

Challenges and Strategies in Managing Elementary School Information Technology Classes: A Case Study of Teaching Windows Paint to Third Graders

Qiudie Tao, Bo Cai

School of Information Science and Technology, Yunnan Normal University, Kunming 650000, China

Abstract

Against the backdrop of digital transformation in education and with the evolution of information technology curriculum philosophy, classroom discipline issues in elementary school information technology courses have taken on new complexities and challenges. Taking the teaching of the “Windows Paint” module in a third-grade class at a certain elementary school as a case study, this research analyzed classroom video recordings using ELAN multimodal annotation software to systematically examine students’ disciplinary behaviors, teachers’ response strategies, and the effectiveness of classroom management in information technology classes. The findings reveal that student discipline issues primarily manifest as inattention, careless operations, and a weak sense of rules, and are closely related to the organization of instructional content, the use of reward and punishment mechanisms, and students’ cognitive developmental stages. Based on the case analysis, this paper proposes eight management strategies, including establishing classroom routines, designing point-based reward and punishment systems, optimizing instructional content, utilizing verbal commands for management, and strengthening home-school collaboration. The study indicates that effective classroom discipline management should facilitate a transition from external control to internal self-discipline, thereby supporting the development of students’ self-regulation skills and their adaptation to digital learning environments.

Keywords

Classroom discipline in elementary schools; Information technology education; Classroom management strategies.

1. Introduction

In this new era, where artificial intelligence, big data, and digital technologies are deeply intertwined, education is undergoing unprecedented transformation and reshaping. The new curriculum standards for information technology in compulsory education, issued in 2022, not only renamed the subject from “Information Technology” to “Information Science and Technology”, but also placed greater emphasis on integrating four core competencies—information literacy, computational thinking, digital learning and innovation, and social responsibility in the digital age into classroom instruction. This curricular transformation, set against the backdrop of the times, has given rise to diverse teaching models while also introducing new complexities and challenges regarding classroom discipline.

The new curriculum standards stipulate that elementary schools must offer a standalone Information Technology course starting in third grade, with instruction moving from regular classrooms to computer labs. Third-grade students, typically aged 8 to 9, are psychologically immature and have limited self-control. Especially in an IT classroom filled with screens, the internet, and hands-on tasks, they are prone to behaviors such as inattention, careless

operation, and a weak sense of rules. To some extent, these behaviors disrupt classroom order. However, the disciplinary issues students exhibit often go beyond mere classroom behavior; they reflect deeper challenges in adapting to digital environments and developing self-management skills. What characteristics do discipline issues in elementary school information technology classrooms exhibit? What are the historical roots and psychological motivations behind these problematic behaviors? What strategies can teachers adopt for effective classroom management to achieve an organic integration of “discipline” and “instruction”? Taking the “Windows Paint” module in a third-grade elementary school information technology curriculum as a case study, this research explores these three questions.

2. The Concept of Classroom Discipline Management

Good classroom discipline is essential for the smooth conduct of classroom instruction. Regarding the concept of “discipline” in the field of education, Zhao Xiuli et al. argue that discipline refers to the subjective force that enforces behavioral norms. By promoting and implementing relevant disciplinary policies in students’ daily lives and studies, the notion of strict adherence to discipline is deeply ingrained, thereby preventing disciplinary violations and facilitating the transition from external regulation to self-discipline [1]. Gu Yuan defines discipline as external norms and controls imposed on individual behavior [2]. Charles argues that “discipline” in the educational context primarily concerns student misconduct and the actions teachers take to help students regulate their behavior [3].

