Protocol-Guided Teaching: An Experiment in Chinese Basic Education

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Abstract*: Protocol-guided teaching, a method of classroom instruction reform started by Donglu Middle School in Nanjing of China has developed into a student-centered teaching model in the context of the deepening reform of Chinese basic education. In this model, the teacher plays an essential guiding role, and the main objective is the development of the student's autonomous learning ability. The purpose of this article is to increase interest in and conversations about the protocol-guided teaching model among educational professionals by describing the history of the approach, summarizing its features, and highlighting its implementation tactics.*

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KEY components of school instruction include the instructor, the student, the subject matter, and the instructional strategy. Effective teaching models depend on how these components are arranged. Over the past two decades, protocol-guided teaching has placed a lot of emphasis on the relationships between the key components, and a new viewpoint has been adopted to address the connections between teaching and learning, learning and practice, and student knowledge mastery and competence development. The current study tried to explain the background and characteristics of protocol-guided teaching as well as provide implementation suggestions for this teaching model based on practical explorations of this method in a variety of Chinese primary and secondary schools.

The Background of the Protocol-Guided Teaching Model

Protocol-guided teaching, which originated in Chinese basic education, has been used in a variety of schools in China for over two decades and is regarded as one of the most significant teaching models in Chinese basic education. Kangjing Chen, the head of Nanjing's Donglu Middle School, advocated the use of the "instruction protocol," the first kind of protocol-guided teaching, in 1999. Chen and his teaching staff have made it a success via years of experimentation, reflection, and development under the philosophy of "mutual promotion of teaching and learning in a student-centered classroom" (He &Xu, 2009). Following the introduction of "instruction protocol," other schools attempted to learn from Donglu Middle School's experience.

Instigated by Donglu Middle School's instructional reforms, schools across the nation initiated their own classroom instruction reforms and made ongoing modifications to the "instruction protocol." Consequently, the "instruction protocol" gradually morphed into the "learning protocol," which in some institutions is referred to as "the protocol for students." The transition from "instruction protocol" to "learning protocol" signified a shift from a focus on instructors' instruction to a focus on their guidance on students' autonomous learning, a significant improvement in the new teaching model (Xia & Zhou, 2020).

Protocol-guided teaching is now widely accepted in the educational community as an instruction style in which teachers create student learning protocols prior to the session based on course standards, textbook material, and student learning conditions. Furthermore, these protocols often include learning objectives, materials, methods, and procedures to assist students in engaging in more autonomous learning (Wang, 2020). Teachers do not directly impart knowledge to students in this type of instruction, but rather assist them to inquire and practice independently; the purpose of instruction is to enhance students' capacities and skills through student-centered and teacher-led classroom learning. The learning protocol not only provides students with basic learning materials and teachers with a teaching framework, but it also serves as a guide for student learning by restructuring textbook content with well-designed questions that allow them to explore and solve problems in an organized and sensible manner. Learning protocols that are well designed can have a major positive impact on classroom performance by increasing students' initiative and self-motivation in learning.

The Characteristics of Protocol-Guided Teaching

Equilibrium between Teachers' Instruction and Students' Learning

Teaching and learning have merged into one seamless process as a result of the ongoing advancements made to contemporary educational institutions and the public's enhanced educational viewpoints. An excessive focus on either aspect can lead to an unbalanced condition of the teaching process, which has a detrimental impact on the effectiveness of instruction and student performance. Equilibrium between teacher control and student autonomy can be attained with the aid of protocol-guided instruction. When teachers create learning protocols in advance for their students, they concentrate on creating appropriate learning tasks and approaches while keeping in mind the learning circumstances and characteristics of the students. In order to better meet the needs of the students, they can also modify their teaching procedures while putting the learning protocol into practice.

The protocol-guided teaching model tries to change the traditional didactic teaching style and shift the emphasis of the classroom toward student learning. All of the exercises are made to increase student engagement and guarantee that they actually learn something. By strictly limiting the quantity of teacher speaking, protocol-guided teaching sets itself apart from conventional teaching approaches and turns the students into the main actors in the classroom. As a result, rather than acting as the classroom's controllers, teachers now create the learning environment and serve as facilitators.

Teachers are only permitted to step in and offer guidance when students are having trouble with their learning activities.

A Reconstruction of Learning Substances

The learning protocol can be used as a lesson plan for teachers and as learning materials for students under the protocol-guided teaching paradigm. The fundamental benefit of the learning protocol is how it modifies textbook material. Questions that are pertinent to the course curriculum build on the material from the textbook. Students gain independent inquiry skills as they look for answers to the questions. This represents a radical shift from traditional education. Questions can be challenging and inspirational, which offers good potential for enhancing students' enthusiasm for learning, whereas textbooks are supposed to transfer established human knowledge and experience.

