

Problems and Research Emphases of Higher Education Informatization in Chinese Universities

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Abstract. The higher education informatization is the trend of education development, the whole information system is a complex and open dynamic structure. in which the components are co-developed collaboratively in a constantly changing environment. After 20 years of development, the results of development have been remarkable. However, in the process of construction, universities should especially recognize the changes brought by information technology to higher education. For promoting core competitiveness of Universities, it is also necessary to integrate all kinds of distributed systems, attach importance to data sharing, carry out information data analysis, try to build a system assessment, Enhance top-level design with the aim to core development planning, establish the necessary personnel system for IT personnel to participate in decision-making, rationally allocate resources.

Keywords: Higher education informatization, Problems, Research Emphases.

1. Introduction

The informatization of higher education is the trend of education development, which provides strong support for the development of education, scientific research and management in universities, conversely, the education model of modern universities, it is reshaping the whole higher education ecology; informatization has penetrated into all aspects of universities in the information management, it is not only used in administrative management, teaching and scientific research, and the cross-departmental flow and sharing of information has become the norm, and with the people's demand for informationization, technology itself is no longer an obstacle for teachers and students, promoting the overall change and the transformation of learning models of universities have become the fundamental influence of informationization on universities, the famous American Higher Education Informatization Association EDUCAUSE pointed out in the 2011 research report "the application of information technology in universities has now crossed the construction stage of data centers and college management systems, and it is turning to the daily application of teachers and students." [1]

2. Insufficiency of Higher Education Informatization in the Practice

Since the 1990s, China has begun to build information technology of universities, especially in the past decade or so, the funds invested by universities in the construction of information infrastructure have also shown a "blowout", almost all universities have paid great attention to information infrastructure construction, technology introduction, management, and personnel technical training and so on, have already realized the great changes brought by information technology to universities, and have made great achievements in the construction of information infrastructure. However, there are still some areas for improvement in the understanding and application of informatization in the process of practice.

1. The decision-making level of universities lacks understanding of informatization and the support of information technology personnel system. Simple technical positioning and guiding information construction ideas still dominate; Universities attach importance to hardware construction and neglect system integration, emphasize scale effect, lack necessary assessment and dynamic monitoring, and regard education informatization as a kind of technology construction and investment act away the process of scientific research, teaching and management in universities, thus causing universities to lack strategic planning for the informatization, the phenomenon of repeated construction is common, the resource utilization rate is insufficient, and the bonus brought by

informationization to universities cannot be obtained, moreover, there are few uniformly guided organizations and management systems in the decision-making level of universities for the whole school level, not to mention that information professionals directly provide senior management with a highly informative solution to the core interests of the school on the core interests of the school, conversely, and the insufficiency of this system increases the distance between the informatization construction of universities and the long-term development plan of the school.

2. Data information collection is slow, system localization is insufficient, and data sharing and mobility are seriously insufficient, the phenomenon of "information island" is very common in universities. With the popularization of information technology, the information accomplishment and needs of college teachers and students are getting higher and higher, however, due to the lack of uniform guidance for information construction, various databases and systems with different architectures emerge as the times require, various departments are building their own information platforms, Data collection is repeated, and core data collection coverage is insufficient; moreover, the information development of the school is inconsistent with the core business needs. At the beginning of the construction of the university's system architecture, part of it is self-developed, but a considerable number of relatively mature programs are provided by professional companies, in practice, localization requires a certain cost, and it needs constant adjustment and integration, the informatization technology is integrated into education and rebalanced, the management has reservations about it, resulting in a considerable gap between the operational results and the information needs of teachers and students, which makes teachers and students use information technology less effectively than management level, this is undoubtedly one of the hidden obstacles to the promotion speed of informatization in universities; in addition, information sharing of various teaching data in universities has become a development direction in the world, however, due to the great differences in the process of information construction in universities, there is a certain conflict in their respective interests, although the relevant code classification of educational institutions is regulated at the national level, the uniform national organization code database is established, however, there is still no uniform data standard at the university level, in addition to data system compatibility and other problems, resulting in low data mobility inside schools and among schools, waste of resources and education costs are increased.

3. There is a lack of data analysis and information evaluation system as a whole. Analytical technology is the most beneficial and effective application in the informatization of universities, and it is also a hot spot which various countries study at present. Chinese universities have shown a fast-rising trend in campus scale, and their development has entered into the era of "big data", and it is a great challenge for the allocation of teaching resources, optimization of management, and development plan of core competitiveness in universities. Informatization construction itself can help to cope with these changes, but because the internal system of universities is scattered, the data mobility is seriously insufficient, and effective data fusion cannot be carried out, and the management usually does not deliberately set up professional data analyst in the personnel arrangement, so the lack of big data analysis has become a common problem in universities, furthermore, this cannot form reference results with strategic planning significance for school development.

Moreover, the evaluation system of informatization is insufficiently established, especially the lack of quantitative evaluation methods. China has also carried out many studies and practice on it, for example, in 2005, the Education Informationization Branch of the China Higher Education Society organized and developed the "Research on the Informatization Index System of Chinese Universities", and the Ministry of Education organized and implemented the "Research on Informatization Construction and Innovative Development Strategy of Chinese Education", they are all research and practice on adapting to the informatization evaluation mode of universities. However, due to the complexity of informationization and geographical differences, and the process is not intuitive and simple and composed of variables, it is not easy to determine the measurement dimension and establish a uniform evaluation model for quantitative evaluation. Moreover, due to the lack of top-level design at the university level, there is usually a lack of awareness and system to monitor and evaluate the actual level of education informatization in the whole informatization

construction process, this will inevitably affect the ability of universities to promote informatization, education reform and enhance core competitiveness.

