

Research Report on the Dual Effects of Online Learning Resources on the Academic Development of Primary and Secondary School Students and Optimization Strategies: A Case Study Based on Changguo Subdistrict

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ABSTRACT

With the continuous advancement of "Internet + Education," online learning resources have become an important vehicle for in-class supplementation and extracurricular expansion for primary and secondary school students. Their diverse content, flexible formats, and convenient accessibility offer new possibilities for personalized learning and the development of autonomous learning abilities. However, the openness of the internet, the uneven quality of resources, and the immature physical and mental development of primary and secondary school students also give rise to issues such as distracted attention, exposure to harmful information, and inadequate supervision by families and schools. Taking Changguo Subdistrict as a case study, this paper systematically examines the perceived dual effects of online resources on academic development from both positive and negative aspects, integrating the perspectives of students, teachers, and parents. Through a mixed-method approach combining questionnaires and interviews, the study finds that while online resources are widely recognized for their role in knowledge consolidation and personalized learning, negative effects such as attention distraction, vision problems, and erosion of deep thinking are also prominent, with significant perceptual discrepancies among the three stakeholders. Based on the findings and acknowledging the exploratory nature of this case study, the paper proposes targeted optimization recommendations at the student, parent, teacher, school, and platform levels. The aim is to regulate learning behaviors, amplify the value of resources, mitigate potential risks, and effectively promote the high-quality academic development of primary and secondary school students, while calling for larger-scale research to validate these preliminary findings.

Keywords: Online Learning Resources, Primary and Secondary School Students, Academic Development, Dual Effects, Optimization Strategies

RESEARCH BACKGROUND

With the deepening advancement of digital education, the integration of information technology and basic education has become increasingly close. Online learning has transitioned from an emergency measure to a normal mode of operation (Wu, D. G., & Li, W., 2020). The Ministry of Education promotes the digital

transformation of education and encourages primary and secondary schools to leverage high-quality online resources to enrich teaching, address shortcomings, and tailor instruction to individual aptitudes. Consequently, online learning resources have become an important part of the basic education system.

Online learning resources broadly refer to various digital materials generated and disseminated via the internet that support students' autonomous learning and teachers' instructional activities. These include instructional videos, question banks, courseware, popular science content, online courses, and Q&A materials. They are characterized by openness, sharing, diversity, and interactivity. Compared with traditional paper-based resources, they transcend the limitations of geography, teaching staff, and textbooks, adapting to different academic profiles and learning needs, thus providing strong support for personalized and deep learning (Chen, L., Li, F., Wang, C., Yin, X.B., Chen, Y.H., Jiang, Y.H., & Zhao, W.L., 2011).

In the post-pandemic era, online and offline blended teaching has been comprehensively deepened, significantly increasing the frequency and scope of online resource usage. These resources have become a primary channel for students to consolidate knowledge after class, fill gaps, and pursue enrichment (Wu, D. G., & Li, W., 2020). Numerous studies have confirmed that high-quality online resources can effectively compensate for the limitations of classroom teaching, broaden horizons, enhance autonomy, and optimize teaching outcomes (Tang, Y. M., & Xie, Z. J., 2007). However, as the volume of resources continues to expand, a large amount of non-standardized, fragmented, and entertainment-oriented content has infiltrated learning scenarios, with negative effects gradually becoming apparent.

The academic community generally acknowledges that primary and secondary school students are still mentally and physically immature, possess weak information literacy, and lack self-discipline. When using online resources, they are prone to distraction and difficulties in screening, resulting in low self-learning efficiency (Zhong, Z.X., & Yang, L., 2002). At the same time, teachers' insufficient capabilities in online teaching, parents' lack of supervision, and imperfect resource management systems further amplify these negative effects (Zhu, Z. L., 2006). Existing studies tend to focus on single advantages and disadvantages or macro-level countermeasures, lacking a systematic analysis from the bidirectional perspective of students, parents, and teachers (Li, G. X., 2002).

