https://doi.org/10.37420/j.cer.2026.033

Research on the cultivation and construction of "digital craftsmen" in tourism management major of local application-oriented universities from the perspective of OBE-CDIO

Yao Luo , Rongfen Huang*
Guangxi Minzu Normal University ,Chongzuo,China
***Corresponding author, E-mail: 2673682508@qq.com**

Abstract:
In the context of the digital transformation of the tourism industry promoted by information technology in the new era, ' digital craftsman ' has become the core demand for the high-quality development of the tourism industry. There are some difficulties in the tourism management major of local applied universities, such as the lag of teaching content, the disconnection between practical teaching and industry demand, and the lack of professional quality cultivation. The fundamental reason lies in the disconnection between talent training mode and industry demand. This paper deeply integrates the OBE education concept with the CDIO model, clarifies the training goal of " digital craftsman, " constructs the " four-stage progressive, three-classroom linkage " curriculum system, the " four-true and four-ring " teaching mode, and the " multi-dimensional " evaluation system, and forms a complete education closed-loop by supporting the systematic implementation path and multi-level guarantee mechanism, so as to provide theoretical support and practical path for the training of compound talents in tourism specialty.

Keywords:
OBE-CDIO ; tourism management major ; 'Digital Craftsman '

1 Introductory

Under the background of the continuous development and accelerated integration of the new generation of information technology represented by big data, artificial intelligence and virtual reality, the tourism industry is in an important stage of digital transformation. The wide application of technology has promoted the rapid evolution of emerging business forms such as the construction of smart scenic spots, online tourism services and digital tourism products, which has made profound changes in the business process, service mode and post ability structure of the tourism management industry. At the same time, the ' 14th Five-Year Plan for Tourism Development ' and ' Opinions on Deepening the Reform of Modern Vocational Education System ' and other policy documents also clearly state that it is necessary to strengthen the training of high-level digital skilled talents who can adapt to the digital development of the tourism industry to better support the transformation and upgrading of the industry.

© 2026 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

As the main position for the cultivation of tourism management professionals, local application-oriented universities bear the important responsibility of connecting the upgrading needs of the tourism industry and transporting compound digital talents. However, under the background of the rapid development of digitalization and intelligence of the tourism industry, the cultivation of tourism management professionals still faces a certain degree of structural imbalance and quality improvement bottleneck. Specifically, on the one hand, the update speed of the course content is relatively lagging behind, and it is difficult to reflect the new formats, new technologies and new models of the tourism industry in time, resulting in a certain disconnection between some teaching contents and the development trend of the industry. On the other hand, in the process of talent training, the cultivation of students ' professional ethics consciousness, craftsman spirit and other professional qualities is relatively weak, which is easy to produce the phenomenon of ' value absence '. The main reason is that the existing talent training mode has not fully adapted to the trend of digital transformation of tourism industry, and there is still a lack of multi-level connection between training objectives and industrial needs, school education and enterprise practice, as well as knowledge transfer and ability training.

In order to effectively respond to the structural challenges faced in the current training process of tourism management professionals, this paper organically integrates the Outcome-Based Education (OBE) concept with the CDIO engineering education model, and explores the construction of a ' digital craftsman ' talent training model suitable for tourism management majors in local application-oriented universities. Among them, the concept of Outcome-Based Education (OBE) was proposed by William G. Spady. Its core is to take students ' learning outcomes as the guidance, and through the reverse design of the teaching system, the curriculum objectives, teaching content and evaluation methods can be systematically constructed around the expected learning outcomes. Under the guidance of this concept, the curriculum system and teaching link are designed as a whole based on the professional ability and practical literacy that students should possess, so as to promote a closer connection between the goal of talent training and the demand of digital development of tourism industry.

At the same time, by combining with the practice orientation of ' conception-design-realization-operation ' emphasized by CDIO model, it is helpful to strengthen students ' practical ability, engineering thinking and innovation consciousness, and further improve the application and adaptability of tourism management professional personnel training. The CDIO model takes ' Conceive-Design-Implement-Operate ' as the complete process of project operation, emphasizes learning in practical situations, and strengthens students ' practical ability, systematic thinking ability and innovative consciousness through the way of ' learning by doing, learning by doing '. The integration of the two concepts is conducive to the formation of a closed loop of education operation of " goal guidance-process management-result evaluation-continuous optimization, " which provides a theoretical basis and practical path for the cultivation of compound tourism management " digital craftsmen " with digital technology application ability, professional service ability and professional quality.

