INTERNATIONAL ACADEMIC RESEARCH JOURNAL
ISSN :2289-8441
International Academic Research Journal of Social Science
Journal homepage: www.iarjournal.com

Transforming Pedagogy: Revealing Contemporary Teaching Methods Rooted in Protocol-Guided Learning

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Article Information

Keywords
Protocol-Guided Learning
Collaborative Approach
Teacher-Centred Approach
Student-Centred Approach
Dual Master Teaching Model

Abstract

The teaching strategy, recognised as protocol-guided learning (PGL), centres on employing a case study guide methodology. It places significant emphasis on fostering collaboration between educators and students to achieve teaching objectives effectively. Aligned with localised teaching methodologies in Chinese education, this strategy emphasises harmonising various teaching elements. Its goal is to ensure a synchronised alignment among educators, learners, and instructional materials. This research investigates the foundational aspects of this pedagogical approach, utilising a case study from a middle school in Jiangsu, China. Through this specific case analysis, the study aims to elucidate the essential components of the teaching strategy and analyse its practical implementation. By examining its application in a natural educational setting, this research provides insights into the nuanced exploration of protocol-guided learning.

INTRODUCTION

This article explores the transformative shift in educational paradigms, explicitly focusing on the emergence and application of protocol-guided learning. Grounded in purposeful methodologies to enhance student learning, teaching strategies have historically been crucial for fostering creativity and engagement (Zhang & Yu, 1996; Taba et al., 1964). This discussion navigates through traditional teacher-centred and student-centred pedagogies, highlighting the dual-master teaching model as a proposed compromise for balanced teaching strategies.

The contemporary pedagogical method of protocol-guided learning is at the core of our exploration. Originating from a localised paradigm shift, this approach prioritises case studies, guiding learning methodologies, fostering autonomous learning, and nurturing critical thinking (Xiong, 2019). The article traces the evolution of protocol-guided learning in China, particularly within Zhenjiang Experimental School.

Examining theoretical frameworks and derived teaching methods associated with protocol-guided learning, we explore its application within specific disciplines, emphasising positive impacts on teaching efficiency and student engagement. The article also investigates global alignment and adaptation of protocol-guided teaching strategies, noting resonances with student-centred approaches in foreign contexts.

The essence of protocol-guided learning is elucidated, emphasising its role as an integrated educational system balancing diverse teaching elements. This approach harmonises student-centred and teacher-led activities, highlighting teachers' indispensable guidance while empowering students.

The subsequent sections delve into essential components and strategies in protocol-guided learning, providing insights into goal-oriented learning, problem-centred approaches, self-study as a foundation, and hybrid learning. The article also explores core methodologies and objectives at the teacher level, emphasising problem-driven protocols, learner-centric teaching, and reciprocal growth in teaching and learning.

The following sections will detail the foundational steps of protocol-guided learning, elucidate its practical implementation, and emphasize this innovative teaching strategy's dynamic and interactive nature.

PARADIGM SHIFT: MODERNIZING TEACHING APPROACHES WITH PROTOCOL-GUIDED LEARNING

Teaching strategies encompass purposeful methodologies educators employ to enhance student learning within diverse instructional settings (Zhang & Yu, 1996). Various scholars have historically highlighted the significance of these strategies in fostering creativity among students (Taba et al., 1964). Diverse techniques such as demonstrations, real-life scenario integration, and collaborative group work have significantly augmented teaching efficacy (Wei & Wo, 2006). Debates persist regarding the critical factor influencing the development of these strategies, emphasising the need to integrate traditional and innovative pedagogical practices to meet the dynamic needs of present-day students.

TRADITIONAL TEACHER-CENTERED APPROACH

The traditional teacher-centered approach underscores the instructor's role in knowledge dissemination and classroom instruction. Originating in the 17th century, this method evolved through subsequent generations of educators, with variations such as the "five-segment teaching method" derived from the Herbartian tradition (Lu, 1985). Notably prevalent in China, this approach, rooted in Herbartian pedagogy, sometimes focused excessively on procedures, leading to a need for deeper academic exploration (Dong & Shi, 1991).

STUDENT-CENTERED PEDAGOGY

Rooted in Dewey's and Bruner's ideologies, the student-centred approach empowers students for independent exploration and active involvement in learning. While celebrated for emphasising student initiative, excessive focus on this approach might disrupt structured classroom teaching (Ren & Xu, 2011). Recent critique in Western educational circles highlights the need for a more balanced approach to merging teacher-led instruction and student-driven learning (Luo et al., 2012).

