

Teaching Reform Strategies for Textile Specialties in Higher Vocational Colleges under the Background of Digital Transformation

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Abstract: In recent years, with the advent of the digital era, the textile industry is undergoing a profound digital transformation, which places increasingly higher demands on textile talents. Higher vocational education, with the core goal of cultivating high-quality technical and skilled personnel, is closely linked to the development of the textile industry and serves as an important talent support for the digital transformation of the textile industry. Against this background, higher vocational colleges should take the initiative to shoulder their educational responsibilities, actively promote the teaching reform of textile majors based on digital transformation, so that teaching content can not only align with the digital upgrading of the textile industry, but also effectively improve the precision of textile teaching, continuously enhance students' comprehensive quality, ensure that they can fully meet the needs of the digital transformation of the textile industry, boost their employment competitiveness, and supply more high-quality technical and skilled talents with digital thinking for the high-quality development of the textile industry. This paper first expounds the significance of teaching reform for textile majors in higher vocational colleges under the background of digital transformation, and then puts forward a series of effective reform strategies, so as to provide reference for relevant researchers.

Keywords: Digital transformation; Higher vocational colleges; Textile majors; Teaching reform

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1. Significance of teaching reform for textile majors in higher vocational colleges under digital transformation

1.1. Helping to align with the digital upgrading of the textile industry

At present, the textile industry is in a period of digital reform. New technologies such as big data, artificial intelligence and the Internet of Things have been widely applied in various production links. If the teaching of textile majors in higher vocational colleges fails to keep pace with the trend of the times, the students trained will not become high-level textile talents with digital capabilities. In the process of teaching reform for textile majors, teachers integrate knowledge related to digital technology into the core courses of textile majors and

simulate corresponding application scenarios. For example, intelligent equipment operation and maintenance are added to spinning technology teaching; CAD technology and 3D virtual sample technology are integrated into fabric design teaching. This enables students to access cutting-edge technologies during their studies, so that they can better adapt to the job requirements of digital textile enterprises after graduation, realize the seamless connection between industrial development and talent cultivation, and provide solid talent support for the transformation and upgrading of the textile industry^[1].

1.2. Helping to improve the precision of textile major teaching

On the one hand, by means of big data, cloud computing, artificial intelligence and other technologies, digital technology can collect data traces of students' study, work and life, build a multi-dimensional "digital portrait" model, and accurately grasp the learning characteristics and needs of college students. In addition, "digital portraits" can precisely locate students' content demands for textile teaching and grasp their preferences, so as to intelligently push corresponding educational content. On the other hand, with the increasingly complex and changeable digital technology environment, students have gradually formed groups with different learning characteristics, which requires the digital transformation of textile teaching to be carried out according to individuals, time and events. Massive collection of students' information through big data helps to understand their learning needs and specific conditions, facilitates personalized teaching for individual students, and provides a new opportunity for "teaching students in accordance with their aptitude" in textile major teaching^[2].

1.3. Helping to enhance students' employment competitiveness

Under the wave of digital transformation, enterprises' demand for talents is no longer limited to traditional professional skills, but prefers interdisciplinary talents with digital literacy who can use digital tools to solve practical problems. Through teaching reform, higher vocational textile majors integrate digital technology into the whole process of talent training, which can significantly improve students' employment competitiveness. First, by learning courses such as intelligent textile equipment operation, textile big data analysis, digital design and simulation, students master cutting-edge digital skills in the industry, which become important "plus points" in job hunting and make them more competitive among applicants. Second, the reformed teaching mode focuses on the cultivation of practical ability. For example, through virtual simulation training and school-enterprise cooperation projects, students can combine digital technology with textile professional knowledge to solve practical production problems and accumulate valuable project experience. This enables them to start work quickly after entering enterprises, shorten the adaptation period, gain favor from employers, and take an active position in the fierce job market^[3].