Most scholars have researched and interpreted classroom discipline from the perspectives of the external control orientation and the internal cultivation orientation. The external control orientation defines classroom discipline as: students must strictly adhere to rules and regulations; it places great emphasis on teachers’ control over students and on ensuring students comply with established rules, primarily referring to students’ orderly behavior in the classroom and their self-imposed standards [4]. The internal cultivation orientation defines classroom discipline as: principles that individual students acquire to control themselves to some extent, in order to align with the various forces they perceive in their surroundings. This orientation holds that external rules and suppression not only fail to foster good discipline but actually hinder children’s natural development; true discipline is formed only when students learn self-control and self-discipline [5]. In line with the demands of the new era on education, the understanding of classroom discipline is no longer viewed as the teacher’s authoritarian control over students but leans more toward the internal orientation. The classroom is student-centered, with students as the subjects of learning and teachers as facilitators and guides. Issues of classroom discipline are not only related to students but are also problems that teachers need to address and resolve.

In this study, “classroom discipline” refers to the behavioral norms established in elementary school information technology classes to ensure teaching order and learning effectiveness, as well as the comprehensive manifestation of students’ internal sense of rules and self-management abilities.

3. Characteristics of Classroom Discipline Issues

3.1. Categorization of Student and Teacher Behaviors

Taking advantage of my teaching practicum, I video-recorded selected third-grade information technology classes and used the ELAN 5.9 multimodal video analysis software to annotate and analyze the instructional videos. Based on this analysis, I summarized the types of discipline issues that may arise among young children in information technology classrooms. The basic information regarding the classes and lesson topics is shown in Table 1.

Table 1. Class and Lesson Topics

Class	Topic	Duration (min)	Use of Class Optimization Master
Grade 3 (1)	Introduction to Drawing	40	Yes
	Writing and Drawing	40	
	Drawing Curves	40	
Grade 3 (2)	Drawing Curves	40	No
	Introduction to Folders	40	

Through the analysis of five recorded classroom sessions, the author identified the categories of disciplinary issues exhibited by third-grade students in information technology classes (see Table 2).

Table 2. Categories of Student Disciplinary Behavior and Teacher Responses

Behavior Category	Code	Description
Student Behavior	A1	Unable to sit still; making noise
	A2	Speaking out of turn; interrupting the teacher
	A3	Walking around without the teacher's permission
	A4	Shouting loudly
	A5	Banging on the desk/tapping the keyboard/rocking the chair
	A6	Active interaction with the teacher causing some disruption
Teacher Response	B1	Reminds students to be quiet
	B2	Mentions rewards and consequences
	B3	Implements rewards and consequences
	B4	Does not react to students' disciplinary violations and continues teaching
	B5	Pauses the class to restore silence
	B6	Implements group self-management

3.2. Analysis of Teaching Cases

This study focuses on two instructional videos from Class 3(1)—“Introduction to Drawing” and “Writing and Drawing”—as the primary cases for analysis, using Table 2 as the coding matrix for video coding.

Case 1: Introduction to Drawing

The teaching behaviors in the “Introduction to Drawing” lesson were coded, and the results are shown in Table 3.

Table 3. Case Study of the “Understanding Drawing” Lesson

Behavioral Category	Behavioral Code Record
Student Discipline	A1; A1; A1; A2; A1; A1; A1; A1; A5; A1; A5; A1; A1; A1; A1
Teacher Response	B1; B2; B2; B2; B2; B2; B1; B2; B2; B1; B2; B2; B1; B2; B2; B2; B1; B1

In this class, discipline issues primarily occurred during the first 5 minutes before the lesson officially began. From minutes 5 to 18, the teacher used the “Class Optimization Master” system to administer rewards and consequences, and engaged students through frequent questions

The note-taking session did not utilize Class Optimization Master for management support, resulting in students talking among themselves. When asking students to answer questions, a points-based reward and penalty system was implemented, which made students more active. The “question-and-points” approach refocused students’ attention on the lesson, but since many students answered, with multiple repeated and incomplete responses, the number of students receiving points increased. Awarding points in real-time during class is challenging for novice teachers. The primary reason is that when using Class Optimization Master to award points, the class size of approximately 55 students—a large class—makes it difficult to quickly locate the corresponding student ID. Additionally, frequent use of mobile phones during class weakens emotional interaction between teachers and students. When students submitted their work, they were required to label it with the corresponding Class Optimization Master ID number, but some students could not remember their numbers, causing classroom chaos. After the bell rang, students became anxious because they had not finished writing their names or were unable to submit their work, leading to restlessness. The teacher running over time further increased the difficulty of maintaining discipline. Therefore, teachers should pay attention to controlling the pace of the lesson, flexibly adjusting it based on students’ actual understanding, rather than insisting on covering all pre-planned content and requiring all students to master it completely. Teachers should focus more on teaching effectiveness rather than the mechanical completion of teaching tasks.