DUAL-MASTER TEACHING MODEL

A proposed compromise between the teacher-centred and student-centred approaches, the "dual-master" model aims to integrate both ideologies, recognising teaching as a multifaceted process influenced by various factors. This model harmonises the influential role of teachers while integrating students' perspectives (He, 1998).

Importance of Balanced Teaching Strategies

A harmonious balance among teacher-student dynamics, teaching methodologies, and learning experiences is crucial for an effective teaching system. Overemphasis on student- or teacher-led approaches might impede the integration of knowledge and skills across different learning domains.

PROTOCOL-GUIDED LEARNING

A contemporary pedagogical method, protocol-guided learning, revolves around case studies as pivotal tools for learning and teaching. This approach prioritises guiding learning methodologies, fostering autonomous learning capabilities, and nurturing critical thinking and learning skills (Xiong, 2019). Several schools in China have adopted innovative teaching modes based on this approach, emphasising self-learning, problem-solving, and goal achievement (Li, 2011).

In 2005, Zhenjiang Experimental School initiated educational reforms grounded in the protocol-guided teaching model. These changes, derived from a school-based guidance plan, incorporated various classroom teaching strategies. The school's consistent application of these methods resulted in top-ranking entrance examination scores for 14 consecutive years within its municipality. It was awarded the first prize for teaching achievements in Jiangsu Province twice. The influence of these reforms extended beyond the local sphere, impacting the Runzhou District, Zhenjiang City, Jiangsu Province, and several provinces nationwide.

CORE PRINCIPLES OF PROTOCOL-GUIDED LEARNING STRATEGY

At the heart of the protocol-guided learning plan adopted by Zhenjiang Experimental School lies a focus on study guides as the primary method, with teacher guidance and students' autonomous learning as critical components. This teaching methodology, grounded in Chinese educational values, represents a localised paradigm shift in teaching methodologies (Luo, 2016).

Evolution of Protocol-Guided Teaching Strategies in China

The development of teaching strategies based on protocol-guided learning began in the late 1990s at Donglu Middle School in Nanjing, Jiangsu Province. Introducing the "lecture draft" was instrumental, providing students with materials conducive to independent learning and fostering greater autonomy (Tao, 2013). As curriculum reforms progressed, the "lecture draft" evolved into the "lead draft" or "learning plan," signifying a shift towards student-centred teaching (He, 2014).

Theoretical Frameworks and Derived Teaching Methods

The theoretical exploration of protocol-guided learning models encompasses critical stages, including foundational frameworks, teaching objectives, operational procedures, and delineating teacher-student roles. Scholars have proposed specific teaching methodologies such as the '2223 efficient classroom' and the '1215' interactive teaching, focusing on cultivating student autonomy and fostering student-led teaching practices (Jia, 2017).

Application in Specific Disciplines

Practising protocol-guided teaching within distinct disciplines has garnered significant attention among educators. Researchers concentrating on physics and English have conducted in-depth studies, emphasising the importance and methodologies of employing protocol-guided teaching. Their findings consistently suggest amplified teaching efficiency, expedited student engagement, and the cultivation of robust autonomous learning abilities (Ma, 2019; Mao, 2019).

Global Alignment and Adaptation of Protocol-Guided Teaching Strategies

While no distinct definition of protocol-guided learning strategies exists abroad, foreign teaching strategies align with the core principles emphasised in this research. Strategies like scaffolding teaching and anchor teaching, advocating for a student-centred approach, resonate with the foundational ideologies of protocol-guided learning-based teaching strategies (Askell-Williams et al., 2012; Mehdi et al., 2016).

The essence of Protocol-Guided Learning as a Teaching Strategy

Protocol-guided learning as a teaching strategy embodies an integrated educational system, orchestrating a delicate balance among diverse teaching elements. It revolves around compiling learning materials and resources—referred to collectively herein—based on curriculum standards, textbooks, and students' cognitive abilities. This strategy focuses on teaching students how to learn effectively using predefined protocols.

A Balanced Blend of Student-Centered and Teacher-Led Activities

This approach harmoniously integrates student-centric and teacher-led methodologies. It underscores the importance of student-centred learning as the focal point, emphasising students' central role in the learning process. Simultaneously, it highlights the indispensable guidance role of teachers—preparing students before class, leading them during sessions, and reinforcing learning post-class—to fulfil their instructional responsibilities effectively.

