Systematic Review of Professional Development Strategies for Young University Teachers' Teaching Competence (2021–2025): Implications for Application-Oriented Institutions in China

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ABSTRACT

Young university teachers play an important role in teaching, curriculum development, and talent cultivation, but many are still at an early career stage and lack sufficient teaching experience. This issue is more evident in application-oriented institutions, where teachers are expected not only to deliver classroom teaching but also to connect teaching with practical training and industry needs. This study systematically reviews professional development strategies for young university teachers' teaching competence from 2021 to 2025 and discusses their implications for application-oriented institutions in China. Based on the PRISMA framework, studies published between 2021 and 2025 were searched in Scopus and CNKI. After identification, screening, eligibility assessment, and quality appraisal, 23 studies were included for analysis. The findings show four main development paths. First, teacher development is shifting from one-time training to structured and staged systems supported by institutional policies. Second, mentoring, peer collaboration, teaching communities, and organizational support are becoming important for young teachers' growth. Third, teaching competitions, open classes, curriculum reform, and other real teaching tasks help teachers improve through practice and feedback. Fourth, university–industry collaboration strengthens practical teaching competence by connecting classroom teaching with industry needs. Overall, young teacher development is more effective when training, mentoring, practice, evaluation, and industry engagement work together as a continuous system. For application-oriented institutions, teacher development should move beyond short-term training and focus on long-term, practice-based, and collaborative support. These findings provide practical implications for improving young teacher development and supporting applied talent cultivation.

Keywords: young university teacher; teaching competence; professional development; application-oriented institutions; systematic literature review

INTRODUCTION

Higher education is shifting from rapid expansion to a model that focuses more on quality and sustainable development (Moreira et al., 2023). In this context, teaching quality has become one of the key indicators of a university's overall competitiveness (Muksar et al., 2022). Young university teachers play an important role in teaching and talent cultivation. However, most of them are still at the early stage of their careers, with limited teaching experience, while also facing multiple pressures related to research, teaching responsibilities, and professional development (Liang et al., 2025; Guo & Wei, 2024).

Previous studies have pointed out that young teachers still face challenges in areas such as instructional design, classroom management, and the use of teaching technologies (Cai, 2025; Zhang et al., 2024). Therefore, how to

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effectively improve the teaching competence of young university teachers has become an important issue in faculty development in higher education (Zaqiah et al., 2024). Some studies focus on training systems, while others examine mentoring, teaching competitions, practical teaching, or university–industry collaboration. However, the relationships among these different strategies have not yet been fully integrated or systematically discussed (Amemasor et al., 2025; Xu & Li, 2025; Sims & Fletcher-Wood, 2021). This issue is even more significant in application-oriented institutions. These institutions not only expect teachers to have strong classroom teaching skills, but also require them to possess practical teaching abilities and an understanding of industry needs. As a result, a single training approach is no longer enough to support the professional development of young teachers.

Based on this background, this study uses the PRISMA systematic review method to examine empirical studies published between 2021 and 2025. The study aims to identify the main pathways for developing the teaching competence of young university teachers and to provide implications for the professional development of young teachers in application-oriented institutions.

CORE CONCEPTS

Young University Teacher

The concept of young university teacher lacks a universally accepted definition. Previous studies have defined this group based on age, years of teaching experience, academic rank, or career stage. Considering the diversity of definitions, this review adopts a broad perspective and defines young university teachers as faculty members at the early stage of their academic careers, including newly employed teachers, novice teachers, and early-career academics. This definition emphasizes career stage rather than a specific age threshold.

Teaching Competence

Teaching competence generally refers to the integrated ability of teachers to effectively plan, organize, implement, evaluate, and improve teaching activities by mobilizing professional knowledge, skills, attitudes, and available resources. In higher education contexts, teaching competence is multidimensional and may include pedagogical competence, practical teaching competence, digital teaching competence, reflective competence, and teaching innovation competence. In this review, teaching competence is treated as a broad construct covering different competence dimensions identified across the included studies.

