

Digital Empowerment and Crowdsourcing Collaboration: Exploring the Development Path of Digital Resources for Career Education in Private Colleges and Universities

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Abstract: Against the backdrop of global educational digitalization, career education in private colleges and universities is currently confronted with prominent challenges including homogenized teaching resources, poor regional adaptability, insufficient in-depth application of digital technologies, and overly single subjects for resource development. Taking the school-based teaching reform of career courses at Hankou University as the practical carrier, and leveraging the Chaoxing learning platform (a widely used smart learning platform for higher education in China), this study explores the construction of a crowdsourcing collaborative education model with multi-party linkage among teachers, current students, alumni and local enterprises. This research builds a co-construction mechanism of "Demand Crowdsourcing — Resource Crowdsourcing — Process Peer-review — Outcome Sharing", develops digital resources covering localized cases, career education micro-lectures, and practical task sheets in alignment with Hubei Province's "Three Highlands, Two Bases" (the official industrial development strategy of Hubei Province) industrial layout, and designs a closed-loop implementation path of "Teaching Embedding — Practice Linkage — Platform Management — Feedback Optimization", which connects the integrated education scenarios of classroom teaching, club activities and discipline competitions. The practice results show that this model fully fits the current situation of private colleges and universities with limited funds and teaching staff: it can not only enrich the digital resources for career education and deepen students' cognition of the local job market, but also form a low-cost and replicable construction scheme for career education resources, which can provide a reference for the digital transformation of career education in similar private colleges and universities.

Keywords: Educational Digitalization; Crowdsourcing Collaboration; Private Colleges and Universities; Career Education; Teaching Resource Construction.

1. Introduction

The 20th National Congress of the Communist Party of China explicitly laid out the strategic plan to promote educational digitalization. Nine departments including the Ministry of Education jointly issued the Opinions on Accelerating the Digitalization of Education, which put forward the promotion of all-round digital transformation of courses, textbooks and teaching, so as to empower the improvement of education quality with digital technology. As the core employment-oriented education course, Career Planning and Employment Guidance for College Students is in urgent need of digital transformation. Li [1] points out that digital intelligence empowers career education.

Public colleges and universities have better conditions in terms of funds, technology and school-enterprise cooperation, so they can purchase mature career assessment systems and build digital resource databases. Constrained by school-running costs, private colleges and universities find it difficult to purchase commercial digital career teaching resources on a large scale. At the same time, the currently available general textbooks and public online career teaching cases are mostly sourced from the internet and financial industries in first-tier coastal cities, lacking real materials that fit the local manufacturing industry, commercial service industry and small and medium-sized enterprises in Hubei Province. Taking the original course materials of our university as an

example, most of the previous cases focused on job-hunting scenarios from e-commerce and large internet companies, which were disconnected from the job positions in Wuhan and local regions, providing limited reference value for students.

At the level of teaching implementation, traditional career course resources are mostly developed independently by teachers, without the participation of corporate HR, industry practitioners and students, so the content tends to be separated from the actual workplace. Meanwhile, the online platform is only used to store courseware and videos, without forming an iterative resource ecosystem, and the integration of digital technology and courses remains at a superficial level.

In response to the above practical problems, based on the reality of Hankou University as a private undergraduate institution, this study relies on the school-based curriculum reform, introduces localized cases jointly created by schools, enterprises, teachers and students, explores the crowdsourcing collaborative resource construction path under the digital platform, and builds a low-cost operation-adaptable digital resource system for career education suitable for private colleges and universities, so as to solve the problem of insufficient supply of career education resources in private colleges and universities.

2. Realistic Dilemmas in Digital Resource Construction for Career Education in Private Colleges and Universities

Given the operation attributes of private colleges and universities, regional industrial characteristics and actual teaching situations, there are four prominent common problems in the construction of digital resources for career education:

2.1. The Resource Supply is Highly Homogenized with Poor Regional Adaptability

General textbooks and publicly available online teaching cases mostly focus on the internet and financial industries in first-tier cities, and lack real workplace materials from local manufacturing industries, service industries and small and medium-sized enterprises in Hubei.

2.2. The Fund for Digital Construction is Insufficient, and Online Resources are in a Fragmented State

Most funds of private colleges and universities are invested in basic teaching, so it is difficult to purchase complete sets of assessment systems and professional resource platforms; the micro-lectures and cases independently developed by teachers are scattered in personal accounts, and no unified standardized resource repository has been formed.

2.3. The Subject of Resource Development is Single, Leading to Insufficient Practicability of the Content

Course resources are independently developed only by the course teachers, who lack front-line enterprise work experience and have insufficient understanding of local job demands; students and corporate HR are not involved in the content creation, so the content is disconnected from the real workplace. Artificial intelligence helps address the issue of a single development subject [2].

2.4. There is a Lack of a Normalized Iteration Mechanism for Resources

The existing resources are used for a long time after being completed, and there is no channel for collecting feedback from students and enterprises, so the content cannot be updated in time following the local industrial upgrading and the changes of enterprise recruitment standards, and the timeliness of resources keeps declining.

