

Research on the Reconstruction Mode of Higher Vocational Education Course Focusing on the Development of Students' High-Order Ability

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Abstract: Aiming at the disharmony between specialty training objective positioning, and the vocational ability requirements of industrial restructuring and technical upgrade for applied talents in first-line production and management generally existing in higher vocational colleges of China, the paper analyzes present reconstruction mode of higher vocational education course at home and abroad, and constructs a higher vocational education course reconstruction mode which focuses on the development of students' high-order ability, and adapts to the industrial restructuring and upgrade in China. The paper proposes unique insights in terms of course reconstruction mode thinking framework, reconstruction principles, ways and methods, reconstruction course teaching staff, teaching management mode, and course teaching assessment system.

1. Introduction

As of the 1990s, Chinese higher vocational education has realized prompt expansion on original basis by taking higher education popularization as the opportunity and new higher vocational education as the entry point. Irrespective of the scale expansion of higher vocational education, the training level of higher vocational technical talents is rather worrisome. Especially, accompanied by industrial restructuring, transformation and upgrade in China, higher vocational education which shoulders the heavy mission of "training high-skilled talents required by first-line production, construction, service and management" is facing increasingly severe challenges now. Under such a background, building a course system centering around high-order vocational ability has become an inevitable choice for higher vocational colleges to insist on connotation development path. However, due to the ambiguous positioning of talent training, the reform suffers from unprecedented resistance and proceeds slowly. Moreover, it never gets rid of the fetters of low-order ability standard. In particular, the most prominent problem is the disharmony between higher vocational education specialty training objective positioning, and higher vocational talents' vocational ability requirements needed by industrial restructuring and technical upgrade. Moreover, graduates are found to lack adequate post adaptability and post transfer ability. It may be explained from four aspects in teaching. First of all, the teaching only focuses on the disciplinary association among concept, principle, law and formula, but overlooks the direct association between knowledge

and students' future vocational labor practice. Secondly, teachers instill knowledge into students in class teaching, but fail to organically combine theoretical teaching with practice teaching. Therefore, students are still passive receivers of knowledge. Thirdly, independent compilation of textbooks artificially severs interdisciplinary association, which not only confines the acquisition of knowledge, and constrains the development of thinking, but also directly weakens students' learning interests. Fourthly, the design and arrangement of teaching formula do not effectively highlight the ability-based features of vocational education and teaching implementation lacks due creativity. Fifthly, conventional performance assessment based on written examination ignores students' comprehensive performance in internship, practice and learning attitudes. Such mode of teaching has obstructed the quality of higher vocational education in China. As an indispensable part of higher education, higher vocational education should cultivate high-quality skilled, applied and practical talents required by first-line production, management and service. Consequently, higher vocational colleges must open effective courses and reconstruct course objectives, course contents, course structure and teaching methods, performance assessment in an all-round and systematic way. (Berliner and David,2004)

2. Analysis on Present Course Reconstruction

In recent years, the focus of higher vocational education on course reform promotes academic attention on course theory research and course reform practice. Remarkable achievements have been attained in at least five aspects: 1. Clarifying ability-based course reconstruction concept; 2. Confirming practice-oriented course composition, and highlighting the construction of teaching conditions; 3. Exploring course construction mode and primarily releasing "vocational ability systematic cluster course" reconstruction mode; 4. Propelling textbook construction full of higher vocational special features; 5. Developing comparative research on foreign higher vocational courses, introducing and consulting American CBE course, ILO MES course and Australian TAFE course. These higher vocational education course-related research and practice results inspire people that higher vocational education course is a new course type. Higher vocational colleges can only promote higher vocational education courses' quality and level and therefore achieve the course-based training objectives by constructing courses according to higher vocational education law and properties and highlighting higher vocational education features. (Dyer and Dyer 2015)

On the whole, the research on higher vocational education course reconstruction mode is still in the start-up stage, and most colleges' course reform is nothing but a face-saving project, which can be evidenced by six points as below: 1. No significant change occurs in speciality course system. Many colleges still follow conventional disciplinary "three-stage" framework which has been already proved to be less rational. 2. Course concept is empty and impractical in specific course reform. It lacks the instruction of thinking. 3. The skill orientation of course objectives and post skill orientation of course design ignore problem-solving ability, sustainability and other high-order ability orientation. 4. Out-of-date course contents deviate from the training requirements. 5. Research on course teaching method and assessment method is still limited by traditional teaching framework. 6. Course designers do not have mature course construction thinking framework and often find difficulty in straightening out thinking and technical routes.

