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ІТ-ДИСЦИПЛІНИ В МІЖНАРОДНОМУ ОСВІТНЬОМУ КОНТЕКСТІ: ПОРІВНЯЛЬНЕ ДОСЛІДЖЕННЯ ВИКЛАДАННЯ В УКРАЇНСЬКИХ ТА КИТАЙСЬКИХ УНІВЕРСИТЕТАХ

Анотація. *У цій статті підкреслюється важливість вивчення та порівняння освітніх практик у різних країнах. Наголошується на необхідності такого аналізу для вдосконалення викладання інформаційних технологій у контексті цифровізації та глобалізації. Проведено порівняльний аналіз ІТ-освіти в українському університеті (Сумський національний аграрний університет, СНАУ) та китайському університеті (Хенанський інститут науки і техніки, HIST). Стаття базується на досвіді викладання авторів в обох закладах, на емпіричних даних, зібраних за допомогою опитувань студентів, спостережень на заняттях та неформальних інтерв'ю зі студентами та викладачами. Дослідження зосереджується на студентах першого курсу, що навчаються за освітньою програмою «Міжнародна торгівля» в HIST (Китай) та студентах спеціальностей «Підприємництві» та «Економіці підприємства» в СНАУ (Україна), загалом 170 китайських та 68 українських студентів. Основні аспекти, що аналізуються в обох освітніх контекстах: попередній технічний досвід студентів (з урахуванням неоднорідної підготовки китайських студентів та більш однорідних, але часто фрагментарних знань українців), мотивація до навчання (сильні зовнішні мотивуючі фактори в Китаї, більша емоційна залученість в Україні), практика самостійного навчання (вища активність спостерігається серед китайських студентів), стилі викладання (відносно формальні та структуровані в Китаї проти неформальних та орієнтованих на зворотний зв'язок в Україні), технічна інфраструктура та академічна культура. Дослідження виявляє низку міжкультурних відмінностей, які впливають на ефективність навчання та характер взаємодії між студентами та викладачами. У висновках наголошується на необхідності адаптувати методи викладання ІТ-дисциплін до культурних та освітніх особливостей студентів. Дослідження також надає практичні рекомендації щодо вдосконалення практики вищої освіти шляхом інтеграції міжнародного досвіду.*

Ключові слова: *інформаційні технології; міжнародна освіта; Китай; Україна; мотивація студентів; самостійне навчання; технічна інфраструктура; академічна культура.*

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IT DISCIPLINES IN THE INTERNATIONAL EDUCATIONAL CONTEXT: A COMPARATIVE STUDY OF TEACHING IN UKRAINIAN AND CHINESE UNIVERSITIES

Abstract. *This article highlights the importance of studying and comparing educational practices across different countries. It emphasizes the necessity of such analysis to enhance the teaching of IT disciplines in the context of digitalization and globalization. A comparative analysis of IT education is conducted between a Ukrainian university (Sumy National Agrarian University, SNAU) and a Chinese university (Harbin Institute of Science and Technology, HIST). The article is based on the authors' teaching experience at both institutions, drawing on empirical data collected through student surveys, classroom observations, and informal interviews with students and faculty. The study focuses on first-year*

students of the "International Trades" program at HIST (China) and students majoring in "Entrepreneurship" and "Enterprise Economics" at SNAU (Ukraine), involving a total of 170 Chinese and 68 Ukrainian students. Key aspects analyzed include students' prior technical background (noting the heterogeneous preparation among Chinese students and more uniform but often fragmented knowledge among Ukrainians), learning motivation (with stronger external motivators in China and greater emotional engagement in Ukraine), independent learning practices (higher activity observed among Chinese students), teaching styles (more formal and structured in China vs. informal and feedback-oriented in Ukraine), technical infrastructure, and academic culture in both educational contexts. The research identifies a range of intercultural differences that influence learning effectiveness and the nature of student-teacher interaction. Conclusions emphasize the need to adapt IT teaching methods to the cultural and educational characteristics of students. The study also provides practical recommendations for improving higher education practices through the integration of international experiences.