As this was a practical exercise class, the teacher rarely used Class Optimization Master to administer rewards or penalties before students began their formal creative work. During the teacher’s explanation, many students could not wait to start drawing. Their attention span was short, and when the teacher was controlling the computer to demonstrate, disciplinary issues arose, such as students fidgeting, rocking their chairs, tapping keyboards, and shouting. However, the teacher did not use the “questioning + points” method to manage these disciplinary issues. Consequently, from the start of the practical exercise, the overall classroom atmosphere was chaotic, and disciplinary problems gradually became more pronounced. After the students finished their practical exercises, the teacher could have walked around to observe their progress, selected some outstanding and innovative works for display and evaluation, and demonstrated the consistency of “teaching-learning-assessment.” The lesson design and implementation should integrate instructional content with classroom discipline management.

4. Analysis of the Causes of Classroom Discipline Issues

4.1. Inherent Characteristics of Elementary School Students

First, according to Piaget’s theory of cognitive development in children, third-grade students are in the preoperational and concrete operational stages. Students at this stage are easily distracted. If teachers engage in monotonous instructional activities for extended periods or if students are distracted by stimuli unrelated to classroom learning, they will lose focus. Consequently, in information technology classes, students often struggle to sit still; their attention typically wanders if a teacher’s demonstration or explanation lasts longer than five minutes. Additionally, students of this age are highly curious, sensitive, lively, and active; they are drawn to new experiences and enjoy games and play. Third grade is the first year students are introduced to the Information Technology curriculum. They are not yet proficient in computer operations but are filled with curiosity about computers. Combined with their tendency to lose focus, this may lead to behaviors such as randomly typing on the keyboard. Finally, students’ self-monitoring abilities are weak, requiring external supervision. They are easily influenced by external stimuli. As shown in the analyzed teaching cases, for novice teachers, relying solely on verbal prompts to maintain quiet and issuing commands—without

a system of points or rewards and punishments—is not very effective for managing student discipline.

4.2. Issues in Instructional Content Design and Organization

As demonstrated by the two specific teaching cases, numerous factors influence classroom discipline management. Teachers, students, the environment, instructional content, teaching models, and instructional control can all impact classroom discipline. If the difficulty of the instructional content exceeds students' zone of proximal development, it can also lead to classroom discipline issues. An excessive amount of content, resulting in high academic pressure for students, can similarly have a negative impact. External environmental factors—such as computer lag, failure to load teaching materials or other resources, and unclear or choppy video—can also trigger classroom discipline problems. When students encounter common issues during practical exercises, it may be because the teacher has not clearly explained the key concepts or procedural steps, which can also contribute to classroom discipline problems.

4.3. Students Feel Treated Unfairly, and Their Self-Esteem Is Harmed

Fairness is relative, and respect is mutual. While conducting teaching activities and enforcing classroom routines, teachers should treat all students equally, ensuring fair opportunities for interaction and equitable reward and punishment systems. At the same time, they must respect students and their individual characteristics, maintaining a balance between tolerance and discipline. For example, some students may not perform well and receive neither praise nor favor from the teacher, but instead face ridicule from their classmates. Another example is when a teacher consistently gives the opportunity to answer questions to only a select few students during class interactions; this can lead to feelings of resentment and dissent among other students, naturally resulting in classroom discipline issues.

