

Education

Lesson Honing through Different Approaches A Meaningful Practice of Teaching Research among Chinese Basic Education Teachers

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“Lesson honing through different approaches” (LHDA) is a form of teaching research in Chinese basic education. This article gives a brief overview of this school-based teaching research method and describes general implementation procedures of LHDA using LHDA-based secondary mathematics teaching research as an example. Issues with the execution of LHDA are also discussed.

Keywords: Lesson Honing through Different Approaches; Teaching Research; Teacher Professional Development

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BRITISH educational thinker Stenhouse advanced the concept of “the teacher as a researcher” in the 1960s, advocating that curriculum research and development should belong to the teacher and that there should be a transition in the teacher’s role from a mere educator to an active researcher (1). Ever since, the movement of “the teacher as researcher” has spread all around the world, and the central role of the teacher in educational research has been constantly emphasized. As well, this notion has informed China’s educational reform and development, substantially driving education and teaching research among Chinese teaching staff.

Teaching research is crucial to the teacher’s professionalism, entailing their capacities to discover problems in the process of education and teaching, design problem-solving plans, address them through hands-on practices, generalize research

findings, and, as a result, advance education and teaching by popularizing their research results. The new era’s requirements for basic education teachers are no longer restricted to disciplinary knowledge and teaching techniques but also include teaching research ability as an essential competence (2). In 2019’s “Opinions on Strengthening and Improving Educational Research for the New Era’s Basic Education,” the Ministry of Education of China stressed the supportive role of education and teaching research (ETR) and encouraged teachers to engage in regional ETR projects, online teaching research, and thematic teaching research. To improve teachers’ instructional methods, various forms of teaching research should be adopted, including lesson demonstration, face-to-face discussion, project-based research, and more. According to the paper, local education departments should regularly sponsor thematic activities focus-

ing on classroom teaching quality, pay attention to cultivating, selecting, and promoting excellent teaching models, and enhance the applicability, effectiveness, and creativity of teaching research work (3). “Lesson honing through different approaches” (LHDA) is one of the school-based teaching research strategies aimed at enhancing teaching quality by both motivating the individual teacher’s initiative and leveraging collective wisdom. This study gives an overview of LHDA, presents basic procedures for its implementation using LHDA-based secondary mathematics teaching research as an example, and discusses issues emerging in its practical applications with the purpose of eliciting an adequate understanding of it in basic education schools and teachers.

An Overview of LHDA as a Mode of Teaching Research

All well-founded curriculum research is based on the study of classrooms, thus resting on the work of teachers (1). In 2003, Luo and Lyu introduced the comparative method into teaching research, in which several teachers taught the same subject in their respective classes using different instructional approaches, observed each other’s lessons, and then conducted joint lesson studies (4). Chen proposed a comparable lesson preparation model in 2004, where teachers from the same teaching research group created different teaching designs for a common subject, shared design intents with each other, gave comments to all designs, and subsequently implemented the lesson based on the agreed protocol (5). These are the earliest experiments with LHDA on record. According to Ni’s study, LHDA is the product of the emergence of new textbooks and teaching models as well as teachers’ needs for professional growth in the new era. LHDA as a teaching research method is conducive to teachers’ deep understanding of textbooks, modification of teaching methods, and generation of new ideas. It provides teachers with opportunities to solve practical problems through inter-peer communication and comparison of differential teaching approaches, thus boosting the teacher’s professional competence as well as the team’s level of teaching research (6). Zheng and Li viewed LHDA as a new form of teaching research based on teachers’ hands-on practices, which seeks to focus research work on classroom instruction, deepen the teacher’s understanding of students’ learning situations, and enable secondary exploitation of textbooks (7).

As LHDA gained popularity, there emerged a variety of interpretations of it. From the organizational viewpoint, Fang observed that LHDA had two formats: several teachers experimenting with the instruction of the same teaching material in different classes using respective approaches; and one single teacher teaching a given content in several classes using different approaches (8). From a comparative perspective, Shi argued that LHDA is a type of teaching research that focuses on comparing the effects of different teaching concepts, approaches, designs, procedures, and techniques in teaching identical content and achieving teaching objectives (9). Also, there are many studies focusing on the functions of LHDA. Li argued that LHDA provided equal opportunities for teachers to participate in lesson design, observation, and elaboration, promoting knowledge and information sharing as well as mutual emotional

support among them (10). This is conducive to their professional development and common growth. Gu emphasized that LHDA is a targeted teaching research strategy that combines considerations such as the academic level of students, the individualities of teachers, existing educational conditions, etc. It is substantially supportive of the improvement of the quality of teaching (11).