Professional Development Strategies

Professional development strategies refer to organized activities, support mechanisms, and developmental approaches designed to improve teachers' professional growth and teaching competence. These strategies may include mentoring, structured training systems, collaborative learning, teaching competitions, practical training, and institutional support initiatives.

Application-Oriented Institution

Application-oriented institutions (AOIs) are higher education institutions that emphasize practical education, industry collaboration, and the cultivation of applied talents. Compared with research-intensive universities, AOIs place greater emphasis on integrating theoretical knowledge with practical application and therefore require teachers to possess stronger practice-based teaching competence.

METHODOLOGY

Research Design

This study adopts a systematic review method based on PRISMA. First, we searched Scopus and CNKI for recent studies related to the teaching competence of young university teachers, with a focus on key factors such as the dimensions of teaching competence, development pathways, and organizational support. To make the

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process rigorous and efficient, we strictly followed the PRISMA guidelines, covering article identification, screening, eligibility assessment, data analysis, and descriptive summary (Rethlefsen et al., 2021; Rethlefsen & Page, 2022).

Identification

After identifying the core concepts and keywords, we expanded the search terms by referring to previous studies and relevant dictionaries, and developed search strings for Scopus and CNKI databases as shown in Table 1. Due to the character limit of the CNKI search interface, time restriction was not directly included in the search string. Instead, publication years were manually restricted during the database screening process to ensure consistency with the predefined inclusion criteria.

Table 1: Search strings

Database	Search strings	Date of access
Scopus	TITLE-ABS-KEY((“early career academic*” OR “early career facult*” OR “novice facult*” OR “new facult*” OR “young teacher*” OR “young universit* teacher*” OR “higher education teacher*” OR “university teacher*”) AND (“teaching competenc*” OR “pedagogical competenc*” OR “instructional competenc*” OR “teaching abilit*” OR “teaching skill*” OR “faculty development” OR “teaching improvement”)) AND PUBYEAR > 2020 AND PUBYEAR < 2026	December 2025
CNKI	(青年教师 + 高校青年教师 + 新手教师 + 大学教师) * (教学能力 + 教学胜任力 + 教育教学能力 + 实践教学能力) * (教师发展 + 专业发展 + 教师培训)	December 2025

Screening

A total of 1,357 relevant articles were identified through the first round of searching, including 186 from Scopus and 1,171 from CNKI. After applying the time-span filter, 277 CNKI articles remained. Following the first round of screening, 463 articles were retained. Next, we screened the remaining articles based on the inclusion and exclusion criteria listed in Table 2 and 356 articles were retained.

Table 2. The selection criterion

Criterion	Inclusion	Exclusion
Language	English or Chinese	Other languages
Timeline	2021–2025	Outside timeline
Publication type	Peer-reviewed journal articles	Conference abstracts, news
Publication stage	Final	In press
Accessibility	Full text available	Full text unavailable
Population	Young university teachers, early-career academics, novice faculty	K–12 teachers, pre-service teachers
Context	Higher education institutions	Primary schools, vocational schools
Phenomenon	Professional development interventions, mechanisms, or structured strategies related to teaching competence enhancement	Only status/problem analysis