2.Concept and fusion logic

2.1 The connotation and characteristics of OBE education concept

Outcome-Based Education (OBE) is a learning outcome-oriented education concept proposed by Amer-

© 2026 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

ican education scholar William G. Spady in the 1980 s. The concept takes students ' learning results as the core, emphasizes the ability and learning effect that students finally form as the fundamental basis for the design and implementation of educational activities, and advocates the systematic planning and organization of teaching objectives, curriculum content and teaching activities in the teaching process around the professional ability and comprehensive quality that students need in the future, so as to realize the effective connection between talent training and social and industrial needs. The characteristics of this concept are mainly reflected in four aspects : First, results-oriented. Take students ' employment competency and career development potential as the goal of education ; the second is reverse design. Starting from the demand for talents in the tourism industry, this paper reverses the design ideas of curriculum system, teaching content and teaching methods ; the third is the student body. Taking into account the learning foundation and development demands of students at different levels, focusing on customized cultivation ; fourth, continuous optimization. Relying on the evaluation feedback mechanism, constantly improve the education and teaching links.

In the teaching of tourism management major in local application-oriented colleges and universities, the OBE concept is highly compatible with the " post course competition certificate " education model, which can effectively solve the problems of disconnection between undergraduate teaching and industry needs, and low adaptability between talent training objectives and posts. Through reverse design, the precise matching of curriculum content and digital post needs of the tourism industry is realized. With the continuous acceleration of the digital transformation of the tourism industry, the demand for compound tourism talents with digital technology application capabilities has become increasingly prominent. The " 14th Five-Year Plan for Tourism Development " clearly proposes to " cultivate tourism digital compound talents. " This policy orientation provides an important policy basis and development direction for the optimization of the training mode of tourism management professionals. From the perspective of educational concept, this requirement is highly consistent with the educational logic that OBE emphasizes learning achievement-oriented and ability training as the core, which provides important theoretical support and practical guidance for the effective application of OBE concept in the teaching reform and talent training practice of tourism management specialty. Local application-oriented universities can take the OBE concept as the essence, carry out hierarchical and classified training around the ability standard of tourism ' digital craftsmen ', integrate the demand for talents in the tourism industry into the whole process of teaching, and build a talent training system with ability as the core.

2.2 The connotation and educational value of CDIO model

CDIO is the abbreviation of " Conceive, Design, Implement, Operate. " This education model takes the complete life cycle of a product or project as the basic framework. By integrating the real project process into the teaching process, it advocates the concept of " learning in practice and practicing in learning " to promote the all-round development of students ' practical ability, systematic thinking ability and innovative consciousness. This model was first applied in the field of engineering education, but its ideas and methods also have important implications for the practical teaching of tourism management. In particular, its emphasis on " project-driven " and " situational practice " teaching ideas helps to make up for the gap between the practical teaching of tourism management specialty and the actual situation of the industry, improve the problem of insufficient practical experience of students, and thus better improve students ' post adaptability and practical operation level.

© 2026 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

Combined with the development characteristics of the tourism industry, the CDIO model can be further explained : in the Conceive stage, students are required to identify key issues in the industry under the background of digital tourism development, such as the operation and management of smart scenic spots, tourism data analysis and online tourism product development, and on this basis, preliminary solutions are proposed. In the design stage, a systematic plan is formed around specific industry issues, including business process design, digital system application planning, and tourism product or route design. In the implementation stage, the design scheme formed in the early stage is transformed into specific results, such as tourism product prototype, business operation process or market data analysis report ; in the Operate stage, the relevant results are applied to real or simulated business situations, and are continuously optimized and improved according to market feedback and tourist needs.

In recent years, some application-oriented universities have gradually introduced this model into the teaching of tourism management. By constructing a project-oriented curriculum system, students are guided to participate in tourism project planning, tourism data analysis and related practical activities, so as to improve students ' vocational skills and innovation ability to a certain extent.

2.3 The integration logic and framework of OBE and CDIO

Although OBE and CDIO originate from different fields of education, they have a high degree of internal unity in their conceptual goals and practical paths, which provides a systematic theoretical support for the cultivation of ' digital craftsmen ' in tourism management specialty. Among them, OBE clarifies the core proposition of " who to train " in tourism management major, and establishes the orientation of training " digital craftsmen " around the needs of tourism digital development, which constitutes the target system of tourism talent training. CDIO provides a method path of " how to cultivate people, " designs teaching based on the whole life cycle of the project, and constructs the training system of talent training. The deep integration of the two can build a complete closed loop of ' goal-process-result-improvement ', and build a bridge between the training of tourism management professionals and the needs of the industry.