In the context of digital transformation in education, online LHDA is widely adopted. Wei described it as an online teaching research model in which teachers from different schools or even different regions work together to study the instruction of a lesson using online teaching research platforms. Often, the recording and broadcasting system is exploited for live streaming of classroom teaching, and experts and teaching researchers conduct discussions and give comments online. In the meantime, teachers from various schools can log in to the teaching research platform for lesson observation and interactive communication (12).

In summary, LHDA can be defined as a mode of teaching research in which a group of teachers collaborate to formulate optimal teaching plans by drawing on each individual’s unique teaching ideas, approaches, and designs based on the learning circumstances of students and the actual conditions of the school (13). The LHDA research model has the potential to significantly enhance teachers’ professional competence and their quality of teaching in that it gives full play to their initiative and creativity in teaching research (7).

The Implementation of LHDA in Secondary Mathematics Teaching Research

Basic procedures for a LHDA-based research activity include setting the subject, studying teaching materials and analyzing student knowledge foundations, crafting the teaching protocol, discussing the protocol within the teaching research group, implementing the protocol in class accompanied by groupmate observation, evaluating and reflecting on teaching outcomes, and modifying the teaching protocol (14). Secondary mathematics teachers typically go through the following steps in a LHDA-based lesson study.

Subject Setting

A well-chosen subject is crucial for reaching meaningful LHDA research outcomes. There are a number of considerations for determining the subject, such as “what mathematics questions are suitable to be included in LHDA?” and “what are the compelling issues to be solved in the current practice of teaching?”. For example, Wang organized LHDA-based research on the instruction of “images and properties of trigonometric functions” to explore how to make teaching beneficial to both low- and high-achieving students. Effective instruction, in his view, is teaching that takes care of the maximum number of students (15). According to Gong’s research, LHDA-based lesson study can significantly enhance the teaching of “monotonicity of functions” (16). Fu studied the rationale, methods, and implementation of LHDA in secondary mathematics teaching research and discovered that LHDA is a valuable avenue for improving the effectiveness of conceptual instruction, a challenging task in mathematics education (17). Therefore, practical teaching needs

and challenges are essential considerations in determining the subject for a LHDA research activity, which give explicit objectives to the research (13).

Discussions and Analyses

After setting the subject, the teaching research group studies together the teaching materials for their LHDA project, which is usually called collective lesson preparation. This is a necessary procedure in that the discussion and analysis of teaching materials help group members ascertain teaching objectives and reach agreement on the difficulties with the lesson in question (18). In addition, teachers, through this procedure, have a better understanding of the purpose of LHDA: it is meant to boost communication and the sharing of teaching experiences and techniques in order to raise the overall level of education rather than rate the level of teaching of each individual (19). This process highlights the equal importance of collective wisdom and individual insights in a LHDA research project.

Individual Lesson Planning

Following the collective discussion, each member of the teaching research group creates the teaching protocol for the agreed subject and teaching materials using their own approach. This procedure is the central part of the LHDA activity. The mathematics teacher needs to study the textbook content thoroughly and understand students' prior knowledge about the subject. Based on the teacher's individual analysis, a teaching protocol with their peculiar teaching style and features is developed. In this process, the peculiarities of the teacher's instructional methods and strategies are emphasized (20). Each mathematics teacher has different education, work, and life experiences, resulting in their own special teaching methods and ideas. Even the same mathematical concept can spark different coping reactions in them. Under the LHDA teaching research model, mathematics teachers' diverse approaches per se are a valuable resource for mathematics teaching (21).

Classroom Implementation and Observation

Classroom teaching is the touchstone for the effects of LHDA. To evaluate the instructional effects of each mathematics teacher's protocol and its implementation, classroom observation is well organized to engage all members of the teaching research group (22). The observers need to record the implementation process of classroom teaching and give analyses and comments, based on which it is possible to explore ways to improve students' in-class learning. Compared with general observation activities, classroom observation as a professional activity requires observers to collect information from the classroom with explicit aims, using their own sensory apparatus and relevant auxiliary tools (observation forms, audio, and video equipment, etc.), and subsequently analyze and study the gathered information (20).

According to specific needs, the teaching research group often divides concrete duties between observing teachers (23), such as:

- i. To record the performance of the lecturing teacher in the classroom. Are there clear processes in teaching design? What is the purpose of each of these processes? Is the time

allocation reasonable?