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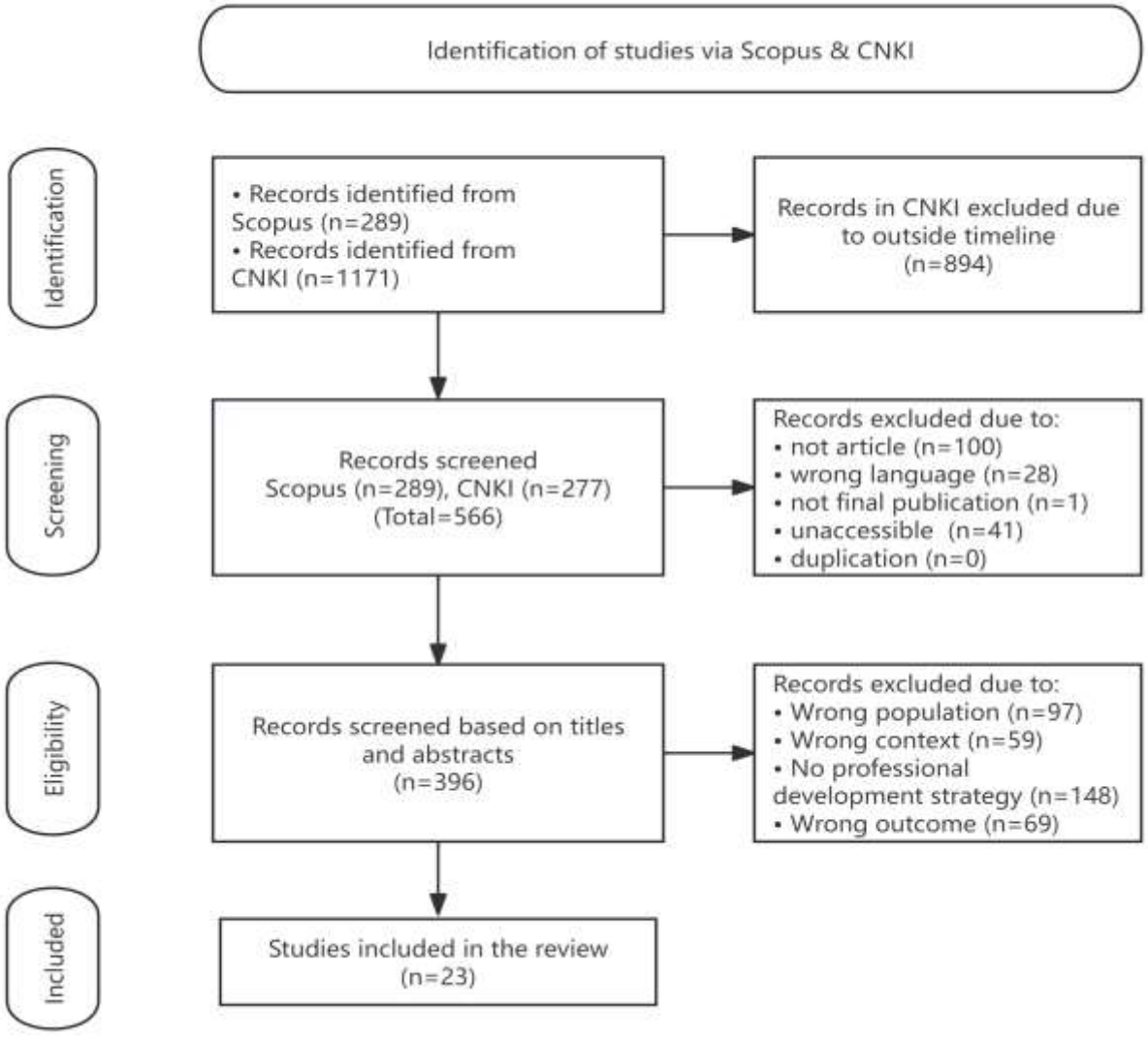
Outcome	Teaching competence, pedagogical competence, digital teaching competence, practical teaching ability	Research competence only
Study type	Empirical, intervention, conceptual	Editorials, comments, review studies

Eligibility

We carefully reviewed the titles and content of all articles to ensure that they matched the aims of this study and met all the criteria listed in Table 2. After a detailed screening process, 329 articles that did not meet the requirements were excluded, while 23 articles were retained for further analysis. The whole process is shown in Figure 1.

Figure 1. Flow diagram of inclusion and exclusion of studies



Quality Appraisal

After full-text screening, the included studies were assessed for methodological quality. Since this review included different types of studies (e.g., empirical, conceptual, intervention), a narrative quality assessment approach was used. Included studies were assessed according to research design, sample adequacy, data collection transparency, analytical rigor, and evidence strength. Studies were classified as high, medium, or low quality.