The specific integration logic is reflected in three dimensions : the first is the goal integration. The " digital craftsman " training goal established by OBE for tourism management specialty is precisely corresponding to the quality and ability required by each stage of CDIO, so that the cultivation of digital skills, tourism service ability and innovation ability runs through the whole process of tourism project. The second is the implementation path. The four stages of conception-design-implementation-operation of CDIO provide a structured and progressive implementation path for the realization of OBE ability goals, and promote the transformation of tourism management teaching from theoretical teaching to project-based and scenario-based practical teaching. The third is the result orientation. Through the final results of the CDIO tourism project, the achievement of the OBE ability goal can be tested, and the project results can be matched with the job requirements to form a benign closed loop of teaching improvement.

© 2026 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

3.The construction of ' digital craftsman ' training for tourism management major in local application-oriented universities

3.1 Establishment of training objectives

Based on the concept of OBE, the core of the construction of " digital craftsman " training mode for tourism management major in local application-oriented universities is to clarify the training objectives that meet the needs of the industry and professional positioning. On the basis of in-depth investigation of the development trend of the tourism industry, through interviews with the heads of tourism enterprises and industry experts, and combined with the new requirements of the tourism industry for the ability structure of compound talents under the background of the development of artificial intelligence technology, this paper systematically positions the training objectives of ' digital craftsman ' talents in tourism management specialty. Specifically, the training goal is to cultivate high-quality talents with all-round development of morality, intelligence, physique, beauty and labor, so that they not only have a solid theoretical foundation of tourism management specialty and strong application ability of digital technology, but also can integrate tourism business and digital technology, and show in practice the comprehensive ability of ' understanding tourism, fine technology and good operation '. At the same time, we should pay attention to cultivating students ' good humanistic quality and professional quality, strengthen their innovative consciousness and practical ability, guide students to inherit and carry forward the craftsman spirit, so that they can adapt to the needs of the digital transformation and development of the cultural tourism industry, be competent for the operation and management of scenic spots, tourism data analysis and other related positions, and grow into applied talents with compound ability and practice orientation.

In order to implement the training objectives, combined with the positioning of post ability, the industry needs are transformed into the three-dimensional training objectives of " knowledge-ability-quality. " In terms of knowledge objectives, students are required to master the classical theory of tourism management, tourism operation technology, understand the basic principles and application scenarios of tourism big data and intelligent tourism system, and be familiar with industry norms and regulations. In terms of ability goals, it focuses on cultivating students ' digital marketing, data analysis, virtual product design, digital tool operation and emergency response capabilities ; in terms of quality objectives, we should cultivate students ' ability of organization, coordination, communication and management, establish professional ethics and ethical literacy, cultivate innovative thinking and lifelong learning consciousness, and have the ability to excavate regional tourism resources.

3.2 ' Four-stage progressive, three-classroom linkage ' curriculum system design

Under the guidance of the overall framework of OBE concept and CDIO engineering education model, the curriculum system is regarded as an important carrier and implementation path to realize the goal of " digital craftsman " talent training in tourism management specialty. Focusing on the new requirements of the development of digital cultural tourism industry for the structure of talent ability, this paper constructs a curriculum system structure with the core characteristics of " four-stage progression and three-classroom linkage. " Among them, the ' four-stage progression ' reflects the gradual improvement process of the course content from basic cognition, professional deepening to practical application and innovation expansion. The

© 2026 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

" three-classroom linkage " constructs a multi-level and three-dimensional teaching situation through the coordination of classroom teaching, practice classroom and industry classroom. Through the systematic integration of curriculum content and teaching links, students are promoted to gradually improve their professional quality, practical ability and digital technology application ability in the learning process, so as to better adapt to the post demand for compound and applied talents under the background of digital transformation of tourism industry.

As the backbone of the curriculum system, the " four-step progressive " divides the learning process into four progressive stages, corresponding to the core links of CDIO, that is, in the cognitive stage (C-conception), the professional general courses are mainly oriented to the lower grades, combined with industry lectures and enterprise visits, to cultivate industry cognition and career recognition ability ; in the special stage (D-design), students ' tourism digital special ability is trained through core courses ; in the comprehensive stage (I-realization), comprehensive courses and practical training projects are mainly used to cultivate students ' thinking of solving complex and practical problems ; in the innovation stage (O-operation), students ' practical ability and business optimization ability are improved by expanding courses and simulation projects.