In general, though higher vocational course construction mode has held universal attention from massive vocational education course research experts and practitioners, it leaves insignificant influences on practice. Some studies even stay at superficial theoretical discussion. Though some colleges reform and innovate vocational education course construction mode, these reforms which have been implemented in a local and small scale entirely lack systematic design, and can't become the mainstream of vocational education yet. Moreover, such studies are often made independently.

Though a majority of colleges which have developed higher vocational education course construction mode research and practice have made breakthroughs in course construction, they never completely remove technical education barriers and skill-orientation ability-based view, nor attain substantial progress and performance. Such research work is basically formal. (Sufang An, Wenbin Li, Jichao Hu and Lixiao Ma, 2017)

3. CONSTRUCTION OF HIGHER VOCATIONAL EDUCATION COURSE RECONSTRUCTION MODE FOCUSING ON THE DEVELOPMENT OF STUDENTS' HIGH-ORDER ABILITY

2.1 Basic Positioning of Course Reconstruction

Though new higher vocational education starts late in China, related exploration on course construction mode is very active. Influential representatives include traditional “basic course, professional basic course and professional course” discipline course construction mode, emerging working process-based course construction mode, project course construction mode, etc. Emerging course construction mode has skill-orientation ability-based view as its foundation featured by four characteristics. Firstly, it emphasizes market-orientation, and insists that vocational technical education speciality should change with social talent requirements. Secondly, it values the core of skill training, and aims to promote students' vocational quality and skills. Thirdly, it has strong systematicness and practicability under the instruction of scientific methods. Fourthly, it has self-improvement functions.

Systematic research on higher vocational education course construction mode has a history of around 30 years in foreign countries. Higher vocational education has developed entire system and distinctive course construction mode in developed countries. Influential representatives include CBE mode, “dual system” mode, and MES mode. The three course construction modes share five points in common. Firstly, they all adopt a non-disciplinary and ability-based vocational education mode. Secondly, the full teaching process is an “entire behavioral mode” which includes information access, formation of working plan, decision-making, implementation of working plan, control of working quality, and assessment of working performance. Thirdly, they all adopt student-centered teaching organization form. Fourthly, the role of teachers has experienced drastic changes, turning from traditional leading actor and teaching organizer to teaching activity supervisor and learning tutor. Fifthly, they all adopt objective learning method and value the quality control and assessment in learning process. (James P. Sampson, Pei-Chun Hou, Julia F. Kronholz and Casey Dozier, 2014)

Comparatively speaking, domestic and foreign higher vocational education course reconstruction mode shares the same trend in development, research, reform and innovation, which transits from “teaching” to “learning”, from conceptual discussion to teaching practice in course construction mode, and from knowledge and skill development to students' vocational quality improvement.

The higher vocational education course reconstruction mode focusing on students' high-order ability development refers to “CBE”, “dual system” and “MES” mode, overcomes the skill-orientation ability-based view in domestic higher vocational education mainstream course construction mode, and constructs high-order ability-based view. By taking the development of high-order ability and vocational ability as course objectives, this mode considers typical comprehensive working task as the carrier of ability development, and procedural teaching implementation as the platform of learners, and high-order ability and vocational ability diagnosis and assessment as the fundamental means of academic performance assessment. With focus on the integration of teaching and learning, it well fixes the disharmony between higher vocational education specialty training objective positioning, and the vocational ability requirements of

industrial restructuring and technical upgrade for applied talents in first-line production and management. It is an effective course reconstruction mode which adapts to Chinese industrial restructuring and upgrade demands, and meantime, conforms to higher vocational education characteristics.(Cohen 2005)

2.2 Course Reconstruction Thinking Framework

The higher vocational course construction mode focusing on the development of students' high-order ability is employment-oriented. According to employment post requirements and career sustainability requirements, it decomposes teaching contents, reconstructs courses in line with the cognitive rules and high-order ability-based orientation. The core of the high-order ability development mode is the development of students' high-order ability.