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Two researchers independently evaluated all included studies. Any differences were discussed and resolved through agreement. The results of the quality assessment are presented in Table 3.

Table 3. Narrative quality appraisal of included studies

Author	Study type	Design	Methodological characteristics	Evidence strength	Quality level
Cai (2025)	Empirical	Survey + interview	375 valid questionnaires; 10 interviews; sufficient sample; detailed data analysis	Strong empirical support	High
Liang et al. (2025)	Empirical	Case study + program description	Case: Guangxi University of Science and Technology; "diagnosis-training-supervision-guidance" model; outcome data provided	Strong empirical support	High
Wang(2025)	Empirical	Survey + interview	10 applied universities surveyed; semi-structured interviews; clear sample size	Strong empirical support	High
Zheng et al. (2025)	Conceptual	Conceptual analysis + case study	Teaching competition focus; tiered training framework; lacks systematic empirical data	Moderate theoretical support	Moderate
Hua & Zhao (2024)	Empirical	Survey + literature review	National random sampling; questionnaires & interviews; systematic method; growth standard system built	Strong empirical support	High
Li et al. (2024)	Empirical	Case study + program evaluation	"Dual track, three collaboration, four ladder" model; outcome data (awards, course construction)	Strong empirical support	High
Zhang et al. (2024)	Conceptual	Conceptual analysis + program design	Six activities under teaching assistant system; clear logic; no empirical data provided	Moderate theoretical support	Moderate
Zheng (2024)	Conceptual	Conceptual analysis	Private university teacher development; three-level strategy; no empirical validation	Moderate theoretical support	Moderate
Dong & Li (2025)	Conceptual	Problem analysis + strategy proposal	Big data context; teaching problems analyzed; training & system suggestions; methods broadly described	Moderate theoretical support	Moderate
Ma (2023)	Empirical	Case study + self-reflection	Engineering education certification context; personal competition & teaching experience; single case	Moderate empirical support	Moderate
Wang et al.	Empirical	Case study + program	Four teaching competition types (ideological and political education, skills, IT, innovation); outcome data	Strong empirical	High

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(2023)		evaluation	(nearly 500 awardees, resource library built)	support	
Luo (2022)	Conceptual	Conceptual analysis	Double Ten Thousand Plan context; analyzes requirements and strategies for young teachers; no data	Moderate theoretical support	Moderate
Zhao (2022)	Conceptual	Conceptual analysis + framework proposal	Literature-based; proposes "four improvements", "three stages", "1+N" training pathways; no empirical validation	Moderate theoretical support	Moderate
Le & Zhang (2021)	Reflective	Experience-based reflection	Based on teaching supervision experience; advice on pace, content, interaction, PPT use; no systematic data	Weak evidence (opinion-based)	Low
Wang et al. (2021)	Conceptual	Conceptual analysis + case description	Problems of class evaluation (no dialogue, passive aphasia); proposes LICC observation framework; brief case example	Moderate theoretical support	Moderate
Zhang & Zhang (2021)	Conceptual	Conceptual analysis	Problem analysis (ethics, skills, practice, innovation); four-dimension development path; no empirical data	Moderate theoretical support	Moderate
Zhang et al. (2021)	Empirical (claimed)	Survey study	Survey of 23 applied universities in Jilin Province; but lacks detailed sample/data presentation; mainly conceptual discussion	Weak empirical support (insufficient data)	Low
Zhao & Shuo (2021)	Conceptual	Conceptual analysis	Identifies weaknesses of newly-employed PhD teachers (research-heavy, lack of pedagogy); proposes systematic solution (development records, assessment, quality monitoring)	Moderate theoretical support	Moderate
Shaikhova et al. (2024)	Empirical	Survey study	16 novice teachers at Amanzhokov University (Kazakhstan) with 5 months experience; quantitative questionnaire; explores how teaching competence is acquired	Moderate empirical support (small sample, single institution)	Moderate
He et al. (2023)	Empirical	Case study + program evaluation	Double teams, double mentors chain mode (cultural, master-led, list demonstration, mechanism chains); outcome data (teaching awards, course recognition, sample Party branch)	Strong empirical support	High
Hua et al.	Empirical	Case study	Team-based training methods (courseware development, repeated	Moderate empirical	Moderate

