience on the initiative «Belt and road», which destroys the framework of China's traditional education system.

Keywords: digital junzi; synthesis of Confucianism and technology; massive open online course services; MOOC services; artificial intelligence; AI; education; humanity; ritual; self-improvement of personality; digital China.

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Introduction

In the 21st century technological innovation is rapidly changing our lifestyles and social structures. One of the most important areas is education, which has always been considered the most important pillar of the nation and society. China is leading this transformational process, with more than 16 mln educational platform users to date and a 45–80 bln dollars educational technology market. The country is creating a global digitalisation benchmark by exporting platforms through initiative «Belt and road».

However, with the continuous development of technology, traditional teaching methods and models have undergone profound changes. Education is no longer limited to traditional classroom learning, but is entering the digital age, becoming more diversified and globalised through new technologies such as online learning platforms (massive open online course, MOOC).

The Chinese case is obviously one of the best research subjects, since only here there is an unprecedented scale of users of online educational platforms, state education policy that implements digitalisation as a national strategy and unique philosophy. These

three pillars of modern China in the field of education make it possible to synthesise technology and ethics into a model of global importance and make a leap from digital China to the Eurasian educational future.

The purpose of the article is to investigate the influence of online platforms on the Chinese education system, to identify how Chinese MOOC platforms implement technological Confucian synthesis, turning students into a relevant form of junzi through the integration of personalisation algorithms with the basic principles of Confucianism: humanity, ritual and self-improvement, to create a harmonious knowledge society within the framework of the modern educational system.

An obvious innovation of the study is the conceptual model of digital junzi proposed by the author, which is being formed by technological Confucian synthesis. In this process, Chinese MOOC platforms act as an infrastructure for Confucian self-improvement in the digital age, synthesising artificial intelligence (AI) personalisation with key principles of Confucianism, turning the mass student into an autonomous digital junzi.

Main part

Confucian thought formed the foundation of education in China, presenting it as a moral path to social harmony. Teacher Confucius in conversations «Lun Yu» spent his studies as everyday work: «To engage in knowledge and return to it on time is not it a joy?» [1, p. 3]. This is how junzi was born – a man of honor, managing through valour: «A noble eats without satisfying hunger to his fullness, lives without pretensions of comfort, is quick to work, is prudent in speeches and is looking for a way to himself in Tao. Here is who appreciates teaching» [1, p. 5]. He insisted on equality of chances: «The doctrine does not divide by rank; all who are drawn to good are worthy» [1, p. 80]. The main thing is personal growth: «I was fifteen – I rushed to knowledge, stood firm at thirty, did not know forty doubts» [1, p. 6]. Since the 7th century keju has been introduced: tests on sacred books were put at the service of the capable, and not the offspring of the nobility.

It was based on ren, the Confucian category, which is often translated into European languages as humanity, while the Confucius conveyed through this category one of the characteristic features of a mentor – devotion to people, heart to people. The order is also based on whether the necessary component for self-discipline and eternal progress: «Repeating what you have passed, grab the new – here is a real teacher» [1, p. 7].

This line stretches to the present day. China's modern education system is undergoing a stage of techno-

logical modernisation, where the central role is played by the consolidation of online platforms as a single network of digital services that combines educational materials, interactive modules and knowledge acquisition control systems. Such systems provide unprecedented knowledge coverage to students, faculty, and universities, ensuring adaptability, expansion, and individualisation. These grounds are unconditional prerequisites for the formation of digital junzi.

Chinese online learning platforms refer to «...internet platforms that provide a variety of educational materials and learning resources, usually including online courses, educational videos, e-books, exercises, exam preparation materials, and education-related social interaction tools. These platforms are aimed at meeting the needs of students of different ages and training requirements, from basic education to higher education and vocational training»¹ [2, p. 6].

The development of these platforms embodies technological Confucian synthesis. Having emerged as additional tools, they have grown into full-fledged interaction environments due to «improving the technological infrastructure, diversifying the content of the course, introducing online assessment tools and wider user participation» [2, p. 11]. It is in this environment that the principle of incessant self-improvement is being revived today, where digital exams replace the ancient keju exam system.

¹Here and further translated by us. – W. Zh.