Keywords: *IT disciplines; international education; China; Ukraine; student motivation; independent learning; technical infrastructure; academic culture.*

Problem statement. In the 21st century, the ability to use information technologies has become one of the key competencies for professionals across various fields. This drives the growing demand for high-quality IT education and highlights the importance of effective teaching of IT disciplines in higher education institutions worldwide. Comparing educational practices – particularly learning environments, students' prior preparation, motivation, and teaching methods – in an international context enables the identification of both universal approaches and culture-specific strategies. Such analysis can help uncover best practices that may enhance the education of Ukrainian students.

Analysis of Current Research. The modern system of higher education is rapidly transforming under the influence of globalization, digitalization, and international academic mobility. In this context, the study of how technological disciplines are taught in different countries has become particularly relevant. Comparative pedagogy and cultural aspects of education in Asia and Europe occupy a significant place in academic discourse. Research by Hofstede Insights and the works of G. Hofstede demonstrate that Asian cultures are characterized by high levels of collectivism, hierarchy, and discipline, which directly influence teaching styles and student behavior [1; 2].

In the Ukrainian context, as noted by O. Ovcharuk, education is more open to improvisation and flexible content delivery, but sometimes lacks in structure and organization [3]. A separate body of research is devoted to student motivation in IT-related fields. In their article, M. Ryan and E. Deci emphasize that intrinsic motivation (interest, self-realization), combined with extrinsic factors (career goals, salary), fosters a strong drive for in-depth learning of technical disciplines [4]. The motivational factors specific to the Chinese educational environment are examined in [5], where researchers argue that social pressure and academic expectations play a decisive role in students' learning engagement.

In the Ukrainian academic space, the teaching of IT disciplines is also gaining a more systematic character. Ukrainian studies [6] address the specifics of teaching programming in non-specialized school settings, while [7] explores key features of Ukraine's digital education landscape.

Studies in the field of educational analytics and EdTech also deserve attention. They emphasize the use of interactive platforms, digital learning methods, and personalized approaches across different countries [8]. In particular, the importance of flexible digital tools for data visualization in the learning process is highlighted. However, the comparative aspect of IT education approaches across international contexts remains insufficiently explored.

The aim of this article is to compare the specifics of teaching IT disciplines at a Ukrainian and a Chinese university. The study focuses on several aspects, including the educational environment, students' prior technical background, learning motivation, independent study practices, and academic culture. Based on this comparison, the article formulates practical recommendations applicable to Ukrainian higher education.

Research methods. The study is based on the teaching experience of the authors at two higher education institutions: Harbin Institute of Science and Technology (HIST, China) and Sumy National Agrarian University (SNAU, Ukraine). The research compares the specifics of teaching IT disciplines to first-year students majoring in "International Trades" at HIST (China) and students of the "Entrepreneurship" and "Enterprise Economics" programs at SNAU (Ukraine). In total, the study involved 170 Chinese and 68 Ukrainian students.

All groups were at the initial stage of studying IT-related courses (such as Big Data, Algorithmization and Programming, and Programming Applications), which enabled an assessment of their entry-level preparedness, motivational factors, and adaptability to new digital knowledge.

The research utilized observation, comparative analysis, and elements of qualitative research, including student reflection, feedback, and informal interviews.

Presentation of the main research material.

1. Level of Students' Prior IT Training

We believe that the level of students' prior IT training plays a crucial role in their subsequent learning of IT disciplines, as it encompasses fundamental knowledge in mathematics, statistics, programming, and information technologies.

A survey conducted among students from both universities – Harbin Institute of Science and Technology (HIST, China) and Sumy National Agrarian University (SNAU, Ukraine) – revealed that their high

school preparation in IT was generally comparable. The subject known as “Informatics” in Ukraine is taught under a unified national curriculum, while in China, it is referred to as “Information Technology” (信息技术 Xìnxī Jìshù) and is categorized into “Standard” and “Advanced” levels, starting from primary school.

In both countries, school textbooks cover similar core topics, including office applications, data visualization tools, algorithms, programming, cybersecurity, and databases.

A significant difference, however, lies in the structure and enforcement of IT education. In Ukraine, informatics is a mandatory component of the national curriculum. In China, by contrast, the requirement to study information technology varies by region, ranging from compulsory to elective. As a result, students in non-IT university programs in China often display widely differing levels of prior knowledge.

Observations of classroom activities and informal discussions with Chinese faculty confirmed these findings.