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(2023)			lecturing, mentoring); two teacher growth cases described; no quantitative outcomes	support (qualitative case)	
Li & Lu (2021)	Empirical	Case study + program evaluation	Three platforms (campus, enterprise, online), three specials (position, allowance, funding), three plans (personalized training, team building, international training); outcome data (1312 student awards, 34 industry-university projects)	Strong empirical support	High
Xiang (2021)	Conceptual	Framework development + mathematical modeling	Identifies deficiencies in English major teachers' competence; constructs measurement system with AHP and Shannon entropy; proposes strategies; no empirical validation of model	Moderate theoretical support (mathematical model proposed but not empirically tested)	Moderate

Data abstraction and analysis

This study analyzed 23 articles and organized them by author, theme, study context, design, sample, and competence dimensions, as shown in Table 4. Based on the content of the articles, the studies were further analyzed under four themes.

Author	Theme	Study Context	Design	Sample	Competence dimension
Cai (2025)	Teaching competence enhancement strategies	China (AOI)	Survey + interview	375 teachers + 10 interviews	Pedagogical competence + Digital teaching competence
Liang et al. (2025)	Teaching development pathways	China (AOI)	Case study + program description	1 university	Teaching competence
Wang(2025)	Practical teaching competence development	China (AOI)	Survey + interview	10 universities	Practical teaching competence + Reflective competence
Zheng et al. (2025)	Teaching competence development pathways	China (AOI)	Conceptual analysis + case study	N/A	Teaching competence + Teaching innovation competence
Hua & Zhao (2024)	Teaching competence enhancement pathways	China (AOI)	Survey + literature review	>100 young teachers	Pedagogical competence + Research competence
Li et al.	Structured	China (a comprehensive	Case study + program	1 university	Moral and professional ethics competence +

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(2024)	training system	university)	evaluation		Digital teaching competence
Zhang et al. (2024)	Mentoring and assistantship support	China (a comprehensive university)	Conceptual analysis + program design	N/A	Pedagogical competence + Teaching innovation competence
Zheng (2024)	Professional development pathways	China (AOI)	Conceptual analysis	N/A	Professional competence + Practical teaching competence
Dong & Li (2025)	Digital teaching development	China (a comprehensive university)	Problem-analysis + strategy proposal	N/A	Classroom management competence + Reflective competence
Ma (2023)	Teaching competence development	China (AOI)	Case study + self-reflection	N/A	Practical teaching competence + Reflective competence
Wang et al. (2023)	Teaching competition system	China (AOI)	Case study + program evaluation	1 university	Teaching competence + Digital teaching competence
Luo (2022)	Collaborative professional development	China (AOI)	Conceptual analysis	N/A	Pedagogical competence + Practical teaching competence
Zhao (2022)	Structured training system	China (AOI)	Conceptual analysis + framework proposal	N/A	Teaching competence + Research competence
Le & Zhang (2021)	Classroom teaching practice	China (a comprehensive university)	Experience-based reflection	N/A	Pedagogical competence + Digital teaching competence
Wang et al. (2021)	Professional development support	China (a comprehensive university)	Conceptual analysis + case description	N/A	Pedagogical competence
Zhang & Zhang (2021)	High-quality teacher development	China (AOI)	Conceptual analysis	N/A	Teaching competence + Practical teaching competence
Zhang et al. (2021)	Professional identity development	China (AOI)	Survey study	23 universities	Teaching competence + Practical teaching competence
Zhao & Shuo (2021)	New teacher induction support	China (a comprehensive university)	Conceptual analysis	N/A	Pedagogical competence + Digital teaching competence
Shaikhova et al.	Teaching competence	Kazakhstan (a comprehensive	Survey study	16 novice	Teaching competence