Digital junzi formation is supported by the following online platforms:

- *Tencent Classroom* – «an online learning platform run by Chinese internet giant Tencent, offering a variety of courses and learning resources, including open courses, professional courses and K-12 educational resources» [3, p. 5]. The learning algorithm of this platform is an up-to-date version of the traditional ritual, suggesting the daily practice of performing the proposed tasks by students at all stages of the K-12, preparing for gaokao;

- *NetEase Cloud Classroom* – «an online learning platform managed by NetEase that provides students and professionals with a wide range of educational content that mostly implements social functions» [3, p. 5]. The multidisciplinary content of this online platform is aimed at implementing the principle of humanity through the formation of collective values;

- MOOC platforms – «Chinese universities and educational institutions actively participate in MOOC global projects, such as MOOC of China University» [3, p. 5], integrating national education standards into the international educational space. Thus, the spread of China's educational culture is one of the mechanisms of China's soft power;

- *XuetangX* – «Tsinghua University-supported online learning platform offering high-quality academic courses and professional training» [3, p. 5].

These systems crystallise the three pillars of modern Chinese education (scale, public policy, and Confucian basis) becoming a digital framework for autonomous digital junzi in a harmonious knowledge society.

Chinese digital education services stand out for their exceptional scope and targeted government support, making them role models around the world in online learning. While Western services mainly make money on content, platforms such as *Tencent Classroom*, *NetEase Cloud Classroom*, *XuetangX* and national MOOC platforms from Chinese universities are closely related to government policy and the latest developments. They attract tens of millions of learners and create an e-learning marketplace. These systems go beyond just disseminating information. They purposefully revive the Confucian pattern of the sage in digital format, helping each student to gain independence in mastering balanced knowledge.

All these resources strive for a common task that can be determined how to grow a digital junzi through a fusion of smart technologies and Confucian ideas like humanity, ritual and personal growth. For example, in *Tencent Classroom* platform, daily tasks on algorithms repeat the ancient ritual of preparing for the gaokao exam, instilling order and stable growth. *NetEase Cloud Classroom* platform emphasises group communication, developing humanity through shared values and a wide range of topics. Tsinghua University's *XuetangX* platform opens the door to elite learning for

the masses, making it easier to access deep knowledge, and MOOC projects weave Chinese approaches into the global space, strengthening the country's influence around the world. Together they form a network where artificial intelligence supports, rather than supplants, a person's personal abilities.

This approach clearly shows the main task: to break down the old barriers in education through the merger of technology and Confucianism, raising the ideal inhabitant of digital China – a person who improves himself, follows ethics and is ready for the difficulties of the new era. These platforms do not split the study process, but build a path from an ordinary student to a new generation junzi, where smart recommendations are in harmony with the principles of self-control and balance. As a result, China offers the world a benchmark in which technology works not only for speed, but also for uplifting spirit and personality.

By deepening the synthesis of technology and Confucianism, China's online platforms are breaking down the barriers of traditional education, paving the way for universal self-improvement. Students go beyond geographical remoteness, rigidity of learning schedules and lack of infrastructure, gaining knowledge even in remote provinces previously cut off from the educational process. The diversity of digital content embodies humanity, making Tsinghua training courses available to millions of *XuetangX* users.

Personal study routes enliven the Confucian place about independent growth. Flexible planning for the individual rhythm of life elevates the strategy of education through life to the rank of the national smart education standard: «...the conflict between the traditional Chinese emphasis on political pragmatism and the classical preservation of the ontological significance of knowledge from the West has never mixed well. The ideal of integrating Chinese and Western ideas was never realized» [4, p. 302]. Digital platforms remove this contradiction by combining practical training in gaokao with a philosophical desire for truth.

Artificial intelligence is perceived only as the core of digital junzi. By analysing competencies, systems match material pointwise, personalisation «...helps students learn more efficiently because they can focus on areas of interest, fill their knowledge gaps, and progress at their own pace. It also helps to improve student engagement and learning achievement» [5, p. 9]. *Tencent Classroom* algorithms lay unique paths, where the ritual manifests itself in measured advancement, synchronised with the student's life goals.