In higher vocational education course reconstruction process adaptable to industrial restructuring and upgrade, higher vocational colleges should change mechanical reception learning to inquiry learning. The thinking framework which illustrates the development of students' high-order ability as the expected objective includes the following ten aspects: 1.Development of students' high-order ability with high-order thinking as the core; 2. The learning concept which emphasizes that learners are the subjects of learning and learners should create conditions to fulfill the subject role; 3.Emphasis on taking challenging, authentic, comprehensive, cross-disciplinary working task as learning mission; 4.Propriety of taking performance-based assessment as teaching assessment construction orientation(As shown in Fig.2); 5.Full motivation of learners' proactive participation initiative, and creation of immersive learning environment for students; 6.Learning strategy which advocates to create learning opportunities for all learners; 7.Creation of a learning context with the objective of building a learning community; 8.Transition of teachers' role to learning helper, instructor, researcher and course developer; 9.Transition of learners' role to learning manager, explorer, cognitive disciple, and teachers among students; 10.Transition of technical support from "learning from technology" to "learning with technology".

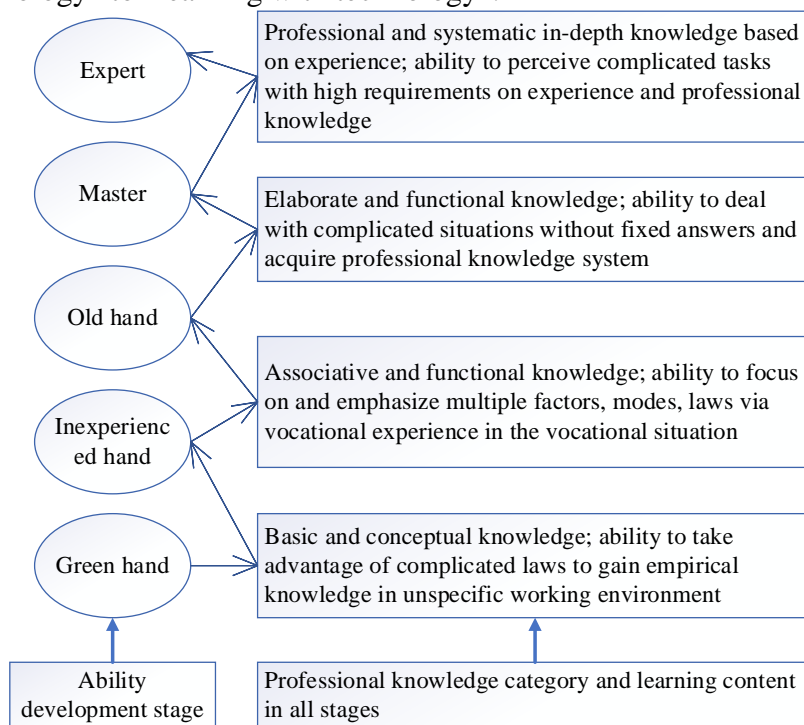


Fig.1 Ability Development Process Flow Chart from Green Hand to Expert

In higher vocational education course reconstruction process adaptable to industrial restructuring and upgrade, higher vocational colleges should adopt course design principles indicative of modern vocational education advanced teaching concept. There are mainly 8 principles involved: 1.Course objective design should highlight the high-order ability-centered ability objectives; 2.Course content design should center around career activity instruction and working process instruction in furtherance of the finalization of course objectives; 3. Main carrier design of course content is project and task design in which design teachers lead students to do the project task; 4. The implementation process of project task should be elaborately designed in “green hand-novice-old hand-skilled hand-expert” vocational ability development law; 5.Course implementation and assessment design should make students effectively join in the full process of class teaching as main subjects; 6.Teaching method design should possibly integrate knowledge theory learning, ability training and practice operation, that is, integration of teaching, learning and practice; 7. Vocational morality and vocational quality teaching must be integrated into all courses; 8.High-order ability must be integrated into all courses, which means that all courses should train students’ high-order ability besides basic vocational ability. (Hughes 1990)