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(2024)	development	university)		teachers	
He et al. (2023)	Collaborative support networks	China (a comprehensive university)	Case study + program evaluation	N/A	Practical teaching competence + Research competence
Hua et al. (2023)	Teaching competence cultivation	China (a comprehensive university)	Case study	2 young teachers	Pedagogical competence + Reflective competence
Li & Lu (2021)	Practical teaching training	China (AOI)	Case study + program evaluation	1 university	Practical teaching competence + Research competence
Xiang (2021)	Teaching competence enhancement strategies	China (AOI)	Framework development + mathematical modeling	N/A	Teaching competence + Teaching innovation competence

RESULTS AND DISCUSSION

Based on the content of the articles, the studies were further analyzed under four themes.

Structured Training Systems and Institutional Support

Evidence from Included Studies

Existing research shows that the enhancement of teaching competence is moving from one-time training to a more systematic and stage-based approach. Universities no longer depend only on pre-service training or short-term lectures. Instead, they are beginning to design training programs based on different stages of teacher development and use institutional support to ensure continuous progress (Wang, 2025; Liang et al., 2025).

A stage-based training model has become a major direction in teacher development. Some studies suggest designing different training tasks for teachers at different career stages, such as novice, developing, experienced, and senior teachers. These studies also propose continuous improvement models that combine diagnosis, training, supervision, guidance, competitions, and research activities to support long-term professional growth (Liang et al., 2025; Hua & Zhao, 2024). Some studies highlight the importance of mentoring, classroom observation, trial teaching, feedback, and teaching competitions. Through repeated practice and reflection, teachers are able to gradually improve their teaching skills and classroom performance (Zhao & Shuo, 2021; Hua et al., 2023; Ma, 2023). At the same time, enterprise practice, temporary industry placements, and industry–education integration have been added to training systems to strengthen the practical abilities of application-oriented teachers (Wang, 2025; Li & Lu, 2021; Zhao, 2022). In addition, digital platforms and intelligent technologies are providing new support for more targeted and personalized teacher training (Dong & Li, 2023; Xiang, 2021).

Pre-service training alone is no longer enough to support teachers' long-term professional growth. Teacher development requires a continuous training pathway, as well as institutional support in areas such as funding, teaching qualification systems, professional title evaluation, teaching rewards, and quality monitoring (Cai, 2025; Zheng, 2024; Li et al., 2024; Zhang & Zhang, 2021). When training, practice, feedback, and evaluation are connected in a complete cycle, the improvement of teachers' competencies becomes more stable and sustainable (Zhang et al., 2021; Hua et al., 2023).

Research on application-oriented institutions further shows that the development of young teachers should place greater emphasis on practical teaching abilities and stronger connections with industry. Integrated pre-service

and in-service training, enterprise placements, dual-qualified teacher studios, university–industry collaboration, and evaluation reform can all help improve teachers' practical teaching competence (Wang, 2025). At the same time, factors such as enterprise platforms, collaborative university–industry projects, social resources, institutional support, and teachers' own professional development awareness also influence whether young teachers can successfully transform industry experience into teaching content and promote teaching reform and innovation (Li & Lu, 2021; Zhang et al., 2021; Xiang, 2021).

Implications for AOIs

For application-oriented institutions, the development of young teachers should move beyond one-time training and shift toward continuous support that is provided at different stages and for different professional needs. Universities can connect induction training, mentoring, classroom observation, trial teaching with feedback, teaching competitions, enterprise practice, industry–education integration projects, and teaching evaluation to build a complete development pathway. At the same time, the training system should place greater emphasis on practical teaching abilities and understanding of industry needs. Evaluation and incentive systems should also reflect teaching quality, curriculum development, practical teaching, and industry service. In this way, teacher development can better support the cultivation of application-oriented talents.

Mentoring and Collaborative Support Networks

Evidence from Included Studies

The development of teaching competence is no longer seen as something teachers achieve mainly through individual effort. Instead, it increasingly depends on mentoring, teamwork, and organizational support. For young teachers to grow professionally, personal effort alone is not enough. They also need continuous support from universities, departments, mentor teams, and professional peer communities (Liang et al., 2025; Zheng, 2024).