- ii. To record the reactions of students. For example, do students give positive responses to the teacher's ingenious ways of introducing concepts related to functions?
- iii. To record the classroom process and outcomes. For example, how is the challenging point "the relationship between independent variables x and y " addressed? Is it successfully solved as a difficulty in function teaching?

Reflection and Revision

There is an inevitable gap between the teacher's expectations and the actual outcomes of classroom teaching. LHDA provides mathematics teachers with an avenue for reviewing and analyzing their classroom implementation, thus stimulating deeper contemplations on their teaching propositions and behavior (13). The after-class discussions give teachers a chance to communicate comments on the lesson and solve issues collaboratively. Following each lesson observation, the teaching research group promptly organizes discussions for the teacher delivering the lesson and the observers. First, the lesson observers produce a report based on their records of classroom implementation. Using this report, the lecturer conducts in-depth reflection on their teaching, analyzing the causes of problems in their classroom. Through further conversations between the lecturer and observers, revision suggestions are formulated (24).

(i) Independent Revision

In a LHDA project, the teacher is both the lesson deliverer and the observer of other teachers' lessons and thus has the opportunity to compare their instruction with their colleagues' on the same subject. This substantially motivated them to reflect on their own teaching and others' advantages in lesson design and implementation. In the meantime, groupmates' comments serve as valuable guidance for further modification. Through post-class reflection, each teacher may modify their teaching protocol, rethinking the scope, knowledge base, focus, and difficulties of the lesson, as well as details like the lesson introduction, connection between specific processes, and interactive Q&A with students (25).

(ii) Convergence of Separate Protocols

The teaching research group put together all the revised teaching protocols and engaged all teachers in an open discussion about them. In this procedure, teachers go through a thorough, straightforward exchange of opinions on all protocols and work to come up with an optimal teaching protocol by drawing on the merits of each individual one (26).

(iii) Constant Improvement

Teachers are encouraged to continue to put forward constructive suggestions for the agreed protocol in ensuing practice. For example, in the teaching of "functions," teachers may employ multimedia to make abstract concepts more intuitive (23).

Practical Validation

A complete LHDA project does not end with the revision of the teaching protocol. The effectiveness of the model protocol needs validation for further implementation. Often, the teacher will

implement the revised protocol in a different class and test its practical effects. Subsequently, a feedback report on its classroom implementation will be produced for the reference of other teachers, shedding light on both its strengths and flaws (24).

Issues Arising in LHDA Research Practice

In the course of nearly two decades' development, LHDA has exhibited remarkable advantages as a teaching research method. Nevertheless, there are still considerable inadequacies in its actual operation. Zhang discovered in his study that there is a lack of right notions of LHDA among ordinary teachers, who tend to see it as an opportunity to copy each other's practices or take their cue from leading teachers (27). No genuine "honing" occurs in such LHDA activities. According to Chen's investigation, some LHDA projects place blind emphasis on the distinctions between participants' teaching protocols. This leads to teachers' overly pursuing individualities, disregarding their students' actual needs and cognitive levels (28). In this case, the primary focus of LHDA is misplaced on the teachers' "differences" rather than the students' "differences." In Wang's view, the Chinese government has invested heavily in developing basic education curricula and textbooks, which deserve serious usage; despite the diverse classroom patterns brought about by LHDA, the exaggerated pursuit of transforming textbook contents ends up consuming excessive amounts of time and energy from the teacher, which is, to a certain extent, a waste of educa-

tional resources (29). Even worse, some LHDA participants make their teaching content a severe deviation from the national course standards in pursuit of creativity and ingenuity. It appears that they strive to "differ for the sake of difference" (30).

The reason for the aforementioned issues is primarily because of the dearth of systematic LHDA research. In the meantime, the majority of LHDA project participants are frontline teachers, who may not have adequate theoretical expertise. Their research foundations are more likely restricted to their immediate experiences. That significantly compromises the generalizability of their research results (31).

Conclusion

The new curriculum reform in China has posed additional requirements for education and teaching research. In the context of the rise of school-based teaching research, LHDA is gaining traction as a research method that focuses on enhancing teachers' classroom instruction. LHDA derives from teachers' classroom practice and, in turn, works on it. It proves effective in addressing various kinds of issues and challenges encountered by teachers in their practice of teaching. As a highly practice-focused research pattern, it can be easily adopted by frontline teachers and thus has the potential to substantially inform their professional development. More in-depth LHDA research is needed in order to provide more valuable insights into this teaching research method to basic education teachers. ■

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