2. Teaching reform strategies for textile majors in higher vocational colleges under digital transformation

2.1. Renewing teaching concepts and establishing industry-oriented education concepts

Under the general trend of digital transformation, higher vocational colleges should promote textile teaching from the perspective of concept innovation, get rid of the traditional wrong concept of knowledge-centered teaching divorced from industrial development, and establish an industry-demand-oriented teaching concept. Based on real production problems of enterprises, cases should be collected and project-based teaching should be adopted. That is, teaching reform should be closely centered on the digital development needs of the

textile industry, and talent training programs, curriculum systems and teaching projects should be formulated accordingly. To this end, higher vocational colleges need to thoroughly investigate the development needs and trends of the textile industry, understand the professional skills, digital literacy and professional literacy required for each post, and reasonably adjust curriculum modules and learning units to ensure that teaching content is highly consistent with enterprise work content. In addition, higher vocational colleges should guide teachers and students to correctly understand digital technology, making clear that technology is not only “peripheral” knowledge of textile majors, but also an important part penetrating textile technology, materials, art and other fields, to improve students’ awareness of solving textile problems with digital thinking. At the same time, higher vocational colleges should promote the teaching process to better serve industrial transformation and upgrading, and cultivate high-quality technical talents adapting to the digital environment. For example, in formulating training programs, higher vocational colleges organize experts from relevant enterprises to conduct joint demonstrations, and integrate post-capacity demands such as intelligent textile equipment operation and maintenance, textile production line data analysis, and textile product online marketing into talent training objectives, to enhance the industrial orientation of textile teaching^[4].

2.2. Innovating teaching modes and implementing online-offline blended teaching

Under the background of digital transformation, to meet students’ personalized learning needs and industrial development needs, higher vocational colleges actively promote online-offline blended teaching. High-quality teaching resources are uploaded to intelligent teaching platforms, and functional modules, such as micro-lecture videos, virtual simulation operation demonstrations, digital resource case libraries and online test question banks are developed. Students can conduct preview, online learning and extended learning anytime and anywhere according to their learning rhythm and needs. For example, they can complete digital textile simulation operations with virtual simulation software or watch practical digital management videos of enterprises. Offline teaching should focus on advanced ability training. Teachers can arrange corresponding teaching tasks according to students’ online learning performance, such as letting students discuss problems arising from online learning, developing digital textile design workshops, and requiring students to complete intelligent textile equipment operation training in workshops. In addition, higher vocational colleges should actively introduce new teaching modes such as flipped classroom and project-based teaching, combine online theoretical knowledge acquisition with offline practical training, and guide students to flexibly use their knowledge and skills to solve practical problems in a virtual production environment. For example, a digital textile design project can be set up, requiring students to complete market research, digital drawing, virtual production and other processes in groups, so as to improve their comprehensive application ability. The application of blended teaching in textile teaching can break the time and space limits of traditional classrooms, effectively expand teaching and learning resources, stimulate students’ interest in learning, improve their classroom participation, continuously develop their independent learning ability and digital collaboration ability, and make students grow into high-quality talents meeting the needs of the digital transformation of the textile industry^[5].

2.3. Strengthening the construction of training bases and building a school-enterprise shared training system

In the teaching of textile majors in higher vocational colleges, training bases are important platforms for cultivating students’ innovative and practical abilities. Higher vocational colleges should make good use

of this platform, strengthen the construction of training bases, and create a favorable environment for cultivating innovative and practical abilities. First, increase investment in digital transformation. Higher vocational colleges should introduce advanced intelligent textile equipment in training bases, such as CAD/CAM systems, digital printing and dyeing control equipment, intelligent spinning machines, etc., and build a “digital twin” training workshop. This creates a highly simulated textile production environment, continuously enhances students’ learning experience, helps them understand the digital textile production process, and enables them to flexibly operate intelligent equipment.

Second, further promote school-enterprise cooperation. Higher vocational colleges should actively seek cooperation from outstanding local textile enterprises, jointly build industrial colleges, and integrate enterprise management experience, technical standards and real production lines into textile teaching through order-based classes. At the same time, effective measures should be adopted to encourage students to actively participate in the development of real enterprise projects, to temper their practical ability in real digital production scenarios and achieve precise matching with enterprise post demands^[6]. For example, higher vocational colleges and enterprises set up virtual simulation training projects combined with real production data, through which students can complete quality inspection, process optimization and product design training, and effectively consolidate their comprehensive literacy.

Third, establish a sound training resource management mechanism, mainly including project achievement transformation and sharing, public research training projects, mutual employment of teachers and equipment sharing, to promote close connection between training bases and the textile industry, facilitate the organic connection between practical teaching and theoretical teaching, enable students to obtain sufficient practical opportunities, timely understand cutting-edge information of the textile industry, broaden their professional horizons, and inject inexhaustible talent power into the development of the digital textile industry^[7].