Mentoring and peer support are the main forms of collaborative development for young teachers. Related studies show that activities such as teaching assistant training, guidance from experienced teachers (Ma, 2023), participation in research and teaching teams, support from both research mentors and teaching mentors (He et al., 2023), teaching demonstrations, open classes, experience sharing, and teaching competitions (Zhang et al., 2024) provide young teachers with opportunities for observation, practice, feedback, and communication. These forms of support help them adapt more quickly to teaching positions and improve their abilities in instructional design, classroom implementation, and teaching reflection (Zhang et al., 2024; He et al., 2023; Ma, 2023).

Teaching competence is enhanced through peer interaction and classroom feedback. Classroom observation and teaching evaluation based on real teaching situations (Wang et al., 2021), departmental teaching activities, young teacher associations, and feedback from teaching supervisors can reduce the passive role of young teachers in the evaluation process. Instead, these activities encourage them to improve classroom teaching through discussion, reflection, and collaborative inquiry (Dong & Li, 2023; Le & Zhang, 2021). Specific issues such as classroom pacing, content organization, teacher–student interaction, and the use of teaching materials or presentation slides are also more effectively improved through feedback from real classroom settings (Le & Zhang, 2021).

Collaborative support also requires the joint participation of universities, departments, and external platforms. Top-level planning, classroom teaching qualification systems, differentiated evaluation, school-based teacher trainer teams (Liang et al., 2025), collective lesson preparation, assessment standards, and the integration of both internal and external resources (Li et al., 2024; Zheng, 2024) together provide young teachers with a more stable environment for professional growth.

Implications for AOIs

For application-oriented institutions, greater attention should be given to building collaborative support

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systems for teacher development. Universities need to establish mentoring systems, teaching communities, and university–industry cooperation platforms. Through collective teaching research, enterprise practice, peer communication, and continuous feedback, young teachers can receive long-term professional support. Especially in the context of application-oriented talent cultivation, collaborative development approaches are more effective than one-time training in improving teachers' practical teaching abilities and professional adaptability (Li & Lu, 2021; Li et al., 2024; Wang et al., 2021).

Teaching Competitions and Practice-Based Development

Evidence from Included Studies

Existing studies show that teachers need to develop their abilities through real teaching tasks and classroom practice. Teaching competitions, open classes, teaching assistant experience, and course development provide young teachers with concrete teaching situations and give them clear goals for professional improvement (Zheng et al., 2025; Zhang et al., 2024; Wang et al., 2023).

Real teaching tasks allow teachers to improve their abilities by dealing with concrete classroom problems. Teaching assistant training, preparation programs for the first class, classroom observation, trial teaching sessions, and open classes help young teachers identify weaknesses in real or near-real teaching situations (Zhang et al., 2024; Hua et al., 2023). Skills such as classroom pacing, content organization, presentation design, teacher–student interaction, and teaching reflection are gradually developed through repeated practice and continuous feedback (Zhang et al., 2024; Hua et al., 2023).

Compared with simply attending training sessions, this kind of practice-based development is more direct and effective.In addition, curriculum-based ideological and political education, information-based teaching, and practical teaching have also been incorporated into teacher competency training. As a result, teaching development is no longer limited to traditional classroom lecturing but has expanded to broader teaching practices and learning contexts (Luo, 2022; Ma, 2023; Shaikhova et al., 2024).

Real teaching tasks and competitive mechanisms can increase teachers' initiative. Approaches such as project-based workshop training, the integration of teaching competitions, curriculum reform, and student competitions, and competition systems centered on professional training, micro-lesson contests, and classroom teaching innovation competitions (Zheng et al., 2025; Wang et al., 2023) all treat competitions as part of an ongoing process of teaching improvement rather than as one-time activities.