The quality of education is improved through innovative tools. Multimedia formats, live discussions and interactive *NetEase Cloud Classroom* replace classical lectures with digital cognition ceremonies. Technology «provides more opportunities for assessment and feedback, which helps educators better understand the needs and progress of students, thereby better meeting

their academic requirements» [6, p. 31]. Instant feedback embodies Confucian pedagogy, where the teacher leads the mentee to the heights of wisdom.

Thus, the positive effects of online platforms: accessibility, personalisation, high quality education, systematically embody technological Confucian synthesis, giving rise to digital junzi. A citizen is born from a mass student, ready for the harmonious society of digital China knowledge and the challenges of the modern world.

Touching on the shadow side of the synthesis of technology and Confucianism, we can say that Chinese online platforms are revealing cracks in the foundation of the junzi. The main conflict is a technological split that fuels inequality. In the remote corners of the country and poor counties, students do not have a stable Internet and gadgets, losing the chance to gain knowledge, violating or completely eliminating the principle of humanity proclaimed by *XuetangX*.

Infrastructure imbalances exacerbate the gap for peripheral layers, and weak digital learning skills block the effectiveness of available online platforms. The independence of online forms gives rise to apathy, breaking the ritual: «...the lack of direct observation and atmosphere in the classroom, as well as the autonomy of the curriculum, can lead to problems such as delay, reduced learning ability and academic dishonesty. In addition,

students may feel lonely and lack interaction with peers and teachers, which may affect their learning experience and academic achievement» [5, p. 3].

Data protection deforms the integrity of the digital junzi. Collecting the grades, study styles and personal information of millions is dangerous. Student data «...may be at risk of being hacked or misused without permission. Students and parents are also concerned that their data may be used for commercial purposes by advertisers or other third parties» [7, p. 17]. Monetising student habits is at odds with the Confucian desire for purity: education is not for monetary gain, but for truth.

Within the world space, China's experience highlights global risks, for example, «the authors justify the need to create a Belarusian digital university model that will take into account the traditions and values of Belarusian society, the accumulated experience and practice of Belarusian scientific schools, without blind copying successful foreign models» [8, p. 78–79]. This is a positive perception of the Chinese digital education initiative, where the digital junzi calls for a Eurasian rethink, demonstrates the need to abandon the mechanical transfer of elements of China's education system, requiring individual adaptation of digital environments to unique cultural grounds to maximise the result.

Future outlook and recommendations

In the long term, digital innovation will continue to radically transform the architecture of Chinese education. Key developmental trajectories include the institutionalisation of virtual and augmented reality technologies enabling immersive cognitive practices, as well as the dominance of artificial intelligence in personalised educational ecosystems. AI algorithms will systematically tailor instructional content and guidelines to individual cognitive profiles and student learning trajectories. In parallel, mobile learning and social media platforms will strengthen communication and collaborative functions, forming network models of interaction.

A set of institutional measures is needed to level the identified contradictions. Firstly, the implementation of subsidiary programmes of technical equipment and infrastructure support guarantees equal access to digital resources for all social strata. Secondly, the systematic professionalisation of teaching staff through certified programmes to improve information and communications technology competence will optimise motivational mechanisms and student engagement.

It is necessary to develop a systematic regulatory framework for the protection of personal information in the educational sphere. The state is obliged to construct a regime of increased legal rigour, integrating preventive control mechanisms with adequate sanctions for privacy violations. In educational policy, a conceptual priority of innovative technologies is required,

supported by grant and infrastructure incentives for universities in the process of digital transformation. Additionally, it is advisable to institutionalise public-private partnerships as a vector for the development of the educational technology sector. In the context of education reform, the priority task is the professionalisation of teaching staff through certified adaptation programmes to technological innovations. Institutions are moving rationally to hybrid learning models synthesising traditional and digital formats to maximise technological benefits. The pandemic experience acted as a catalyst for the introduction of innovative tools in the field of Belarusian-Chinese educational cooperation, strengthening bilateral academic ties. Remote cooperation has been continuously strengthened, online courses have begun to develop, and effective remote enrollment training tools have emerged, «Belarus and China have also carried out a number of cooperation in the fields of cultural exchange and education» [9, p. 434].