The " three-classroom linkage " provides support for the " four-stage progression, " and constructs a three-dimensional teaching space through the three major teaching scenarios : relying on the theoretical classroom of the classroom and online platform to consolidate the " tourism + digital " knowledge base ; the practical classroom based on the training base in the school improves the practical ability through virtual simulation. Extend to the actual classroom of the real scene of the enterprise, let students participate in the actual work tasks, and temper the ability to solve problems.

3.3 ' Four true four ring ' teaching mode innovation

In order to implement the OBE-CDIO concept, combined with the characteristics of the tourism industry, the " four true and four rings " teaching mode is proposed. With " reality " as the core and " link " as the process, the simulation teaching situation is constructed to realize the effective connection between students ' ability and job requirements.

The ' four truths ' constitute the basis of teaching. The real project leads, with the real or high simulation digital project of the enterprise as the carrier, to ensure the practicability of the learning content ; the implementation of real scenes, relying on the school simulation training room and the school-enterprise co-construction base, to create an immersive experience ; real process training, simulation of tourism digital business process, strengthen the standard operation ability ; real evaluation incentive, the introduction of enterprises and industry experts to participate in the evaluation, the use of industry standards to enhance professional identity. The ' four rings ' are the teaching implementation steps, forming a closed-loop teaching unit, and realizing the integration of knowledge, ability and literacy.

3.4 The construction of 'multi-dimensional 'evaluation system

Under the guidance of the concept of OBE continuous improvement, combined with the characteristics of the discipline of tourism management and the actual needs of the development of the cultural and tourism industry, a talent training quality evaluation system with the core characteristics of " multi-subject partici-

© 2026 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

pation and multi-dimensional index evaluation " is constructed. By integrating multiple evaluation subjects inside and outside the school, including teachers, students, industry enterprises and employers, the system comprehensively evaluates the quality of talent training from multiple dimensions such as the achievement of curriculum objectives, the cultivation of practical ability and the development of professional quality. At the same time, through the system optimization of evaluation content, evaluation index and evaluation method, the quality monitoring and feedback mechanism covering the whole process of teaching is formed. Based on the continuous feedback and analysis of the evaluation results, the improvement of the curriculum system, the improvement of teaching methods and the optimization of practical teaching are continuously promoted, so as to realize the dynamic monitoring and continuous improvement of the quality of talent training. The diversification of evaluation subjects is to construct a multi-dimensional network of self-evaluation and mutual evaluation of teachers, enterprise tutors, industry experts and students, and each subject focuses on different evaluation dimensions. The evaluation content is multi-dimensional, covering professional knowledge, digital skills, professional quality, innovation ability, etc., to meet the requirements of ' digital craftsmen '. The evaluation method adopts the combination of process and result evaluation, quantitative and qualitative analysis, and establishes a virtuous cycle of ' evaluation-feedback-improvement ' to achieve two-way improvement of teaching and learning.

4.Implementation path and guarantee mechanism

4.1 Systematic implementation path

The principle of " reverse design " of OBE education concept is the criterion for the implementation of the " digital craftsman " training mode of tourism management major in local application-oriented universities. That is, starting from the graduation ability requirements of " digital craftsman " and the post requirements of tourism industry, the curriculum system, teaching content, teaching methods and practical links are reversely deduced and designed to ensure that all aspects of talent training are closely related to the post requirements and ability objectives of the industry. The CDIO model provides a project-based structured implementation path for talent training, relying on the whole life cycle of the project to carry out teaching, and helps students improve their ability in project practice.

The project design of tourism management specialty should follow the gradient principle of " from simple to complex, from single to multiple, " and build a project library throughout the whole process of talent training. In the basic stage, design individual skill projects, such as tourism data collection and collation, basic operation of smart tourism tools, etc., to strengthen a single professional skill ; design comprehensive application projects in the advanced stage, such as intelligent scenic spot navigation design, tourism destination short video marketing, etc., focusing on multi-skill integration and comprehensive ability training ; in the high-level stage, with the help of practical projects, such as participating in the digital operation of tourism enterprises, writing tourism data analysis reports, etc., to achieve seamless integration with industry positions.