As shown in Fig.2, higher vocational education course design route adaptable to industrial restructuring and upgrade concentrates on course deconstruction and reconstruction. On the one hand, it clarifies speciality training objective. Such speciality talent training objective is specifically oriented to certain post or post group. On the other hand, it conducts in-depth working analysis on post, and determines the high-order ability-focused vocational ability standards required by the post. The core meaning of such course decomposition is that it breaks through the knowledge system-centered course standards, and builds high-order ability-centered vocational ability course standards. Secondly, it reconstructs course based on vocational post ability orientation. First of all, it clearly straightens out the knowledge, skills and attitudes required by the formation of post high-order ability, and ascertains basic contents of speciality teaching. Secondly, it divides course modules in line with speciality ability, and then designs effective teaching methods, teaching processes and teaching assessment with module teaching objectives. Finally, it illustrates the relation between knowledge, skills and attitudes, especially concentrates on how to apply acquired theoretical knowledge, operational skills and working attitudes to finish working tasks, and therefore cultivates the ability of making judgement and taking actions in sophisticated working conditions. (Guest, D. E.,2015)

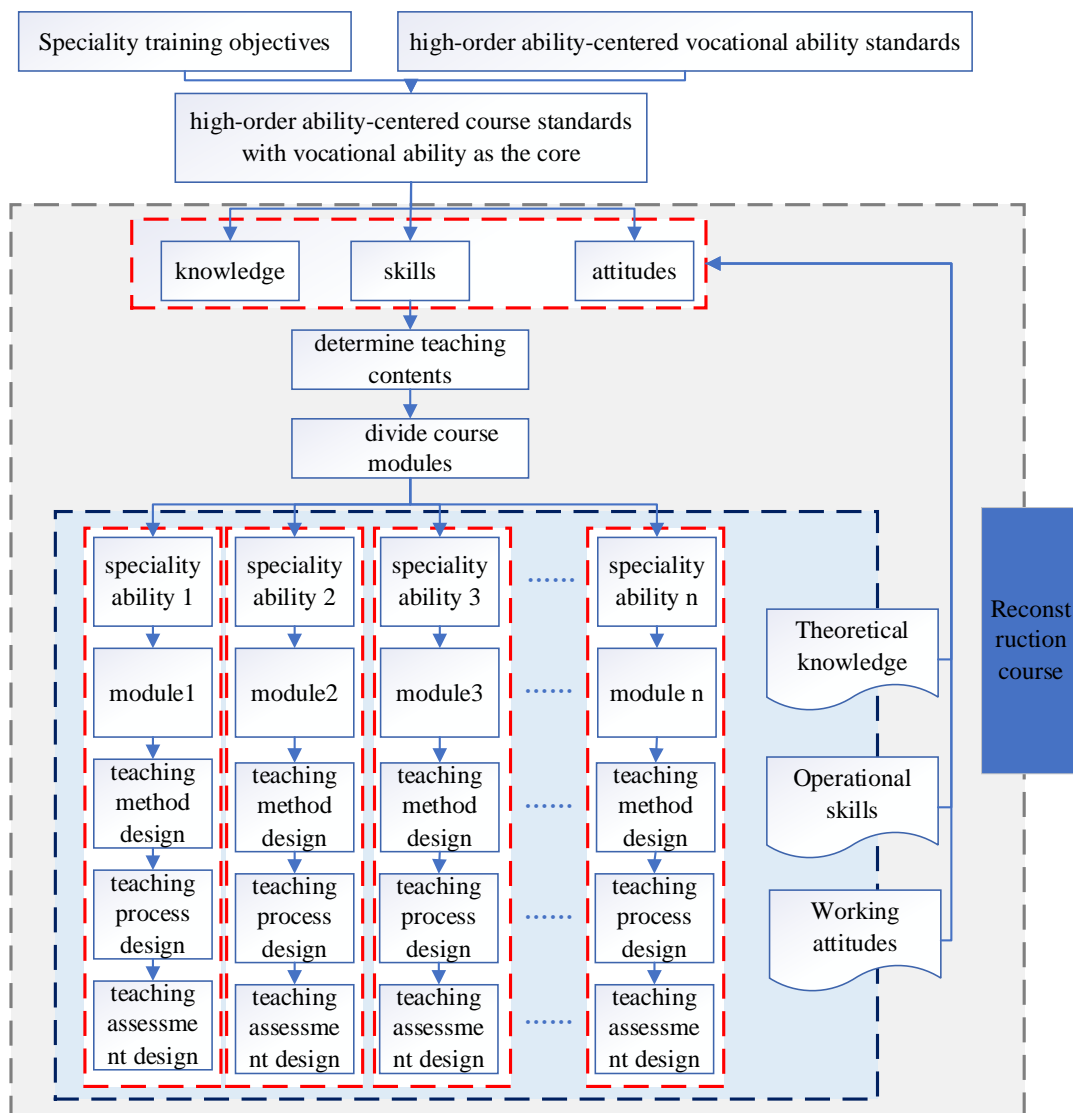


Fig.2 Course Design Chart

In strict accordance with the mainstream of modern vocational education course reform, higher vocational course reconstruction mode focusing on the development of students' high-order ability has initially formed a higher vocational ability development-oriented course system with theoretical support, implementation method and teaching practice. With regard to theory, the paper raises