The consolidation of digital ecosystems in international university alliances is strategically important. The formation of joint educational trajectories with the institutions of the Eurasian Economic Union, China and India construct the Eurasian academic space on the basis of convergence of standards and mutual recognition of attestation. The development of standardised digital skills qualification protocols to ensure their interoperability between sovereign educational jurisdictions is critical.

The technological transformation of learning activates fundamental questions of digital ethics. AI bias in competency assessment procedures, commercialisation of biographical data, and erosion of interpersonal pedagogical practices dictate the need for a digital education deontology code. Government regulation is required to codify the axioms of algorithmic transparency, informed subject consent, and technological auxiliarity, where digital artifacts expand but do not substitute for humanistic pedagogical discourse.

The structural reorientation of the educational system postulates the realignment of fiscal resources towards capital-intensive investments in educational technology. The institutionalisation of the national digital educational infrastructure fund accumulates

capital for a regional technological upgrade. It is competitive to develop a venture mechanism to support educational innovators through fiscal preferences and incubation platforms, catalysing the innovation ecosystem.

The construction of a prognostic horizon until 2035 will allow counterposing the effect of metaversal spaces, neural interfaces and generative intelligence on the configuration of the educational field. National doctrines are required to project scenarios of technological synergy, including quantum simulations of cognitive processes and blockchain identification of academic verifications. This prognostic methodology guarantees the resilience of state educational architecture in conditions of non-linear technological trajectories.

Conclusions

Summing up, we note that the introduction of digital technologies radically changes the face of the educational system in China, giving rise to balanced approaches, where advanced developments are combined with fundamental human values and traditions of the country. In China, online platforms for a wide audience embody a unique fusion of technology and Confucian ideas, cultivating the image of digital junzi due to individual customisation of training and an emphasis on humanity, rituals and personal growth. This opens the doors of knowledge to all and awakens the active thinking of students.

China's digital change in education is not a departure from its roots, but a natural development of centuries-old Confucian thought. Since ancient times, the task of the exercise was clear, it was associated with the formation of a perfect citizen – junzi, the support of calm in society and the country's fortress. The author's new idea about digital junzi masterfully connects old truths with actual reality. Services like *Tencent Classroom*, *XuetangX*, and the *NetEase Cloud Classroom* synthesise smart algorithms with basic Confucian concepts of humanity, ritual, and self-improvement. It turns out not just a technique, but a deep renewal, where machines help to spiritually grow and improve.

Digital junzi is a step beyond a simple practical understanding of the role of gadgets, it is a fresh look at a person on the network, where traditional social selection mechanisms, for example, keju breathe in *Tencent Classroom* programmes, *NetEase Cloud Classroom* group chats and *XuetangX* expanded educational programmes. The main achievement of China's modern educational system is seen in large-scale training commissioned by the state without loss of morality. Through

history, we see how from the exclusive checks of the 7th century, forming small groups of ideal men, we move to services for 16 mln users, where AI pushes for goodness, knowledge and pride in history for a wide audience. The union of a living mind and artificial algorithms gives rise to an independent student who is ready to independently choose the path of knowledge and prosperity for himself and the whole nation.

Ancient rules come alive online, changing the crowd of students into carriers of balance, harmony and social values. The active spread of such a scheme is the basis of China's strength as a single civilizational world. Digital junzi here acts as an ideal resident of digital China: strict to himself, responsive to others, striving for knowledge and self-improvement. A complex of educational online platforms generates knowledge as the basis of citizenship, where the success of one is success and benefit for all. This extinguishes disputes within society, softens the difference in money, customs within the country, cultivating the image of a country without conflicts.

Before the difficult tests of the outside world, this method gives China strength and confidence, based on the confidence that every educated resident of the country maintains its integrity and follows the path of its prosperity. China gives the whole world network Confucianism as an education project for all. From the rule «science without ranks» to MOOC for billions, from local keju to checks of the level of gaokao anywhere in China and the world. China blurs the boundaries of time and space, simplifying the exchange of experience and access to knowledge, emphasises the value basis of change: the transition from a traditional, human-centered understanding of knowledge to a partnership between man and machine.

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