5. Classroom Discipline Management Strategies

5.1. Establishing Fair, Lawful, and Reasonable Classroom Rules and Enforcing Them Actively

Practice has shown that managing classroom discipline through lecturing is not very effective. Not only does it take up valuable class time, but in severe cases, it can strain teacher-student relationships and cause students to lose interest in learning. Therefore, teachers need to shift their roles and recognize that they are not authorities, but rather guides, helpers, problem-solvers, and even trusted friends to their students. Consequently, building a relationship based on cooperation and trust is crucial. Teachers can collaborate with students to develop a disciplinary agreement that both parties support, typically completed during the first class session. For younger students, teachers can describe potential disciplinary issues in concrete terms, discuss with students how they think they should respond in such situations, and then provide further guidance and solicit feedback from the entire class. Next, encourage students to present the jointly developed classroom discipline agreement through hand-drawn posters, drawings, or other creative formats, and display them on the classroom's cultural wall to help students quickly become familiar with classroom routines.

5.2. Establishing a Reward and Punishment System

Case studies in educational research indicate that using the "Class Optimization Master" software can effectively manage student classroom discipline. Designing a points-based reward and punishment system—deducting points for certain disciplinary infractions and awarding points for positive behaviors—encourages students to develop in a positive direction. This approach reflects the application of behaviorist reinforcement in education. However,

regarding how to set up and implement the points system, teachers must consider practical factors and weigh their options to avoid excessive material rewards or punishments. At the same time, teachers should engage in continuous professional development and leverage teaching evaluation software to achieve streamlined, digital classroom discipline management.

5.3. Designing Engaging and Interesting Instructional Content

Designing engaging and interesting instructional content relies on the use of diverse teaching methods. Teachers can incorporate various approaches, such as group collaboration and hands-on activities, to accommodate the different learning styles and needs of students. At the same time, emphasis should be placed on stimulating student interest by selecting content closely related to students' real lives, thereby enhancing the appeal and proactivity of learning. Furthermore, high-engagement teaching activities—such as interactive lessons, role-playing, and group collaboration—should be designed to boost student participation in the classroom, encouraging them to engage more actively and proactively in their learning.

5.4. Skillfully Using Commands to Clarify Discipline Rules

First, teachers should collaborate with students to establish clear, concise, and easy-to-understand classroom discipline rules. Through regular communication, students should be helped to fully understand and voluntarily adhere to these rules. Second, any violations of these rules should be corrected promptly and accompanied by appropriate rewards and consequences to reinforce students' respect for the rules. The use of verbal cues is one effective method for enforcing discipline. Clear, concise cues help students quickly understand and follow classroom instructions. For example, when the teacher gives the cue "1-2," students respond with "Quiet"; when the teacher says "Sit up straight," students respond with "Ready"; and when the teacher says "1-2-3, look at the screen," students stop what they are doing, focus on the screen, and listen to the teacher's explanation. Through repeated practice of such commands, students can develop conditioned reflexes in a short period, thereby effectively maintaining classroom order.

5.5. Strengthening Home-School Collaboration

First, teachers should establish a smooth home-school communication mechanism. Through various channels such as parent-teacher conferences, phone calls, and home visits, they should promptly provide parents with feedback on their children's performance at school and gain insight into their behavior at home. Second, schools and families should jointly monitor students' disciplinary behavior and collaborate to develop effective strategies for fostering a sense of rules. Additionally, families should actively cooperate with the school to maintain consistent standards regarding the cultivation of behavioral habits and discipline education. At the same time, parents should strive to create a positive home environment, providing students with opportunities and space for self-management to promote the development of good behavioral habits.

5.6. Providing Personalized Learning Support

The prerequisite for providing personalized learning support is a thorough understanding of students' individual differences. Teachers can gain a deep understanding of these differences by assessing students' learning styles and ability levels, thereby laying the foundation for personalized support. On this basis, teachers should develop individualized learning plans tailored to students' unique characteristics and provide targeted guidance and support to meet the diverse learning needs of each student. However, in the context of large-class instruction, fully personalized learning guidance is difficult to achieve. To address this challenge, teachers can adopt differentiated instruction strategies, such as small-group tutoring and tiered

assignments, to appropriately accommodate students' varying learning needs while balancing the developmental needs of the entire class as much as possible.

