

Academic Tribe-Based Master Teacher Studios in China: New Characteristics and New Mechanics

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Abstract: *The academic tribe-based master teacher studio, as a new pattern of teacher professional development in China, has the potential to circumvent the limitations of traditional master teacher workshops, such as insularity, experience-focused tendency, insensitivity to emerging technologies, unbalanced engagement between members, and rigid mechanisms. This article is a discussion of the chief characteristics and working mechanics of the academic tribe-based master teacher studio. The studio provides an open, intelligent platform for teacher professional growth with the adoption of distributed leadership, collaborative research, and intelligent technology. Focusing on learning, research, and scaling as three core tasks for its teacher members, it plays the concomitant roles as an intelligent learning center, an authentic teaching issue-focused lab, and a research outcome scaling center, aiming to offer the teachers all-round support in personalized learning, teaching problem solution, and research outcome dissemination.*

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Introduction

THE CONSTRUCTION of master teacher studios (MTSs) is an initiative launched by the Chinese education authorities, aiming to optimize the teaching force structure and enhance the teaching quality

for its basic education. The MTS is typically described as a form of organization for promoting teacher professional development, which is led by a teaching specialist and intended to support education research and teaching practice of teacher participants (Shan & Liu, 2015). Master teachers are those officially recognized excellent educators, who not only possess extraordinary disciplinary expertise but also morally act as role models in the teaching profession (Han & Yu, 2014; Zhu & Yan, 2019). They are the pivotal figures for MTSs. Leveraging their connections and expertise, they assist ordinary teacher members in enhancing their professional competence through activities such as lesson studies and subject-based research. MTSs across China also work to promote regional education and teaching innovation by engaging in teaching reforms, curriculum development, and project-based research. Additionally, MTSs have the duty to share high-quality teaching resources and advanced pedagogical ideas with peers outside their regions to boost the overall quality of education.

Evidently, MTSs have played a significantly positive role in supporting professional development of younger-generation teachers and raising the quality standards of Chinese basic education. Nevertheless, due to their organizational structure characterized by the hierarchical relationship between a master teacher, senior teachers, and novice teachers, as well as their high dependence on the personal competence of the leading teacher, traditional MTSs have their limitations, including:

- Insular tendency: An MTS is typically centered around a leading teacher, with its activities seldom going beyond the realm of a specific subject or the boundaries of the school, lacking openness and a capacity for cross-disciplinary collaboration.
- Experience-based approach: The imparting of the leading teacher's experience is the primary activity of a MTS, with a dearth of systematic theoretical research and related practical extension.
- Neglect of technology use: Traditional MTSs have low awareness of educational technology, albeit being in a digital era.
- Unbalanced engagement of various members: The master teacher dominates the decision making within the MTS, whereas ordinary teacher members have insufficient discourse power with low levels of engagement.
- Low adaptability: many MTSs have difficulty adapting to the complexity of modern educational development without long-term development planning or dynamic adjustment consciousness.

In addition, teachers' professional development needs vary from person to person. Those who join MTSs have their own planning for future

careers and thus have diverse expectations of MTSs (Zhang & Han, 2014). However, traditional MTSs can hardly meet these individualized needs.

To tackle the said limitations of traditional MTSs, Chinese academics and educators proposed a new form of the MTS, namely, the academic tribe-based MTS. In the field of academic research, an academic tribe often means a scholastic community dedicated to a specific disciplinary domain, whose members share comparable culture, values, attitudes, and research interests (Zhou et al., 2024). Yet, in the term "academic tribe-based MTS," the "academic tribe" specifically denotes a group of teachers who share common research interests. This article expounds on the core characteristics and workings of the academic tribe-based MTS, with the view to providing valuable insights for teacher development research.

Chief Characteristics of the Academic Tribe-Based MTS

Distributed Leadership and Multi-Entity Involvement

As opposed to the traditional MTS, which operates with a hierarchical organizational structure where the master teacher is the only decision-maker and academic authority, with other members being their followers, an academic tribe-based MTS may assign the leadership role to any member, depending on the practical needs of the ongoing project and the specialisms of individual members. With this distributed leadership style, every MTS member has the opportunity to act as a leader in any of the diverse scenarios including reading forums, theme-based education or teaching research, project-based research, and more. The distributed leadership approach can effectively address the issue of unbalanced engagement between the leading teacher and ordinary members by creating a symbiotic relationship within the organization, which enables each individual member to fully release their potential and optimizes the MTS's development.