Based on this, the present study is grounded in educational practice and takes Changguo Subdistrict as a case to examine the dual effects of online learning resources on the academic development of primary and secondary school students from multiple perspectives. It identifies problems and constructs practical optimization strategies to provide a reference for the high-quality development of digital education, while clearly positioning this as an exploratory case study.

Problem Statement

The proliferation of internet technology has enabled online learning resources to permeate all aspects of primary and secondary education, making them a key factor affecting students' academic development. Against the backdrop of educational digital transformation, the educational value of online learning resources is widely recognized, but the coexistence of benefits and drawbacks remains an unavoidable issue (Yang, X. M., & Zhao, X. S., 2016).

At the positive level, online learning resources are rich in content and flexible in learning modes. They can meet the differentiated and personalized learning needs of primary and secondary school students, helping them break through classroom limitations and enhance their autonomous learning abilities. At the same time, they support teachers in innovating teaching methods, enriching teaching content, and reducing teaching burdens. Additionally, they provide convenience for parents in family education and assisting their children with after-school learning (Jiang, Z. H., 2013).

At the negative level, the current online learning environment is chaotic, with resource quality varying greatly and entertainment-oriented information mixed in. Primary and secondary school students are in a critical period of physical and mental development and the formation of learning habits. They exhibit weak self-discipline, poor information discrimination skills, and low autonomous learning abilities, making them highly susceptible to distractions, internet addiction, and ineffective learning during online learning. Furthermore, most parents currently lack scientific methods for supervising online learning, with issues of either excessive laissez-faire or over-control being common. Some teachers lack proficiency in utilizing online resources and are unable to accurately select and integrate high-quality resources, thus failing to fully leverage the instructional potential of online resources (Zhu, Y. X. ,2005).

Most existing domestic studies focus on the development of online learning resources, technological optimization, or single-effect analyses. There is a lack of systematic research that considers the dual effects from the perspectives of students, parents, and teachers simultaneously, and optimization strategies for online learning in primary and secondary schools remain relatively scarce (Luo, R. G. ,2020).

Therefore, this survey focuses on the core questions: What strengths and weaknesses exist for different stakeholders in online learning scenarios? How can negative effects be mitigated and the educational value of resources maximized from these three perspectives?

Research Objectives and Significance

Research Objectives

Drawing on a review of domestic and international studies and empirical analysis, and using Changguo Subdistrict as a case study, this paper aims to achieve the following objectives: 1. Through survey data and interview results, accurately identify the specific problems and underlying causes at three levels—students' autonomous learning, parents' supervision and management, and teachers' instructional application—in the current use of online learning resources by primary and secondary school students. 2. Integrating existing research findings and practical teaching realities, formulate targeted, actionable, and scalable optimization strategies from multiple dimensions including students, parents, teachers, platform management, and school guidance.

Research Significance

Theoretical Significance

This study is grounded in the "Internet + Education" development trend, integrating existing research on online learning, digital education, and personalized learning. It breaks through the limitations of single-perspective research and constructs a new analytical framework featuring three-dimensional subjects and dual effects. At the same time, this study refines the mechanism by which online learning resources affect the academic development of primary and secondary school students, enriching the theoretical research system of digital education. To some extent, it fills the gap in current academic research on multi-stakeholder online learning optimization in primary and secondary education, providing theoretical references and a framework for subsequent research (Qian, Y. ,2015).

Practical Significance

For students, this study can guide them in establishing correct concepts of online learning, enhancing their information discrimination and autonomous learning abilities, so as to leverage strengths and avoid weaknesses and achieve academic improvement.

For parents, it can provide scientific supervision methods, addressing the problems of blind or extreme management in family education regarding internet use.

For teachers, it can help strengthen their ability to utilize digital resources, optimize online teaching models, and promote their professional development.

For schools and the education sector, the survey conclusions and optimization strategies can serve as references for schools to regulate students' online learning behaviors and build high-quality learning resource platforms. They also provide practical support for education authorities to improve the management system of online educational resources and purify the basic education online learning environment (Ma, X. N., 2021).