In the past two decades or more, learning protocols have emerged in a variety of forms, and the majority of institutions have developed learning protocols suited to their particular circumstances. Those that have proven effective in course instruction and are well-liked by students have been published and have become prevalent. In the basic education community, the Phoenix Digital Learning Protocol, published by Phoenix Education Publishing, Ltd.; the Digital Learning Protocol, published by Shanghai Educational Publishing House; and the Zhixing Classroom Learning Strategy: Digital Learning Protocol, published by China University of Petroleum Press, are particularly well received.

Well-Organized Learning Procedures and Activities

The explicit prescribing of learning procedures for students is one of the most notable aspects of the learning protocol. A relatively comprehensive learning protocol typically includes student independent study, independent inquiry, exercises, and instructional assessment, despite the fact that institutions' specific learning processes may vary (Zhao, 2022a).

In protocol-guided teaching, Yangzhou Wenjin Middle School, for example, has used a "Four Steps of Guidance" approach. Their school-based learning protocol is designed to guide students through the whole lesson learning process, from pre-class preparation to classroom inquiry, summary and reflection on learning methods, and instructional assessment. The learning protocol suggests a variety of pre-class learning activities for students to help them integrate into learning situations by presenting familiar concepts and the evolution of relevant information. It includes specific planning for class activities to guarantee that classroom inquiry is effective and that the objectives of these activities are met. The following step of summary and

reflection assists students in generalizing approaches and researching routes from class activities. The instructional assessment process is interwoven into every step of the student learning process, including evaluations of student autonomous pre-class learning, problem-solving, mastery of learning skills and strategies, and knowledge consolidation after class (Wang, 2022).

The practice of experiential teaching at the Zhenjiang Experimental School makes full use of learning protocols (Xia, 2020). The entire teaching process is divided into a number of learning activities with the use of the school's learning protocols. While teachers simply serve as organizers and "counselors," students complete these tasks independently in groups. Their experiential teaching is founded on the idea that students should acquire content before teachers lecture or demonstrate it to them. Instead, teachers should let students get first-hand experiences through observation and practical application. Students ask questions, consider them, and then debate them as this process progresses. Teachers then provide applicable guidance and suggestions in response to students' individual research. After then, students continue to attempt and experiment in order to identify the norms and laws guiding their practice and discover solutions to the issues they have raised (Xia & Zhou, 2020). This process emphasizes students' agency in the classroom while still providing teachers with full rein in their directing roles. The emphasis of learning protocols-based experiential education is on developing students' capacities for observation, thinking, creativity, innovation, and representation. As a result, it is possible to greatly improve students' all-around competencies.

Shandong 271 Education Group's holistic module learning model incorporates learning protocols. The connotation and structure of the learning protocol have undergone extensive development over the course of years of teaching reform, resulting in the formulation of the holistic module learning protocol, also known as the 271 learning protocol. It is a structured and intelligent learning protocol that includes student learning materials, student learning dynamics, and visual student feedback (Liu, 2022). Consequently, it not only reflects course content but also the students' learning process, which includes its automatic generation, recording, and evaluation. In 271 learning protocols, holistic design, holistic representation, and holistic learning are the three most prominent characteristics. It systematically structures the learning content of the entire module with learning objectives, scenarios, tasks, and evaluation, with an emphasis on the development of students' higher-order reasoning skills.

The knowledge economy sets more stringent requirements on the labor force. It is the obligation of educational practitioners to educate students to be high-quality talents with the ability to learn autonomously and think independently, as well as a sense of social responsibility. Cramming and teacher-dominated classroom instruction can only develop knowledge col-

lectors, not creative talents. As a result, encouraging students' creative thinking is a fundamental factor in the design of 271 learning protocols. Students will automatically develop higher degrees of creativity and a stronger capacity for bearing responsibility as a result of the ongoing effects of such learning procedures, better preparing them for diverse future endeavors (Zhao, 2022a).

In addition, 271 learning protocols place a premium on group study, emphasizing that each student must be a part of an appropriate study group. Cooperative learning within a group is a crucial component of the learning protocol. Each student performs a unique role in their study group based on their individual strengths. Members of the group assist and encourage one another in implementing the protocol. In this process, the teacher serves primarily as a facilitator, never interfering with or disrupting student group activities but providing assistance when necessary. One student from each study group is a member of the specialty study group for each subject. Therefore, each student has the opportunity to join a specialized study group. They engage in subject-based academic research and the planning of the learning protocol; they assist instructors and serve as academic leaders for group members in their assigned courses (Zhao, 2022b).

Supported by Modern Educational Technology

The protocol-guided teaching paradigm emerged alongside the rapid development of information technology and thus has a particular interest in the implementation of educational technology in classroom instruction. In order to generate more effective learning protocols, teachers used educational cloud platforms to seek out educational resources and collaborate on lesson planning. In order to provide precise instruction, teachers use tablets and LED panels to present learning objectives and content, as well as to monitor students' progress. Students can receive assignments from teachers and seek out learning materials using digital devices, as well as use inquiry learning tools provided by educational platforms.