Essential Components and Strategies in Protocol-Guided Learning

Goal-Oriented Learning: Teaching objectives align with students' learning objectives, empowering them to identify lesson-specific learning tasks.

Problem-Centred Approach: Transforms textbook knowledge into problem-solving scenarios, fostering learning through active problem-solving, a cornerstone of this strategy.

Self-Study as Foundation: Encourages pre-class self-study and related exercises as the basis for protocol-guided learning.

Hybrid Learning Approaches: Simplified content encourages independent or group learning, while intricate topics necessitate detailed lectures from teachers to ensure comprehension.

Classroom Engagement and Real-Time Training: Teachers guide students through lesson-related problems, reinforcing knowledge through in-class exercises.

Core Methodologies and Objectives at the Teacher Level

At the teacher level, protocol-guided learning hinges on problem-driven protocols, learner-centric teaching, the fusion of learning and thinking, and mutual reinforcement of teaching and learning.

Problem-Driven Protocols: Employ problem-based scenarios to enhance student initiative and autonomy, utilising well-designed questions for effective classroom engagement.

Teaching Rooted in Learning: Encourage teachers to pose guiding, inspiring, and curious questions, foster student thinking, and tailor discussions to meet diverse learning needs.

Integration of Learning and Thinking: Foster deep thinking among students to aid comprehensive understanding, internalisation of knowledge, and development of problem-solving skills.

Reciprocal Growth in Teaching and Learning: Protocol-guided learning nurtures student learning and teacher reflection and growth. Teachers refine knowledge delivery while engaging in continuous learning, ensuring teacher and student progress throughout the teaching-learning process (Zheng, 2015).

CORE ELEMENTS OF PROTOCOL-GUIDED LEARNING TEACHING STRATEGY

Protocol-guided learning encompasses various steps that may differ among educational institutions. Here, we outline the foundational steps of protocol-guided learning practised at Zhenjiang Experimental School. Recognising that these steps may vary depending on the specific classroom context is essential. Typically, for newly introduced courses, the teaching process involves nine fundamental steps:

Defining Learning Objectives: Initiate the course by establishing precise and transparent learning objectives to guide students throughout their learning journey.

Protocol-Guided Preparatory Phase: Engage students in a preparatory phase using the protocol-guided approach, encouraging them to familiarise themselves with upcoming learning materials.

Encouraging Autonomous Collaboration: Foster self-reliance among students through independent or group-based collaborative learning activities.

In-Depth Analysis and Structured Lectures: Provide detailed analysis and structured lectures to facilitate a comprehensive understanding of the subject matter.

Practical Application: Implement practical sessions or experiments that allow students to apply theoretical knowledge in real-time scenarios.

Diversification and Extension: Encourage students to explore additional dimensions or extensions of the subject matter beyond the standard curriculum.

Inductive Summarization: Guide students through inductive thinking, enabling them to extract essential insights and summarise their learning.

Assigning Reinforcement Tasks: Assign relevant tasks or assignments to reinforce learned concepts and promote further independent learning.

Cultivating Reflective Inquiry: Foster critical thinking and reflection by encouraging students to question, articulate their understanding, and reflect on their learning process (Xia, 2017).

ESTABLISHING LEARNING OBJECTIVES

Teachers establish common lesson objectives based on new curriculum standards and students' cognitive abilities. This mutual understanding cultivates a shared purpose between teachers and students throughout the teaching and learning process.

REFINING PROTOCOL-GUIDED LEARNING TEACHING STRATEGIES

Pre-Class Preparation: This stage involves students engaging with teaching materials before class. Students initially understand the material through independent reading, study, reflection, and exploration. The aim is to identify potential issues and initiate the learning process.

Autonomous Collaboration: Students, individually or in groups, delve into understanding fundamental concepts, essential graphics, and primary methodologies aligned with the lesson's objectives. Group discussions and cooperation after self-study lead to a comprehensive and accurate comprehension of the acquired knowledge.

In-depth Analysis and Instruction: Teachers conduct detailed analyses and deliver structured lectures during class sessions. Illustrative examples induce critical thinking, followed by exercises to reinforce learning.

Real-Life Application: Instructors select topics closely linked to real-life issues for practical exercises that challenge students without being overly complex. Assessments of student performance guide lesson planning, ensuring comprehensive understanding.