Furthermore, an academic tribe-based MTS allows "outsiders," such as peers teaching different subjects, leaders in other industries, and experts from think tanks, to take on leadership roles in its theme-specific research projects or professional development programs. These outsiders bring to the MTS more diverse perspectives and expert thinking and methodologies, allowing teachers to access broader resources and broadening their horizons. This practice helps change the insular nature of traditional MTSs by breaking down the boundaries between schools, disciplines, education phases, and even regions. The consequential formation of an open professional development ecosystem can generate more possibilities of professional growth for MTS members.

Collaborative Research and Teacher Autonomy

Collaborative research is the top priority of the academic tribe-based MTS, where teachers maintain high levels of communication to jointly investigate into thorny issues arising in education and teaching, and conduct project-based research and innovative teaching experiments, under the guidance of the master teacher or the project-specific leader. With the collaborative research model, MTS members are active explorers and creators of knowledge rather than passive recipients of existing knowledge or the leading teacher's prior experience. Zhang et al.'s (2022) study confirms that teachers' collaborative studies can effectively advance the MTS's research project while also giving full play to the role of the project leader in encouraging knowledge construction in teachers.

At the same time, the academic tribe-based MTS pays high regard to the teachers' autonomy in professional development. Sharing common educational beliefs and values, they have the right to determine their own research directions in accordance with their individual specialisms and interests, in consultation with the leading teacher and other specialists. The respect for teacher autonomy can successfully elicit self-motivation and creativity in MTS members, accelerating their transition from "experience-focused practitioners" to "reflective researchers."

Intelligent Technology-Enabled Digital Education Communities

The academic tribe-based MTS is highly responsive to the new challenges in the digital era, eagerly embracing emerging technologies. It encourages teachers to apply intelligent technologies in teaching to optimize instructional design, accurately assess student learning outcomes, and provide personalized support for students, using tools based on artificial intelligence (AI) and big data analytics. For example, teachers can employ AI-powered learning analytics to conduct intelligent lesson preparation as well as precision teaching observations and diagnosis (Li & Zeng, 2022), for the purpose of enhancing teaching quality. Furthermore, academic tribe-based MTSSs actively engage in the construction of educational cloud platforms to promote educational data sharing and cooperative work. Through these cloud platforms, teachers can access diverse teaching resources without temporal and special constraints. In the meantime, the virtual teaching research communities created by academic tribe-based MTSSs can organize cross-regional and cross-disciplinary research to support knowledge dissemination and sharing among teachers. As a result, digital education practices like these have significantly improved the MTSSs' work

efficiency while also offering teachers broader opportunities and richer resources for professional development.

Workings of the Academic Tribe-Based MTS

MTSs' overarching goal is to empower high-achieving teachers to support professional growth of the whole teaching force for the overall improvement of education quality. The academic tribe-based MTS seeks to achieve this goal through more effective workings, which are characterized by a concentration on three primary tasks: learning, research, and scaling, playing the concomitant roles as an intelligent learning center (ILC), an authentic teaching issue-focused lab (ATIFL), and a research outcome scaling center (ROSC).

Advocating Teacher Ongoing Learning as an ILC

The academic tribe-based MTS sees sustainable learning as the key to the teacher's professional growth. By playing the role of an ILC, it provides the teachers with personalized, data-based learning experiences. Unlike the traditional PWT which emphasizes teachers' learning through inheriting the leading teacher's experience (Mao, 2023), the academic tribe-based MTS as an ILC advocates exploratory learning to encourage teachers to develop the ability to autonomously enhance professional competence. It works to achieve this objective mainly through the following three devices.

Personalized Diagnosis: Pinpointing the Teachers' Needs

The academic tribe-based MTS as an ILC conducts quantitative analysis of the teachers' instructional performance (with their consent prior to data collection and analysis), using advanced technologies, such as AI and big data analytics. This enables it to accurately identify the strengths and weaknesses of each individual teacher and give them tailored recommendations for improvement accordingly. Specifically, the diagnosis comprises: (i) AI-assisted analysis of classroom instruction. AI technology is used to analyze recordings of real or simulated classroom teaching for a thorough appraisal of the teacher's performance from multiple dimensions including lesson organization, frequency of classroom interactions, and appropriateness of teaching methods. (ii) Analysis of homework marking data. Based on homework marking data, the effectiveness of the teacher's homework design and feedback in enhancing student learning is assessed to aid them in adjusting homework management. Through technology-assisted practices like these, the academic tribe-based MTS as an ILC can provide a "competence profile" for each teacher, which clearly describes their

strengths and shortcomings. The adoption of such precise diagnosis ensures that the teachers can receive evidence-based comments instead of subjective ones, which are common in traditional MTSs.