To achieve more tailored training, protocol-guided teaching fully considers digital transformation and the use of big data. Access to high-quality educational resources is a necessary step toward a better teaching strategy, and teachers who are aware of the importance of using high-quality resources can be motivated to maximize learning protocols (Wang, 2022). The digital revolution in education has resulted in the development of digital learning protocols, which are more time-saving and cost-effective than paper-based protocols, allow for real-time communication and feedback, and thus serve to increase teaching efficiency and student-teacher engagement.

Big data stores large volumes of personal information about students, as well as their online interactions and system-generated data. In recent years,

there has been an increase in the use of learning analytics and educational data mining in educational communities, as well as a significant shift in the educational technology research paradigm (Zhu & Shen, 2013). When big data is applied to the analysis of students' learning processes, behaviors, and results, more accurate information is provided for decision-making in teaching. Big data-based technologies are used in digital protocol-guided teaching to facilitate student-individualized learning by providing more relevant learning resources and approaches to them based on their unique features and habits, hence improving their learning efficiency and quality.

Implementation Strategies for Protocol-Guided Teaching

Adherence to the Idea of Student-Centered Education

The principle of student-centered education has emerged as a central concept in contemporary education and underpins the majority of teaching paradigms at the basic education level. The protocol-guided teaching approach is based on this educational principle and emphasizes the value of appropriate relationships between learning and teaching, students and instructors, and learning and practice. It focuses on structuring learning experiences with students as the main players.

To encourage students to become more engaged in their learning, a classroom climate that prioritizes learning rather than teaching must be established (Wang, 2022). When teachers' roles change from being classroom lecturers to being planners before class, directors during class, and tutors after class, the transition from passive to active learning can effectively urge students to participate in the course. A more amicable student-teacher relationship can be created as a result. Teachers serve more as learning facilitators, helping and guiding students as needed. Students must take the initiative and be accountable for their own learning. It is possible for teachers and students to enhance their mutual understanding, respect, and trust.

Both practice and acquiring new information are crucial to effective classroom instruction. In a traditional, teacher-centered classroom, student training time is scarce, and teacher lectures prevail. A natural fusion of learning and practice is encouraged by the protocol-guided teaching style. A suitable number of in-class tasks are given to students to help them cement their mastery of the lesson's material based on the assumption that they comprehend it. Opponents of protocol-guided teaching may minimize its effectiveness by associating it with an exercise book because the learning procedure allots a significant amount of time for exercises. That is a severe misinterpretation of this instructional paradigm.

Scientific Design and Use of the Learning Protocol

The instructor controls the classroom in traditional teacher-dominated education models by selecting what to teach, how to teach, and how to evaluate student learning outcomes; at the same time, the student becomes a passive recipient of knowledge and the object of information cramming. A well-crafted learning protocol, on the other hand, is the most important component of the protocol-guided teaching approach, as it governs students' learning activities and teachers' instructional framework. The most essential prerequisite for protocol-guided teaching is protocol-based learning and instruction.

Composing learning protocols requires collective professional knowledge and competence, as well as the participation of all teachers in the school who teach the same discipline. Typically, the creation of learning protocols consists of three steps: in the first step, the learning protocol for a specific lesson is prepared by one teacher; in the second step, all members of the teaching research group of the subject discuss collectively the individual protocol and propose improvements to make it a common protocol for the use of all teachers; and in the third step, all teachers of this discipline further modify the common protocols based on the suggestions made by the teaching research group (Xia & Zhou, 2020).

The Ministry of Education of China has established course requirements for all subjects and learning stages. On the basis of these standards, efforts have been organized to compile textbooks for all subjects. Despite being authoritative and professional, textbooks have limited content and scope. Basic education students must transform the textbook into a comprehensive learning plan that includes learning objectives, content, methods, and activities. The introduction of learning protocols signified a successful shift from textbook-based to learning-plan-based instruction. A learning protocol, unlike a textbook, is created by in-service teachers who take into consideration national course standards, textbook content, and students' learning status, making it more acceptable and beneficial to students.

The core of the protocol-guided teaching methodology is the learning protocol. Teachers at schools that adopt this teaching paradigm must implement instruction using school-designated learning protocols, and students in these schools must adhere to the conditions and guidelines outlined in the protocols when engaging in learning activities. There is no arbitrary teaching or learning methods that go against established learning procedures.

Conclusion

Education has become more demanding as time and society have advanced. The goal of education is no longer only to impart existing knowledge to stu-

dents but rather to foster autonomous learning abilities and creativity in them. The protocol-guided teaching paradigm has the ability to meet the changing educational requirements. Its application in a wide range of Chinese schools has resulted in learning protocols of various forms but with the same characteristics, and they have proven to be productive in terms of student learning results. We anticipate that through engaging in ongoing practice, summarization, and reflection, more educational practitioners will have a better grasp of the value of this teaching approach and improve its effectiveness in basic education.

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