Survey Design

Survey Objectives

The core objective of this survey is to understand the current status of online learning resource usage among primary and secondary school students and to clarify the dual effects of these resources on their academic development. From the three dimensions of student usage behavior, parental supervision models, and teacher instructional application, we aim to accurately identify existing problems, uncover their underlying causes, and ultimately formulate optimization pathways suitable for families, schools, and students, providing empirical evidence for regulating students' online learning and improving the quality of digital learning (Peng, W. H., Yang, Z. K., Tu, S. Q., & Li, N., 2007).

Survey Scope

The survey covers students from three educational stages—primary school, junior high school, and senior high school—including students of different grades and academic levels, as well as their corresponding parents and teachers.

Survey Subjects

1. Students from primary, junior high, and senior high schools in Changguo Subdistrict;
2. Corresponding parents of these students;
3. Teachers from these schools.

Survey Content

Centered on the core framework of "dual effects and three-dimensional subjects," the survey content is divided into four major sections: positive effects investigation, negative effects investigation, existing problems investigation, and optimization needs investigation, comprehensively covering the core research content.

Survey Methods

This study adopts a multi-method empirical research model, combining literature review, questionnaire survey, in-depth interview, and inductive analysis to ensure scientific rigor and comprehensiveness.

LITERATURE REVIEW METHOD

Systematically review relevant papers and research reports on online learning resources, academic development of primary and secondary school students, digital education, and online teaching optimization from databases

such as CNKI. Synthesize the definitions, types, functions, impact mechanisms, and optimization pathways of online learning resources to provide theoretical support for this research.

Questionnaire Survey Method

This study designed separate questionnaires for students, parents, and teachers, using a Likert five-point scale format, with options ranging from "Strongly Disagree" to "Strongly Agree," assigned scores from 1 to 5 respectively (see Tables 1, 2, and 3 below). The items in the questionnaires were primarily adapted from established scales in domestic research on online learning and digital education, with modifications and deletions to fit the core framework of "dual effects and three-dimensional subjects." The student version was mainly informed by the Online Learning Status Questionnaire by Chen Qingqing, the College Students' Online Learning Engagement Scale by Li Ran, the Middle School Students' Online Course Learning Quality Questionnaire by Lin Shuji et al., as well as research on high school students' online learning engagement and primary and secondary school students' online self-efficacy. The parent version drew on questionnaire frameworks from studies on family supervision and parental involvement in online learning environments. The teacher version referenced questionnaire frameworks from studies on teachers' attitudes toward online teaching and the application of digital teaching resources. After retaining core dimensions and removing redundant items, the final versions included 20 items for students, 19 for parents, and 20 for teachers. A small-scale pre-test was conducted to further refine the wording, ensuring that all three groups could accurately understand the items. Items 8-14 in the student questionnaire, items 8-13 in the parent questionnaire, and items 9-14 in the teacher questionnaire were negatively worded and were reverse-coded during the analysis to ensure that higher scores consistently represented more favorable perceptions.

Table 1: Student Questionnaire

Item No.	Item Content
1	Online learning resources can help me make up for knowledge points I didn't understand in class.
2	Online micro-lectures, question banks, and popular science content can broaden my knowledge and meet my personalized learning needs.
3	Independently searching for online learning materials can enhance my independent thinking and autonomous learning abilities.
4	Online playback and Q&A features are convenient for me to review key and difficult points repeatedly.
5	Diversified online learning formats can enhance my learning initiative.
6	When encountering learning difficulties, online resources can provide multiple problem-solving approaches and inspire thinking.
7	Online learning is not constrained by time or place, making it convenient to use fragmented time for filling gaps.
8	During online learning, short videos, games, and entertainment pop-ups easily distract my attention.
9	The quality of online learning resources varies greatly, but I can quickly identify high-quality learning content.
10	When using electronic devices for online learning, I rarely experience eye strain or mental fatigue.
11	I do not use the pretext of online learning to browse entertainment videos or play online games.
12	Fragmented online content does not reduce my ability to engage in long periods of deep focused learning.