5.7. Fostering a Positive Classroom Atmosphere

In some classes, students are generally restless, the learning atmosphere is poor, and discipline is lacking. Classroom discipline management should be approached as an "offensive" rather than a "defensive" strategy [6]. Subject teachers should actively communicate with the homeroom teacher of the class to understand the students' characteristics and develop a mindset focused on building and fostering a positive classroom atmosphere. The homeroom teacher should take the lead in promoting the class's moral and cultural development, maintain classroom routines, and communicate frequently with subject teachers to understand the overall classroom discipline of the class. By collaborating with subject teachers to implement preventive and corrective measures, they can help students develop in a positive direction.

5.8. Updating Concepts of Classroom Discipline Management

Traditional classroom discipline consists of rules and order designed to regulate student behavior in order to maintain the normal progress of classroom instruction, emphasizing the restraint of student behavior [7]. However, classroom discipline is not merely about restraining and suppressing student behavior; it should also serve to guide and transform. It should help students develop good habits, correct negative behaviors, and convert them into positive ones. The new perspective on discipline calls for a shift from external control to internal self-discipline. Today's classroom is a "dynamic" one, where students actively participate and engage in learning [7].

The educational philosophy of the new curriculum reform calls for student-centered classroom instruction, emphasizing student agency and fostering core competencies. In teaching activities, teachers are required to break away from rigid, fixed educational paradigms, adopt a student-centered approach, and guide students to transform from passivity to proactivity—shifting from external control to the cultivation of internal discipline.

6. Research Conclusions

(1) Discipline issues among students in elementary school information technology classes primarily manifest as follows: inability to sit still and persistent noise; speaking out of turn without permission and interrupting the teacher; moving around without the teacher's permission; shouting; banging on desks, tapping keyboards, or rocking chairs; and causing partial disruption in the classroom due to enthusiastic interaction with the teacher. It should be noted that not all of the above behaviors constitute strict disciplinary issues. Teachers should provide appropriate guidance and intervention based on an understanding of the specific context, avoiding overreaction or neglect of potential problems.

(2) The causes of classroom disciplinary issues among elementary school students can be summarized as follows: First, students possess inherent psychological characteristics such as easily distracted attention, strong curiosity, sensitivity, liveliness and hyperactivity, a strong desire for knowledge, and relatively weak self-control; Second, deficiencies in the design and organization of instructional content; third, students feeling unfairly treated or having their self-esteem damaged, which in turn leads to behavioral misconduct.

(3) From the teacher's perspective, eight management recommendations are proposed: establish fair, lawful, and reasonable classroom routines and enforce them actively; implement a reward and punishment system; design engaging and interesting instructional content; skillfully use verbal cues to clarify disciplinary rules; strengthen home-school collaboration; provide personalized learning support; foster a positive classroom atmosphere; update classroom discipline management philosophies and adopt a scientific approach to education.

(4) The underlying goal of discipline management is to facilitate students' transition from external regulation to self-regulation. Practice has shown that when students understand and accept classroom rules, experience the fairness of the points-based reward and punishment system, and gain a sense of accomplishment through practical exercises, they gradually reduce their reliance on external teacher supervision and exhibit greater self-control and cooperative behavior. This is fully consistent with Piaget's theory of cognitive development and the "student-centered" philosophy of the new curriculum reform. Teachers should recognize that the ultimate goal of discipline management is not to "control students," but to help them develop an internal sense of rules and self-management skills, thereby enabling them to adapt to the learning demands of the digital age.

7. Limitations and Future Directions

This study is based on a sample consisting of a single school, two classes, and five classroom recordings; therefore, the generalizability of its conclusions requires further validation. Future research could expand the sample size and employ experimental or action research methods to compare the long-term effects of different management strategies. Additionally, how to integrate AI-assisted teaching tools with classroom discipline management is an area worthy of further exploration.

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