At HIST, the technical background of students – particularly in mathematics, statistics, and programming – was found to be highly heterogeneous. Some students had little to no understanding of basic concepts, while others exhibited advanced programming skills in languages such as Python and Java. Conversely, Ukrainian students generally demonstrated a more uniform level of competence, though it was sometimes limited or fragmented across specific topics.

These differences significantly affect students' perception and assimilation of course content. Ukrainian students tend to adapt more quickly to IT terminology, grasp software tools and analytical platforms with relative ease, and show a higher level of readiness for independent problem-solving. Chinese students, on the other hand, often require more time to process material and benefit from additional clarification – particularly when dealing with abstract concepts or mathematical models.

2. Educational Environment

An important component of the educational environment is the availability of technical resources. At HIST (China), classrooms are equipped with modern multimedia systems, interactive whiteboards, stable high-speed internet access, and specialized software. Students also have access to a digital learning platform that provides video lectures, interactive exercises, and regular online assessments.

At SNAU (Ukraine), the technical infrastructure is also gradually being modernized. Classrooms are equipped with projectors and computer labs offering access to basic software tools. The primary educational platform used is Moodle; however, students have fewer opportunities for practical IT work compared to their Chinese counterparts at HIST.

Group sizes differ significantly between the institutions. At the Chinese university, each group typically consists of around 35 students, and in many cases, 2–3 groups are combined for a single course. This results in a predominantly lecture-based format, which limits opportunities for individual interaction. At SNAU, student groups are generally smaller – about 25 students per group – allowing for more flexible teaching approaches such as one-on-one consultations, active discussions, and small-group work.

There are also notable differences in the structure of the educational process. In China, the system is highly structured, with strict guidelines and standardized tasks prevailing. In contrast, the Ukrainian educational process is more flexible and responsive to contemporary demands and students’ individual needs.

Teaching styles are influenced by both cultural and institutional factors. Chinese students typically display a high level of formal discipline, obedience, and respect toward instructors, yet they may be less inclined to engage in discussion or ask questions. At SNAU, students are more open to informal communication but often require additional motivation to participate consistently in the learning process. Ukrainian students willingly engage in applied tasks, though they often need support in developing self-discipline and time management skills.

Thus, the educational environments differ in both technical infrastructure and pedagogical approaches – factors that must be taken into account when designing IT courses.

3. Student Motivation

An analysis of the motivational attitudes of students at HIST (China) and SNAU (Ukraine) reveals both commonalities and culturally driven differences.

According to survey data, the primary motivational factors were:

HIST: “Employment opportunities” and “High demand for IT professionals” (over 80%)

SNAU: “Personal interest in technology” or “Other” (e.g., “interest in startups,” “opportunity to work as a freelancer”)

Chinese students generally exhibit a high level of extrinsic motivation, driven by intense labor market competition and a strong societal focus on academic achievement. For most of them, studying IT disciplines is viewed as a strategic investment in their future careers – particularly in international trade, finance, and tech-related business fields. Their awareness of IT’s importance is reinforced by institutional pressure: strict monitoring systems, attendance requirements, and examinations. However, their intrinsic interest in the subject matter is not always strong; motivation is often reduced to the desire to achieve high grades or avoid penalties.

In contrast, Ukrainian students show more diverse motivational profiles. Some are genuinely interested in the practical application of knowledge, especially when content is presented through real business or startup examples. However, a significant portion lacks a clear understanding of their long-term educational goals or how IT fits into them, which lowers their overall interest in studying. Nevertheless, if the learning process manages to spark interest in a specific tool (e.g., data visualization in Tableau or forecasting in Excel), intrinsic motivation tends to increase. The teacher's personality also plays a vital role – informal communication, encouragement, and enthusiasm about the subject positively impact student engagement.

At HIST, motivation for independent work is shaped not only by academic culture but also by the high level of competition in the industry. Students understand that the ability to independently solve analytical problems is a key advantage in the job market. At SNAU, independent work is often perceived as a response to a teacher's assignment rather than a path toward professional development. Only a portion of students demonstrate intrinsic motivation to deepen their knowledge.

Overall, HIST students tend to focus on outcomes, discipline, and responsibility, whereas SNAU students are more process-oriented, emotionally engaged, and interested in applied aspects of learning.