At the same time, in the implementation path, it is necessary to deepen the organic integration of ' course certificate competition post ', and integrate the tourism vocational skill level certificate, industry skill competition rules and scoring requirements, and tourism enterprise post requirements into the curriculum teach-

© 2026 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

ing and daily practice teaching. Through course education certificate and competition to promote learning, students can prepare for the certificate examination in course learning, practice their practical ability in skill competition, enhance their professional competitiveness and industry adaptability, and form a closed loop of " learning in class, testing in certificate and improving in competition. "

4.2 Multi-level safeguard mechanism

(1) Build a ' tourism + digital ' double-qualified teaching team

High-quality teachers are the main support for the training mode of " digital craftsmen. " It is necessary to form a teaching team composed of professional teachers, digital technology backbones and senior experts in the school. On-campus teachers need to strengthen digital skills training, systematically learn cutting-edge knowledge such as tourism digital technology and smart tourism operations, and realize the transformation from pure tourism teaching to ' tourism + digital ' composite teaching ; through the external precise introduction, we can absorb the technical talents of enterprise digital operation and tourism platform, and supplement the practical experience and digital ability of teachers. At the same time, we should establish a two-way communication mechanism between school and enterprise teachers, encourage teachers to work in enterprises, invite enterprise tutors to teach and guide on campus, and build a double-qualified team with both theoretical foundation and practical experience.

(2) Construct the practice teaching system of tourism digital characteristic teaching.

Adequate and high-quality teaching resources and systematic and perfect practical teaching platform are important basic conditions and key support for promoting the effective operation of talent training mode. On the one hand, we should build a systematic digital teaching resource library around the core courses of the major, integrate diversified learning resources such as smart tourism-related courseware, project cases and operation demonstration videos, and rely on the online and offline integrated learning platform to provide students with more flexible and diverse learning paths to meet their personalized development and independent learning needs. On the other hand, build a ' virtual simulation + physical operation ' practical teaching platform system, build a smart scenic spot simulation laboratory, a big data analysis laboratory, etc., and restore the real job scene through virtual technology ; relying on industrial colleges and school-enterprise cooperation bases, the school cooperates deeply with local tourism enterprises and tourism technology companies to realize the integration of educational resources and industrial resources and provide students with real practice scenarios.

(3) Establish dynamic quality assurance and incentive mechanism.

A perfect and flexible management mechanism is an important institutional guarantee for the smooth implementation of the talent training model and the continuous optimization. At the institutional level, we can establish and improve the mechanism of credit accumulation, recognition and transformation by implementing more flexible educational system and teaching management methods, and incorporate the results of students ' participation in enterprise practice projects, professional qualification certificate assessment and various skill competitions into the credit recognition system, so as to realize the diversified evaluation of learning results. At the same time, by encouraging students to actively participate in off-campus practice activities and

© 2026 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

innovation and entrepreneurship practice, expand the path of learning and growth, and further enhance the openness and adaptability of talent training. Establish a dynamic evaluation mechanism of " monitoring-evaluation-feedback-optimization, " carry out normalized monitoring and evaluation of the whole process around key indicators such as students ' digital skills, professional ability and project results, and optimize the teaching content and path in time. Improve the performance appraisal system, include teachers ' school-enterprise cooperation, curriculum development and other work into the assessment and reward ; give recognition and credit awards to students ' project practice, competition awards, and certificates, and provide endogenous motivation for the implementation of the training model.

Funding

This work was supported by ‘Strong Base-Integration-Collaboration : Research on OBE-CDIO Talent Training Mode of Tourism Management Specialty in Local Applied Universities from the Perspective of Digital Intelligence’. Guangxi Higher Education Undergraduate Teaching Reform Project General Class B Project , Project Code: 2025JGB419)

References :

[1] Gao Yan, Gao Xueqin. The research and design of the course " Introduction to Tourism " under the OBE-CDIO concept [J].Journal of Heilongjiang Ecological Engineering Vocational College, 2020,33 (05) : 139-143.

[2] Yuan Mei, Zou Xiang.Research on the Construction of " Digital Craftsman " Training Mode for Financial and Economic Majors in Higher Vocational Colleges from the Perspective of OBE-CDIO [J].Modern Vocational Education, 2026, (02) : 77-80.

[3] Huang Yuyang, Liu Linlin, Zheng Baoning, et al. Research on the teaching reform of Food Engineering Principle course based on OBE-CDIO teaching model [J].Qin, 2026, (01) : 150-152.

[4] Li Minghao, Deng Siyu, Asikka. Practical exploration of product design specialty based on OBE-CDIO concept [J]. Screen printing, 2025, (24) : 147-149.

[5] Cocoa, bayberry. Reform and practice of course teaching mode based on OBE-CDIO composite concept-Taking procurement and supply management course as an example [J].Journal of Wuhan Metallurgical Management Cadre College, 2025,35 (04) : 73-76.

© 2026 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)