3. The Research Key Point of Informatization Development in Universities

1. The decision-making level attaches importance to the informationization of universities. The change of university informationization to the whole educational ecology is huge and subversive, the traditional teaching mode is changing, and the economic bonus and social impact it brings are immeasurable, in 2014, JISC CEO Martin Harrow wrote a report and pointed out that the universities contribute 73 billion pounds (about 686.1 billion Yuan) to the British economy every year and generates 10.7 billion pounds (about 100.6 billion Yuan) export service income, which makes higher education have a greater impact on the economy than other industries. This is due to many factors, but there is no doubt that the world-class shared digital infrastructure of UK universities is an important advantage [2]. This explains that the informatization work of higher education needs to be forward-looking from another aspect, need to be recognized and supported by the decision-making level of the government and universities, and carry out scientific strategic planning and top-level design, promote the deep integration of informatization and core business of the universities, we should not simply regard the application of information technology in higher education as the main body of informatization construction, instead, we should face up to the relationship among education informatization and the whole higher education, economic development, and the structure, scale, speed, quality and effect of universities in the informationization process, and promote the coordinated and rapid development of informationization in higher education.

2. We strive to establish a uniform and simplified basic data collection standard to form a data sharing system under a uniform architecture. In the university, there must be uniform data standard and clear information collection regulations to form a complete system, it is necessary to change the situation where the management subsystems cannot be effectively connected and can only be managed at the business level of each subsystem. All kinds of effective information data are important bases for the informatization operation of universities, this collection process should be timely, various, simple and effective, which should cover all aspects and nodes such as teaching, administration, scientific research and service as much as possible, this will lay a good foundation for information consulting services and data analysis; in addition, how to ensure the co-construction and sharing of educational resources is the key node for higher education informationization to promote education reform, from the management level, sharing data can speed up data flow, eliminate the "information island" phenomenon, improve data utilization and reduce informationization cost, even "share costs" with informationization industry companies, thus driving industrial development, optimizing allocation of education resource, improving management efficiency, and accelerating the integration of information technology into the school's education system; from the perspective of university education development, data sharing is the development trend of global higher education, online education, MOOC, and open university have broken the original teaching models, the intangible data stream has infinitely expanded the influence of a university, and this model will also help universities further integrate into the world, reorient themselves, improve the teaching quality, and enhance the influence of their academic research; from the teaching process, continuous data exchange and sharing can change the teaching management mode at the school level, timely understand the current teaching quality, give full play to students and teachers' initiative in the actual teaching process, help teachers to make the teaching purpose clear, improve the teaching level, detailed data can give students effective evaluation and guidance, thereby adjusting the teaching state.

3. The whole information system must be supported by analytical technology. Analytical technology is a hot issue of the education of information in the era of big data. In the whole information system, a large amount of information data will be generated at each micro-individual level, for each operational level and management, only the analysis of information data elements can effectively manage and allocate educational resources, and this level of data will be fused, filtered, counted and analyzed again, and finally provide the decision-making level with macro design and

strategic planning[3]; and analytical technology can also be used for forecasting, for schools, through the analysis of existing data, after certain approaches, seeking to optimize the application of future resources, such as Strengths Weaknesses Opportunities Threats (SWOT strategy analysis). For specific teaching, student classroom presentation, practical operation, subject score, knowledge mastery and other stages of learning data analysis are integrated, based on objective and effective student evaluation, the development trend of students can be predicted to help them learn better, all above are based on the full use of analytical technology, therefore, universities should face up to the importance and professionalism of this technology, it is recommended to set up a data analyst job within the university to lay the foundation for big data analysis.

4. The sustainable development of education informatization needs positive and effective evaluation as the basis, which is a key indicator of the development trend of higher education informatization. The construction of educational informatization is a complex systematic project, at present, there is no uniform and universal information evaluation standard in the world; however, for the decision-making level of universities, when formulate targeted strategic planning, rationally allocate educational information resources, optimize the efficiency of each department, reduce management costs, and improve the scientific nature and practical applicability of decision-making, all must be based on the evaluation of data and information, and it also needs to implement dynamic monitoring for the information construction itself, evaluate the rationality, correctness, and performance relationship of the whole system to help schools formulate the necessary strategies and scientific information construction plans.

5. Informatization talent training and management. "People-oriented" is the basic principle of informatization, universities should pay attention to the rational use of talents, focus on improving the information quality of management, and establish a system, so that information talents can have a place in the strategic dialogue of universities, For example, the "Chief Information Official (CIO)" system appeared in the last century in the US universities, who belong to a senior management position at the vice-principal level and can integrate various information resources to assist the decision-making level to carry out strategic planning [4]. This is also one of the successful experiences in the rapid development of informationization in higher education in the United States; after all, without the promotion of the school decision-making level, the data and systems generated in the informationization process of in Chinese universities are difficult to integrate independently, moreover, it should also be noticed that one of the main groups of informationization use and services in universities-- informatization quality of teachers and general managers.

4. Conclusion

As an important part of national informatization, education informatization has far-reaching significance for transforming educational thoughts and concepts, deepening education reform, improving education quality and efficiency, and training innovative talents, which is an inevitable choice for realizing the leap-forward development of education, and the informatization construction of universities is a strategic, long-term, comprehensive and innovative system engineering, which plays an increasingly important role in the future development of universities. Information technology has long been a key factor, and using technology to carry out enough educational practice activities is the core that should be concerned.

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