3. Construction of Crowdsourcing Collaborative Career Education Resource Development System under Digital Empowerment

Relying on the existing Chaoxing platform on campus, without additional hardware and software development costs, a crowdsourcing collaborative resource development system covering operation mechanism, resource content and classroom implementation path is constructed.

3.1. The Four-in-one Operation Mechanism of "Demand Crowdsourcing — Resource Crowdsourcing — Process Peer-review — Outcome Sharing"

Demand Crowdsourcing: Collect resource development needs through classroom communication, career club seminars, and normalized school-enterprise communication channels. Collect students' confusion in class, sort out the core ability requirements of local enterprise recruitment in school-enterprise docking, and form a resource development demand list divided by industries and modules.

Resource Crowdsourcing: Set up diversified creation teams. Teachers are responsible for controlling standards, students are responsible for material collection, editing and initial draft writing, while alumni and cooperative enterprise tutors provide real workplace cases and post standards. All members complete the initial drafts of various digital resources through division of labor, which reduces the pressure of independent development for teachers.

Process Peer-review: Implement multi-stakeholder online review. Enterprise tutors verify the authenticity of cases, teachers review the teaching adaptability, and students put forward improvement suggestions from the perspectives of readability and interestingness, so as to screen and retain high-quality resources.

Outcome Sharing: The high-quality resources that pass the review are uniformly uploaded to the Chaoxing platform for reuse by all teachers, students and secondary colleges of the whole university, so as to realize the co-construction and sharing of resources.

Crowdsourcing concepts can gather student wisdom to aid teaching[3], and the mechanism in this study is a practice of crowdsourcing in career resource construction.

3.2. Development Content of Digital Career Resource System for Hubei Regional Industries

Centering on Hubei's "Three Highlands, Two Bases" industrial layout, we independently develop four types of standardized supporting teaching resources in cooperation with cooperative enterprises:

Localized structured enterprise case database: Focus on Hubei's pillar and emerging industries such as intelligent manufacturing, modern commerce, digital cultural creation and modern service industry, and include information on post competencies, salaries and local employment channels.

Modular career education micro-lecture matrix: It is divided into four teaching modules, namely career awareness, resume and interview skills, workplace adaptation, and innovation and entrepreneurship planning, to produce 5-10 minutes of lightweight short videos, which are suitable for students' fragmented independent online learning.

Localized practical task sheets: Design practical tasks in supporting courses Career Planning and Employment Guidance for College Students and Introduction to Innovation and Entrepreneurship, including local enterprise industry research, sorting out local industrial policies, and writing regional post career planning schemes, to guide students to actively explore the local job market.

Lightweight career self-assessment tools: Adjust the dimensions of career interest, ability and value assessment in combination with the job demands of Hubei's industries, simplify the development process and embed them into the

online platform, so that students can independently complete the assessment and obtain development suggestions that fit the local employment direction.

3.3. Closed-loop Implementation Path of "Teaching Embedding -Practice Linkage - Platform Management -Feedback Optimization"

In order to avoid the idleness of digital resources as only online materials, a full-scenario landing closed loop is designed to connect the teaching and practical education links.

Teaching Embedding: Deeply integrate into regular career courses. Push micro-lectures for preview before class, carry out case discussions and mock interviews in class, assign practical tasks after class, and realize the deep integration of online and offline teaching.

Practice Linkage: Connect the education chain of courses, clubs and competitions. Relying on the university's career planning club, regularly hold local workplace case sharing salons, invite enterprise tutors to share industry dynamics online and offline; launch the "Localized Career Digital Resource Development Competition", and the high-quality cases and micro-lectures created by students are directly included in the university's resource library; cooperate with cooperative enterprises to carry out offline industry visits and short-term practices, so as to expand the source of resource materials.

Platform Management: Realize standardized operation with the help of existing online tools. Use Chaoxing to complete the classified archiving of resources, set up a Q&A section for enterprise tutors to answer questions, and the platform counts learning data to provide basis for teaching adjustment.

Feedback Optimization: Establish a semester-based normalized update mechanism. Collect suggestions from students, enterprises and other parties every semester, and iteratively update cases and micro-lectures through subsequent course assignments and competitions to ensure the timeliness of resources.

4. Operational Effectiveness of School-based Reform Practice

This crowdsourcing collaborative resource construction model has been implemented in career courses of multiple majors in our university. It is implemented relying on existing platforms, teachers and school-enterprise resources, without the need for large special funds. The practical results are mainly reflected in four aspects:

4.1. A Complete Localized Digital Career Teaching Resource Package has Been Built

It makes up for the shortage of Hubei local industry career materials in the university, forms a number of local cases, micro-lectures and supporting practical task sheets, provides stable and standardized digital teaching materials for career courses in our university, and solves the previous problem that classroom cases are concentrated in coastal regions and disconnected from local industries.