vocational post working process-oriented course reform thinking(As shown in Fig.3) , and specifically incorporates classical teaching theories at home and abroad, such as applying constructivism teaching theory to explain the division of task-driven module, and cognitive law to explain the division of ability progressive module. With regard to method, the paper raises post working process-based course decomposition method and high-order ability-centered post vocational ability-based course decomposition method. Connecting Relation Chart between Professional Course Content and Corporate Vocational Standard As shown in Fig.4. Course reconstruction takes four steps. The first step is to clearly straighten out the knowledge, skills and attitudes required by the formation of high-order ability-centered vocational post ability, and determine basic speciality teaching contents. The second step is to divide course modules by reference to speciality abilities. The third step is to determine the teaching objectives, content system, basic environment and teaching organization of each course module. The last step is to

form teaching method in favor of the formation of high-order ability-centered vocational ability as per module teaching objectives, and choose modular textbooks developed by college-enterprise cooperation. Given present situation of vocational education teaching reform featured by numerous theories and modes but inadequate practice and application, it is in particular important to reconstruct higher vocational course focusing on the development of students' high-order ability and internalizing vocational education concept in theoretical form as concrete course teaching form.

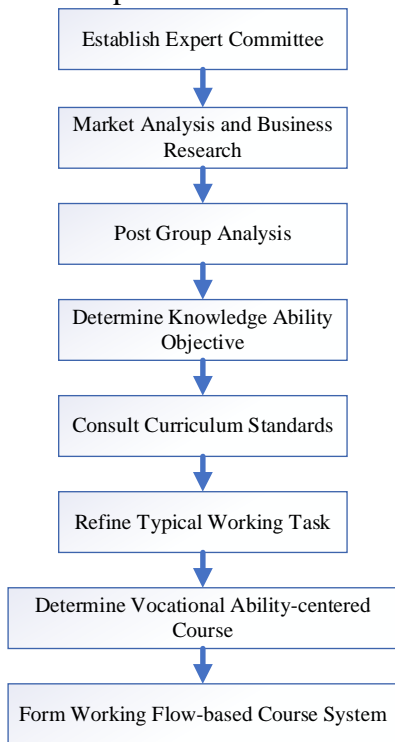


Fig.3 Post Working Flow-based Curriculum System Formation Chart

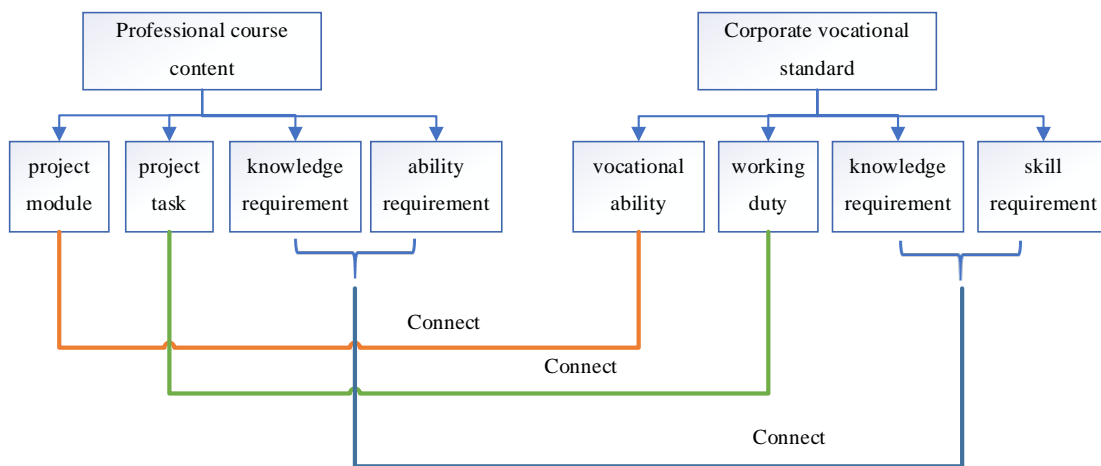


Fig. 4 Connecting Relation Chart between Professional Course Content and Corporate Vocational Standard