Expanding Perspectives: This phase extends thinking capabilities through innovative thinking, problem-solving, and intellectual growth. Students actively participate, discussing potential solutions and aiming for advancements in the teaching-learning process.

Summarising Insights: Summarisation involves revisiting acquired knowledge and discussing insights from classroom instruction. It aids in developing accurate knowledge theories based on teacher-student discussions.

Homework Tasks: Tasks focus on comprehensive, open-ended questions, protocol-guided previews for upcoming lessons, and reflection-based assignments to identify areas for improvement and insights gained.

Example Scenario: Consider the teaching of "Multiplication of Powers of the Same Base" from the Seventh Edition of the People's Education Version:

Before Class: Teachers set student learning goals and teaching objectives focusing on correctly grasping and applying the multiplicative rule of powers with the same base.

Classroom Instruction: Teachers present scenarios and questions to prompt independent study and group cooperation among students. They guide explanations, tailor examples, and facilitate immediate consolidation through exercises.

Post-Class Reflection: Both teachers and students engage in reflective practices to review the learning experience, rectify shortcomings, and consolidate lesson content through extended homework tasks tailored to diverse academic needs.

IMPLEMENTATION OF TEACHING STRATEGIES IN PROTOCOL-GUIDED LEARNING

PLANNING TEACHING ARRANGEMENTS AND RESTRUCTURING THE TEACHING PROCESS

Teaching embodies a mutual exchange between teachers and students, wherein the role of teaching by the teacher remains central. Acknowledging the primary role of students in the teaching process doesn't diminish the crucial leadership of teachers. Integrating student-centred learning and teacher guidance represents an optimal balance (Hu, 2011).

In this teaching paradigm, the teacher's leadership guides students' learning before, during, and after lessons. Teachers play a pivotal role in guiding and facilitating student learning. With the guidance and support of teachers, students may be able to complete their learning. Thus, the effective execution of protocol-guided learning necessitates restructuring the teaching process.

Meticulous Lesson Preparation and Crafting Exceptional Protocol-Guided Learning

At the core of teaching based on protocol-guided learning lies the foundation of protocol-guided learning itself. To effectively implement this teaching approach, meticulous preparation of suitable protocol-guided learning material is essential.

Protocol-guided learning, as defined based on numerous scholarly references, refers to teachers in primary and secondary schools guided by curriculum standards, students' academic status, and learning goals. They use learning materials structured as protocols to show students' learning before, during, and after class (Xia, 2017).

Derived from this definition, several fundamental writing principles are established:
Student-Centric Principle: Protocols must prioritise students' perspectives and learning needs rather than being teacher-centric, focusing on guiding students' learning (Yi, 2003).

Appropriateness Principle: The protocols should match the students' capacity and not exceed their cognitive level, ensuring an appropriate number of learning goals and activities (Li & Teng, 2011).

Problematic Principle: Encourage students to think through the presentation of problems within the protocols, fostering critical thinking (Li, 2011).

Orderly or Systematic Principle: The design of protocol-guided learning content, especially the learning material and teaching process, should be logically sequenced to construct a comprehensive knowledge system rather than imparting fragmented knowledge (Li & Teng, 2011).

The teaching strategy rooted in protocol-guided learning represents a localised educational approach in China, showcasing the collective insights of academic scholars and practitioners. Compiling protocol-guided learning epitomises the collaborative effort fostered within China's joint lesson preparation system. For instance, the protocol-guided learning compilation at Zhenjiang Experimental School follows a structured approach. Initially, the class preparation team leader formulates the subject activity plan and classroom teaching research plan, distributing tasks among team members. Subsequently, subject administration, teaching research, and guidance team members review the primary and alternative drafts based on their responsibilities. Finally, individual teachers in each class adeptly adjust the protocol-guided learning content according to the ongoing class dynamics and academic progress.

Moreover, the subject administration and preparation team leader actively engages in classroom observations, focusing on specific teacher lessons and critical teaching moments. This emphasis on classroom monitoring through observation facilitates a personalised approach to school-wide teaching methodologies. It further allows for comprehensive exchanges between the team leader and teachers post-lecture, fostering a tailored and specialised approach to classroom teaching practices within the school.

Revitalising Classroom Teaching: An Exploration of Protocol-Guided Learning
The essence of the teaching strategy rooted in protocol-guided learning is its reliance on structured questioning as the central instructional tool. In this approach, teachers utilise the problem sets provided by protocol-guided learning to transform textbook knowledge into engaging learning challenges for students.