4.2. It Changes the Traditional Mode of Teachers Independently Developing Resources

Relying on the co-creation projects of micro-lectures and local cases, a multi-party collaborative creation channel for teachers, students, alumni and enterprises has been built, which revitalizes the school-enterprise education resources, reduces the burden of teachers' material development, and enriches the teaching carrier of blended classrooms.

4.3. It Mobilizes Students' Enthusiasm to Explore Regional Industries

Local teaching materials prompt more students to actively participate in industrial park visits and enterprise salons, broaden their horizons of career planning, and strengthen their awareness of local employment; students who participate in resource competitions and industry research have significantly better cognition of local jobs in Wuhan than the classes using traditional textbooks. AIGC can generate personalized career paths[4], and AI technology is a key support for digital-intelligent transformation[5]. This study stimulates students to explore regional industries through crowdsourcing.

4.4. It is Convenient for Private Colleges and Universities to Promote and Replicate

The whole system is built on a general online teaching platform, does not rely on professional technical teams and high funds, and the crowdsourcing and peer review processes are lightweight, which can be used for reference by similar private colleges and universities in Hubei Province.

5. Difficulties in Practice Operation and Long-term Optimization Countermeasures

5.1. Existing Difficulties in the Practice Process

The long-term incentive mechanism for multiple stakeholders is not perfect. Students who create materials and enterprise tutors who output cases for free lack continuous incentives, so their long-term participation enthusiasm is likely to decline; teachers who undertake additional resource review and update work have time conflicts with their daily teaching tasks. For example, without academic credit incentives, the number of student-generated materials decreased significantly.

The on-campus information technology capacity is weak. The university has insufficient full-time information technology personnel, so it is difficult to expand the intelligent functions of the platform and optimize the assessment tools. Some student teams were not proficient in video editing operations in the initial stage, resulting in low production efficiency of materials.

The continuous resource updating task is heavy. Local industries and post requirements are changing constantly, so cases and micro-lectures need to be revised regularly, which cannot be completed sustainably only by the course teachers.

5.2. Long-term Optimization Implementation Countermeasures

Improve the hierarchical and classified incentive system. Students who participate in resource creation or win awards

in competitions will be awarded innovation and entrepreneurship practice credits; teachers' work of resource development and teaching research reform will be included in their annual teaching research workload; school-level practical education appointment letters will be issued to enterprise tutors who continuously output materials and give lectures, so as to arouse the enthusiasm of all parties.

Build cross-departmental collaborative technical support on campus. Cooperate with the university's information center to simplify the processes of micro-lecture production, resource uploading and assessment tool construction, and produce standardized operation guides to reduce the technical threshold of creation; cooperate with similar private colleges and universities in the province to jointly build a shared resource database, so as to share the pressure of development and update.

Implement the student rotation update mechanism. Incorporate case collection and material optimization into course assignments and club tasks, arrange classes and grades to rotate to supplement materials, and rely on competitions to promote resource iteration, so as to alleviate the work pressure of full-time teachers.

6. Conclusion and Prospect

6.1. Research Conclusion

Under the background of educational digitalization, restricted by funds and teachers, private colleges and universities cannot copy the high-investment career education digital construction mode of public colleges and universities. Based on the co-creation practice of teachers, students and enterprises in Hankou University, this paper constructs the localized career digital resource development system of "digital platform + crowdsourcing collaboration", which takes "demand crowdsourcing — resource crowdsourcing — process peer review — outcome sharing" as the operation core, and is supported by the closed-loop implementation path of "teaching embedding — practice linkage — platform management — feedback optimization". This system can effectively solve the common problems of private colleges and universities, such as homogenization of career education resources, weak regional adaptability, shallow digital application, and single development subject.

This model relies on the general online teaching platform, with low cost and easy implementation. It fully mobilizes the multiple forces of students, enterprises and alumni, produces digital teaching resources adapted to Hubei's industries, enriches classroom forms, strengthens students' local employment awareness, and provides a lightweight feasible scheme for the digital reform of career education in private colleges and universities. Hu[6] proposes a systematic implementation path from the perspective of digital intelligence. Our model is a beneficial exploration.

6.2. Future Prospect

Promote inter-college resource collaborative sharing. Jointly build a regional career digital resource sharing alliance with multiple private colleges and universities in Hubei, so that each university can develop corresponding industrial cases separately, realize material exchange, co-construction and shared use, and further reduce the development cost of a single university.

Introduce lightweight intelligent tools to assist resource construction. In the future, simple AI tools can be used to complete case text optimization and automatic generation of career assessment, simplify the crowdsourcing creation process, and further reduce the material production threshold for multiple contributors.

Improve the supporting teaching evaluation system. Incorporate the use of digital crowdsourced resources and students' local industry practice achievements into the process evaluation of career courses, form a complete education closed loop of "resource construction — classroom teaching — practice evaluation", and continuously deepen the reform effect of digitally empowered career education.

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