Precision Recommendation of Learning Resources: Meeting Individualized Needs

Based on the personalized diagnostic results, the ILC will automatically recommend relevant learning resources to the teacher in line with their specific needs. These resources may include online courses, lesson studies, expert lectures, training videos, and more, aimed at boosting the teacher's competence in the targeted area. Chief processes include:

- *Analysis of Learning Needs*: The ILC identifies the teacher's performance gaps from the diagnostic results. For instance, if a teacher is found to have problems with questioning techniques, it will recommend relevant training courses and lesson studies to them.
- *Resource Matching*: Intelligent algorithms help select the most suitable resources and push them to the teacher. These resources cover both theoretical knowledge and practical examples.
- *Dynamic Adjustments*: As the teacher progresses, the ILC continuously adjusts recommendations based on their changed needs, guaranteeing the relevance and effectiveness of their learning materials.

This mechanism for precision recommendation of learning resources ensures the teacher can learn at their own pace while addressing their special challenges. It not only individualizes the learning experience for teachers but also motivates them to continuously improve their teaching practices.

Online Learning Communities: Breaking Temporal and Spatial Constraints

By creating online learning communities, academic tribe-based MTSs enable teachers to engage in learning and peer communication at any time in any places. Their in-service training opportunities are extended beyond offline in-person training. In the virtual learning community, teachers can share experiences, exchange insights, and discuss challenges without temporal and spatial restrictions, which largely heightens their senses of belonging and learning motivation levels. In addition, with its feature of teacher-expert interaction, teachers can consult experts anytime and get timely responses. This significantly increases the teachers' learning efficiency.

Supporting Teaching Research as an ATIFL

The academic tribe-based MTS regards education and teaching research as critical to teacher professional development and educational quality improvement. Its role as an ATIFL is to emphasize that MTS members should pay attention to authentic teaching issues in their research rather than pursuing seemingly sensational research projects. As the ATIFL concentrates on authentic teaching issues, collaborative research efforts, and data-driven validation, its research results can often be directly applied to teaching practice, effectively addressing the challenges encountered by educators in their day-to-day work. A well-designed teacher research and training model consists of logically inter-linked elements, which is easily comprehensible to the team (Zhang & Zhang, 2022). The ATIFL model is featured by the following key elements.

Concentration on Authentic Questions from the Teaching Frontline

The academic tribe-based MTS pays special attention to specific issues arising in the teaching settings, which are both authentic and impactful, affecting teaching outcomes and student learning experiences. Addressing these questions typically entails:

- *Question Collection*: Possible research questions are gathered from regular teacher meetings, online questionnaires, teaching logs, etc., which may concern classroom management, teaching methods, student motivation, subject-specific difficulties, and more.
- *Question Screening*: MTS members classify the research questions collected and identify those that are representative and imperative, such as “challenges in student essay writing” and “students’ inadequate powers of concentration in the math class.”
- *Question Definition*: In-depth analysis of the chosen research questions is conducted to clarify their contexts, current states, and relevant factors. The ATIFL examines multiple facets of the question via interviews, classroom observations, and student comments, to lay groundwork for subsequent research and resolution.

Collaborative Research Efforts

In an ATIFL, all teachers, led by the master teacher, collaborate as a team to find solutions to the issue identified. The collaborative research effort includes basic steps as follows:

- *Team Building*: The composition of the research team depends on the character of the research question. It may engage teachers with other disciplinary backgrounds, or educationists and specialists from other industries, aside from MTS members.
- *Solution Design*: The research team develops a solution program based on brainstorming, literature review, and lesson studies, and conduct preliminary feasibility analysis. For instance, to address the question of "challenges in student essay writing," the team may create a writing training program which combines writing lessons, peer assessment, and individualized instruction.
- *On-site Trials*: The solution program is tested in real classroom settings. Team members divide the tasks like implementation, observation/documentation, and adjustment/ optimization of the program between them. It will undergo several rounds of trials and relentless improvement until the research team is confident of its effects in regular teaching.