When presented with these challenges, students are encouraged to solve them autonomously. Teachers refrain from explicitly explaining queries or concepts already understood by students, leaving such instances for independent or collaborative exploration. However, in specific academic disciplines, particularly in scientific subjects, certain teaching content may require detailed explanations from teachers. For instance, foundational principles in physics, like the Law of Conservation of Mass, often necessitate explicit teacher-led explanations to ensure adequate comprehension.

The teacher's explanatory process should remain rooted in the problem statements from protocol-guided learning. Through these explanations, teachers vividly illustrate the problem-solving thought process, aiding students in understanding the techniques involved in addressing the problems. The focus of the answer should not encompass a comprehensive narrative from start to finish by the teacher but concentrate on crucial aspects. Teachers must pinpoint students' learning journeys' critical, intricate, and misconception-prone facets. This approach involves refraining from explaining concepts students can learn independently or have already encountered. Additionally, teachers avoid reiterating explanations after students have provided answers or when they can explain the idea themselves. By adhering to these guidelines, teachers ensure their explanations serve a meaningful purpose, avoiding the risk of repetitive lecturing.

"READING, THINKING, SPEAKING, AND PRACTICING": A SYNERGY OF TEACHING METHODS
The teaching methodology rooted in protocol-guided learning emphasises the amalgamation of multiple teaching approaches, incorporating "reading, thinking, speaking, and practising." At Zhenjiang Experimental School, these principles form the core ethos, fostering an integrated approach to learning and teaching.

"Reading" emphasises students' comprehensive engagement with texts, which is essential for knowledge acquisition, intelligence development, and skill enhancement. Teachers guide students to read critically, structure content, pose thought-provoking questions during reading, and encourage independent comprehension.

"Thinking" involves students' inquiry skills and collaborative thinking, encouraging reflection on challenging concepts encountered during reading. This process cultivates individual and collective thinking, prompting students to discuss aspects related to protocol-guided learning.

"Speaking" encompasses articulating, explaining, and analysing teaching content, aiding deeper understanding. Students express ideas and problem-solving outcomes from individual contemplation or group discussions. Additionally, teachers provide targeted explanations and analyses, facilitating a profound understanding of concepts outlined in protocol-guided learning.

This stage is crucial as the quality of teaching directly impacts students' knowledge and skills. Teachers must deliver structured, coherent lectures, ensuring clarity, accuracy, conciseness, and emotional engagement to stimulate students' interest and curiosity.

"Practicing" involves homework and exercises integral to comprehending and applying learned concepts. These practices occur before, during, and after classes, systematically evaluating student learning and reinforcing knowledge.

This comprehensive approach blends diverse methodologies to enhance students' learning experiences, ensuring a holistic engagement with the subject matter.

DISCUSSION AND CONCLUSION

Hu (2015) highlighted that Protocol-guided learning presents an intriguing pedagogical approach that places teachers as the backbone and students as the central focus. This teaching method emphasises collaborative efforts between teachers and students to achieve learning objectives.

Hu (2015) emphasises the importance of flexible teaching designs using student-centred materials integrating pre-, during, and post-class activities. This approach encourages active student participation, problem-solving during lessons, reflection on learning experiences, and the cultivation of independent problem-solving skills, all guided by teachers.

In China's educational reform context, Yu and Shi (2014) commend protocol-guided learning as a significant contributor to transforming elementary education. This approach has shown promise by enhancing students' academic performance and improving teaching efficiency across various schools (Teng, 2015).

However, while protocol-guided learning has received acclaim, there are concerns raised by Qiu (2017) regarding its limitations. Notably, it favours overall academic improvement but may not adequately cater to the needs of high-achieving students. Critics argue that this approach might hinder teachers' autonomy and innovative teaching methods (Qiu, 2017).

Addressing these concerns, He (2019) proposes leveraging modern technology, such as the Internet and extensive data analysis, to supplement protocol-guided learning. This integration could enhance personalised learning experiences, particularly for high-achieving students, while supporting teachers in overcoming limitations associated with this approach.

In conclusion, while protocol-guided learning has shown promise in reshaping education, ongoing discussions and proposed enhancements involving technology integration are vital to refine and optimise its effectiveness in catering to diverse student needs and supporting teachers' pedagogical autonomy.

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