Compared with general training, competitions and practice-based activities make it easier for teachers to identify problems, adjust their methods, and develop a habit of continuous improvement (Zheng et al., 2025; Wang et al., 2023). What this approach improves is not only competition performance, but also teachers' abilities in teaching design, classroom implementation, and teaching innovation.

Implications for AOIs

For application-oriented institutions, teacher development should be closely connected to real teaching and practical tasks. Universities can link teaching competitions, curriculum reform, classroom training, and enterprise practice to create a development pathway based on practice, feedback, and improvement. Teaching competitions should not function only as activities for awards or evaluation. Instead, they should be integrated with curriculum development, team mentoring, the transformation of teaching resources, and continuous feedback. This approach better meets the needs of application-oriented institutions for strong practical teaching competence and can also make the professional growth of young teachers more effective.

University–Industry Collaboration and Practical Teaching Competence

Evidence from Included Studies

Teacher development in application-oriented institutions should not only focus on improving classroom

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teaching. It should also integrate industry practice into teaching. Related studies point out that teachers need to understand industry needs and develop the ability to guide practical learning in order to support application-oriented talent cultivation (Li & Lu, 2021; Zhao, 2022; Wang, 2025).

Industry practice, temporary placements in enterprises, project collaboration, and the integration of industry and education are widely seen as key approaches to improving teachers' practical teaching abilities (Li & Lu, 2021; Zhang et al., 2021). Several studies argue that the development of "dual-qualified" teachers should not stop at formal certification. More importantly, teachers need to participate directly in industry practice and turn their professional experience into teaching content that can be used in the classroom (Ma, 2023; Wang, 2025). At the same time, enterprise mentors, university–industry joint courses, and real project-based teaching are gradually becoming important forms of support for teacher competency development. These approaches help teachers connect academic teaching with real workplace needs and provide students with more practice-oriented learning experiences (Li et al., 2024; Le & Zhang, 2021).

Teachers' practical abilities directly affect the quality of application-oriented talent cultivation. Teachers who lack industry experience often find it difficult to carry out practical teaching effectively or connect their teaching with industry needs (Zhao, 2022). Compared with training that takes place only within universities, real industry settings are more effective in improving teachers' practical teaching skills, curriculum design abilities, and professional adaptability (Shaikhova et al., 2024; Zhang et al., 2021).

Implications for AOIs

For application-oriented institutions, teacher development should closely connect industry practice with classroom teaching. Universities need to establish stable university–industry cooperation mechanisms that allow teachers to regularly work in enterprises, participate in real projects, and update course content based on current industry needs. In this way, teacher development can move beyond theoretical training and better reflect the educational mission and practical orientation of application-oriented institutions.

Limitations

Several limitations should be noted. First, this review searched only Scopus and CNKI. Although these databases cover a large proportion of international and Chinese educational research, some relevant studies may not have been captured. Second, only English- and Chinese-language studies published between 2021 and 2025 were included. Studies in other languages and grey literature were excluded. Third, despite efforts to expand the search strategy, some studies may still have been missed because different terms are used to describe young university teachers and teaching competence. Finally, the number of included studies was relatively small, and the quality assessment was narrative in nature. Future research could include more databases and evidence sources to provide a broader understanding of professional development strategies for young university teachers.

CONCLUSION

This systematic review examined professional strategies for developing teaching competence among young university teachers between 2021 and 2025. The studies show that teacher development in universities is moving toward a more systematic and practical model. Young teachers no longer develop mainly through short-term training or personal experience. Their growth depends more on staged training, mentoring, collaboration, real teaching tasks, and industry practice.

The key finding is that teaching competence develops best when support is continuous and connected. Institutional policies provide the basic structure. Mentoring and peer collaboration help teachers improve through feedback. Teaching competitions and classroom practice turn training into real ability. University–industry cooperation further connects teaching with practical workplace needs.

For application-oriented institutions, teacher development should not be treated as separate activities. Training,

mentoring, practice, evaluation, and industry engagement need to work together as one system. This can help young teachers improve more steadily and better support the goal of cultivating applied talents.

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