Data-Based Validation of Research Outcomes

The academic tribe-based MTS as an ATIFL places high value on the data-based research approach. Data from on-site trials are carefully gathered and analyzed to validate the effectiveness of the solution program. Specifically, the validation process consists of the following steps:

- *Data Collection*: Multiple kinds of data on student in-class engagement, homework completion, exam results, etc. are gathered via classroom observations, student surveys, teaching administration systems, and other channels.
- *Data Analysis*: Statistical methods are applied to data analysis, and the pre- and post-trial data are compared to evaluate the effects of the program on student learning outcomes.
- *Verification of Research Outcomes*: The results of data analysis are used to verify the effectiveness of the solution program. If data-based analysis demonstrates its effects are significantly positive, it will be further refined and scaled; if not, it will be re-examined and modified. This approach is to ensure the reliability of the MTS's research outcomes.

Scaling Research Results as a ROSC

The academic tribe-based MTS as a ROSC is committed to disseminating its evidence-based programs to a broader educational community to give them fuller play in Chinese basic education. In doing so, it needs to make a lot of endeavors to translate their research results at the theoretical level into applicable and practical tools which can be more easily adopted by more schools and teachers. The ROSC's objective is three-fold:

To Translate Research Outcomes into Practical Tools

The paramount responsibility of the ROSC is to convert the MTS's research results into concrete, workable educational tools to ensure their widespread application in actual teaching. This is achieved through: (1) producing reports on examples of successful teaching models and programs with detailed explanations of their development contexts, implementation procedures, potential effects, caveats, etc.; (2) developing supporting teaching toolkits, which may include instructional templates, assessment tools, learning materials for students, etc., for practitioners' easier, more efficient application of the MTS's research outcomes; (3) creating detailed guides that provide recommendations on the implementation of their programs and solutions to common challenges, directing teachers to adapt them to their own teaching contexts.

To Give Tailored Support to Different Schools and Teachers

The academic tribe-based MTS as a ROSC works to provide customized solutions to meet the specific needs of different schools and teachers through efforts including: (1) investigating into the various circumstances faced by different schools and teachers (e.g., rural schools may lack laboratory equipment, while their urban counterparts may have issues with student motivation), via questionnaires, interviews, and fieldwork; (2) customizing solutions for teachers from different schools, based on the investigation results, with full consideration of the schools' physical conditions as well as their teachers' professional competence and students' characteristics; (3) providing resources needed, such as teaching materials, training programs, and specialist guidance, to facilitate schools and teachers smoothly executing the solution program (e.g., providing rural schools with basic lab equipment and instructional support to assist with their enactment of scientific experiment lessons).

To Conduct Longitudinal Evaluations for Continuous Improvement of the Scaling Process

The ROSC not only pay attention to the immediate impacts of the MTS's research results but also conduct follow-up evaluations and make continuous improvements to ensure the solution program they developed can work in various scenarios in a sustainable manner. To this end, the academic tribe-based MTS needs to gather feedback regularly from schools and teachers through questionnaires, interviews, and case studies to understand the outcomes of the solution program and its challenges; to use a data-based approach to evaluate its effects, that is, to compare pre- and post-application data on teaching outcomes, such as student test results and in-class performance, to determine its effectiveness; and to continuously modify it by adjusting its implementation processes, optimizing teaching tools, and updating the guiding manual. The long-term evaluation and optimization on the part of the academic tribe-based MTS ensures that scaling its research results is not a one-time effort but an ongoing, dynamic process of improvement, which can substantively contribute to the enhancement of teaching quality in basic education.

Conclusion

The academic tribe-based MTS, as a novel pattern of teacher professional development, creates new pathways for teachers' professional growth and educational quality enhancement, with its distinctive characteristics and working mechanics. It can play a significant role as an ILC in providing highly efficient learning experiences to teachers via individualized diagnosis and precision recommendation of learning resources, as opposed to the traditional "one-size-fits-all" teacher training modality; as an ATIFL in encouraging educational studies that targets authentic teaching issues by means of collaborative and data-based research; and as a ROSC in disseminating their valuable research results in a broad educational community by demonstration of exemplary cases, provision of targeted support, and longitudinal evaluation. Academic tribe-based MTSs assist the transition from "experience-focused practitioners" to "reflective researchers" in teachers by encouraging collaboration and knowledge-sharing. In the future, they have the potential to become more robust facilitators of teacher professional growth and educational innovation, acting as a key driver of high-quality development of Chinese basic education.

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