4. Specifics of Students' Independent Work

According to the survey results, 86% of HIST students reported engaging in independent study either daily or several times a week, while at SNAU, only around 63% showed similar activity. Nearly a third of Ukrainian students rarely engage in independent work or do not practice self-study at all. This difference can be partly attributed to educational traditions: the Chinese system places greater emphasis on self-discipline and consistent preparation, whereas in Ukraine, independent work is often perceived as optional or something done only before assessments.

Chinese students actively use online courses, video tutorials, and platforms such as Coursera, Bilibili, MOOCs, and YouTube, especially for reviewing material, completing homework, or preparing for tests.

At SNAU, a significant portion of students rely on lecture materials, teacher presentations, and brief in-class instructions. Only a small group shows initiative in exploring additional resources independently – primarily through YouTube or Ukrainian educational platforms like Prometheus and Osvitoria. Overall, the level of autonomy among Ukrainian students is lower, and they often require clear instructions and regular feedback to stay on track.

5. Academic Culture

Academic culture plays a crucial role in the effectiveness of the educational process, especially in technically complex and dynamic fields. Its key components include student discipline, respect for instructors, willingness to collaborate, and adherence to academic ethics. A comparative analysis of the academic environments at HIST (China) and SNAU (Ukraine) reveals notable differences shaped by cultural traditions and educational systems.

The Chinese academic environment is marked by a high level of discipline and self-regulation. Students at HIST strictly adhere to assignment deadlines, attend classes punctually, and rarely miss lectures without valid reasons. Tasks are usually completed in full and submitted on time. Both administrative and informal sanctions – such as grade penalties, negative feedback, or parental notification – are applied in cases of tardiness or careless attitudes.

At SNAU, the approach is more flexible: absences, lateness, and incomplete assignments are relatively common. Students often request deadline extensions or ignore assignments entirely. Although this does not always impact their overall academic performance, such behavior slows down the course pace and increases the workload for instructors.

In China, student–instructor interaction tends to be formal, respectful, and limited to class time, largely due to cultural norms of hierarchy and the large group sizes. In contrast, Ukrainian academic communication is more informal and accessible, often extending beyond the classroom. Students may reach out to instructors via messengers, social media, or in person – including with personal or logistical concerns. While this openness fosters trust, it also carries potential risks, such as blurring the boundaries of professional communication.

Conclusions and prospects for further research:

A comparative analysis of teaching IT disciplines at Ukrainian (SNAU) and Chinese (HIST) universities revealed several significant differences in the academic environment, teaching approaches, and cultural norms of interaction among participants in the educational process. The key findings include the following:

The level of *prior technical preparation* is more heterogeneous among Chinese students, while Ukrainian students tend to demonstrate a more balanced but often fragmentary understanding of specific topics. Therefore, IT teaching in the Ukrainian context requires a gradual increase in complexity and active support of students, especially during the early stages of the course.

The educational environment differs in terms of technical infrastructure, pedagogical approaches, student composition, teaching style, and the attitude toward instructors. These factors must be considered when designing IT courses for diverse academic contexts.

There is a marked difference in *motivation*: Chinese students are largely driven by future career prospects and societal expectations, whereas Ukrainian students are more often motivated by personal interest or curricular requirements. This impacts both their engagement levels and the quality of independent learning. As such, teaching strategies should be adapted to cultural and educational contexts: in China, by emphasizing the professional importance of IT courses; in Ukraine, by demonstrating their practical value and fostering a positive emotional learning atmosphere.

Independent learning is significantly more structured and supported by digital resources and monitoring tools in China. In Ukraine, such work tends to be more sporadic, which negatively affects learning outcomes. To improve this aspect, Ukrainian institutions should promote the use of online resources and micro-courses, teach time management, and evaluate both the results and process of independent work.

Academic culture in China is more formalized and shaped by norms of hierarchy and discipline. In Ukraine, interaction between students and teachers is more flexible and open, but this can lead to a lack of structure and academic discipline violations.

Overall, the experience of teaching IT disciplines in both countries demonstrates potential for mutual enrichment of educational practices. The Ukrainian system offers strengths such as flexibility, open dialogue, and creativity, while it could benefit from incorporating positive elements of the Chinese model – greater structure, technological integration, and process formalization.

Future research could focus on tracking changes in student motivation over time, exploring the impact of language of instruction on IT education outcomes, and developing assessment methods that uphold academic integrity while embracing innovative teaching practices.

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