2.4. Improving the evaluation system and building a diversified evaluation mechanism

First, introduce diversified evaluation subjects. Higher vocational colleges should change the previous situation of single evaluation by teachers, and introduce the combination of enterprise evaluation, student mutual evaluation and self-evaluation. Enterprise supervisors can evaluate students’ performance in internships and school-enterprise cooperation projects from the aspects of post-skill mastery, professional attitude and teamwork. Through group mutual evaluation and self-evaluation, students can clearly recognize their own advantages and disadvantages, and cultivate self-reflection and independent learning ability. For example, after completing a digital textile design project, not only school teachers comment from a professional perspective, but designers of cooperative enterprises are invited to evaluate the market applicability and technical feasibility of the works. At the same time, students are organized to conduct a project summary and mutual evaluation, forming multi-dimensional evaluation feedback^[8].

Second, enrich teaching evaluation methods and contents. On the one hand, higher vocational colleges should innovate existing evaluation methods. On the basis of retaining traditional written examinations, virtual simulation operation evaluation, case analysis and project report evaluation are introduced to improve the flexibility and comprehensiveness of teaching evaluation. On the other hand, higher vocational colleges should actively expand evaluation contents. In addition to evaluating students’ mastery of basic knowledge, students’ digital technology application ability, problem-solving ability and teamwork ability should also be evaluated to effectively improve the comprehensiveness of evaluation results. For example, in the teaching evaluation of the “Fabric Design” course, teachers can accurately evaluate students’ digital design ability through 3D

virtual proofing effects, design concept explanation and digital design works; in the teaching evaluation of the “Spinning Technology” course, teachers can evaluate students’ comprehensive ability combined with product quality, production efficiency and students’ operation standardization. In this way, the evaluation results are more objective and scientific, and the guiding role of evaluation in teaching reform is truly exerted^[9].

2.5. Strengthening the construction of teaching staff and enhancing digital literacy and ability

The formation of a diversified teaching team in higher vocational colleges will effectively improve the digital transformation effect of textile teaching. A diversified teaching team is composed of professionals from various fields. Each teacher has unique strengths, visions and problem-solving methods, realizing professional complementarity and mutual promotion in diversified team cooperation, and injecting new perspectives and ideas into the complex and diverse digital transformation of textile teaching. At the same time, interdisciplinary academic exchanges can stimulate the creative thinking of team members, thereby generating new ideas, technologies and methods. The introduction of an interdisciplinary management team can break the boundaries of traditional management methods, explore novel, flexible and effective transformation plans, and continuously improve the teaching effect of textile majors. In addition, higher vocational colleges should rely on the advantages of digital technology to set up virtual teaching and research offices. On this platform, teachers can break the limitations of time and space, and make full use of fragmented time for in-depth communication and interaction, such as sharing teaching experience, sharing high-quality teaching resources, and discussing encountered teaching problems. This not only continuously enhances teachers’ professional comprehensive literacy, but also broadens their teaching horizons, and helps improve the quality of digital transformation of textile teaching. In addition, higher vocational colleges can actively invite experts and elites to join virtual teaching and research offices to share cutting-edge knowledge and new ideas in the digital transformation of textile teaching with in-service teachers, effectively promoting the process of textile teaching reform^[10].

3. Conclusion

In short, digital transformation has brought unprecedented opportunities and challenges to textile teaching in higher vocational colleges. Higher vocational colleges must take active actions and start with the following strategies: renewing teaching concepts and establishing industry-oriented education concepts; innovating teaching modes and implementing online-offline blended teaching; strengthening the construction of training bases and building a school-enterprise shared training system; improving the evaluation system and building a diversified evaluation mechanism; strengthening the construction of teaching staff and enhancing digital literacy and ability.

This is not only the internal requirement of aligning with industrial development and improving teaching quality, but also the key measure to cultivate high-quality technical and skilled talents meeting the needs of the new era and enhancing students’ employment competitiveness. In the future, higher vocational textile majors should continue to deepen integration with the industry, keep up with the cutting-edge development of digital technology, continuously optimize talent training programs, commit to supplying more interdisciplinary talents who master both professional technology and digital skills for the digital transformation and upgrading of the textile industry, and contribute to the high-quality development of China’s textile industry.

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