2.3 Reconstruct Course Teaching Management Mode

The main teaching management mode of traditional higher vocational education is discipline-based. Course system is set up according to discipline requirements, teachers are organized

according to discipline orientation, and students are grouped according to discipline specialty. Such teaching management mode does not adapt to current higher vocational education, because teachers lack due cognition about vocational post, course system lacks pertinence for vocational post, and students lack clear objective for learning. As proposed by the Education Development and Planning Outline in China, vocational education must be employment-oriented. As vocational post is the starting point and destination of higher vocational education, higher vocational education teaching management mode is necessarily requested to transit from discipline-orientation to ability-orientation. (Liu, & Da., 2016)

The course reconstruction mode which focuses on the development of students' high-order ability is the vocational ability-based higher vocational education course construction mode focusing on high-order ability. The research team forms a new teaching management mode suitable for course teaching reconstruction in teaching practice. Its connotation is to organize course in ability modules, and form course system in line with vocational post. Teachers should be organized and managed by vocational post group, in which professional teachers have their own vocational post orientation, devote to the research on post development conditions and high-order ability requirements, and practise the principle in teaching. Students have to be managed by the credit system that allows students to choose course modules based on interests and personal characteristics, and gain corresponding credits.

However, it is far from satisfaction to simply depend on credit system to improve higher vocational teaching quality. Credit system is an objective management mode, which means that students can obtain credits as long as they pass the exam or test. While the final effect of credit system is decided by what students can learn. Good products are produced, and higher education quality originates from excellent teaching process. In this sense, process determines objective and objective management can't replace process management. For achieving the actual efficiency of credit system, teaching process plays a vital role.

In essence, higher vocational education course teaching management mode focusing on students' high-order ability development is module credit system.

Credit system shows higher vocational education objective management, and module teaching mode shows process management. The perfect combination of the two will greatly improve higher vocational education teaching quality, and higher vocational education teaching level. Module credit system is exactly an effective means to integrate the two.

The thinking to implement module credit system is to request students to get credits according to course module, rather than conventional public optional course. The reason is that module teaching course system is built under post working tasks. Every teaching module corresponds to every vocational post working task. The choice for course module is exactly the choice for future vocational post.

Elective system is the core of credit system. Students sign up for the course in line with the instructions of vocational post, which gives great freedom to students' individualized development space. In the learning process for multiple modules, students can not only choose suitable vocational development path, but also deepen study in specific technology.

While conforming to the requirements of the college, students are able to develop their hobbies and personality, obtain enough credits, get the diploma and successfully find a post.

3. Conclusions

As a major category of higher education, higher vocational education cultivates high-quality skilled, applied and practical talents required by first-line production, management and service. Higher vocational colleges must open effective courses and reconstruct course objectives, course

contents, course structure and teaching methods, performance assessment in an all-round and systematic way. The higher vocational speciality education course reconstruction mode focusing on the development of students' high-order ability and adaptable to industrial restructuring and upgrade requirements in new age is exactly proposed throughout in-depth research on course reconstruction objective orientation, learning concept, learning task, assessment propensity, teaching methods, learning context, learning strategy, teacher role, learner role, and technical support. It is of great significance to the promotion of higher vocational education course construction, and especially the rise of education quality and talent training level adaptable to industrial restructuring and upgrade requirements for higher vocational talents in new age. Follow-up research should concentrate on three aspects: 1. Higher vocational course reconstruction mode focusing on the development of students' high-order ability adapts to what specialty or course. 2. As a kind of course reconstruction mode adaptable to industrial restructuring and upgrade requirements for higher vocational talents and higher vocational talent training law, how do make breakthroughs in its promotion and application? 3. How to further improve higher vocational education reconstruction mode focusing on the development of students' high-order ability?

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