13	Some logically confusing online learning content does not interfere with my ability to build a coherent subject knowledge system.
14	I have never been troubled by the efficiency issues of online learning.
15	I hope teachers can systematically teach us methods for screening legitimate and high-quality online learning resources.
16	Online learning platforms should add a youth focus mode to reduce distractions from entertainment content pushes.
17	If schools uniformly integrate authoritative learning resources, it can reduce the time I spend blindly searching for materials.
18	Parents completely banning the use of electronic devices is the best way to manage my online learning.
19	I am willing to work with my parents to establish a fixed online learning schedule and reasonably control my online time.
20	I hope my parents can supervise and guide me in using online learning resources with companionship.

Table 2: Parent Questionnaire

Item No.	Item Content
1	Online learning resources can help my child fill gaps after class.
2	Enrichment-oriented online resources can broaden my child's extracurricular knowledge and interests.
3	Online synchronous courses and Q&A content can compensate for my own limited ability to tutor my child in certain subjects.
4	Tiered online exercises can specifically target my child's weak areas in various subjects.
5	Online learning helps cultivate my child's habit of independently searching for materials and planning study.
6	Free high-quality online learning resources can reduce the financial burden of extracurricular tutoring.
7	The course replay feature is convenient for my child to review weak knowledge points repeatedly.
8	My child is highly self-disciplined during online learning and is not easily distracted by short videos or online games.
9	Although there are issues with fragmented and low-quality online resources, they do not disrupt my child's systematic learning pace.
10	I have the professional judgment to accurately select high-quality learning resources suitable for my child.
11	Using electronic devices for learning does not harm my child's eyesight or physical and mental health.
12	My child does not use learning as a pretext for entertainment online; I can distinguish the actual purpose in real time.
13	The existence of fragmented online content does not reduce my child's patience for deep thinking and focused problem-solving.
14	I hope the school can offer parent education classes to teach scientific methods for guiding children's online learning.
15	Online education platforms need to improve youth time limits and automatic blocking functions for inappropriate content.

16	Relying solely on parental control cannot fully address all the drawbacks of online learning.
17	I expect subject teachers to regularly recommend high-quality online learning resources suitable for the grade level.
18	I am willing to cooperate with the school to establish a home-school collaboration mechanism to uniformly regulate children's online learning behaviors.
19	I hope platforms can set up dedicated learning zones to reduce entertainment pop-up distractions on learning pages.

Table 3: Teacher Questionnaire

Item No.	Item Content
1	Online learning resources enrich classroom presentation formats and enhance students' interest in learning.
2	Tiered micro-lectures and online exercises support differentiated instruction, catering to both struggling and advanced students.
3	Online courseware, question banks, and micro-lectures can reduce the workload of repetitive lesson preparation for teachers.
4	Online resources can be used for after-school consolidation and error review, extending the effectiveness of offline classroom teaching.
5	Online enrichment materials can supplement real-life knowledge and improve the classroom teaching content system.
6	Online Q&A channels facilitate timely answers to students' questions after class, improving tutoring efficiency.
7	Digital resources support blended teaching, compensating for the limitations of offline-only classrooms.
8	With on-site supervision, the quality of students' home-based online learning can be ensured.
9	Primary and secondary school students have the ability to discern information and are not easily misled by fragmented or non-standard learning resources.
10	Parents have a high level of digital supervision capability, and home-school management standards for online learning can be unified.
11	Existing online teaching resources are already fully sufficient to meet all my daily classroom teaching needs.
12	I have strong digital operation skills for integrating and processing high-quality online teaching resources.
13	The existence of a large number of homogenized and low-quality online resources does not increase my workload in screening teaching materials.
14	Students rarely rely on online answer-searching, which does not weaken their ability to think independently and solve problems.
15	Schools should establish a unified high-quality online learning resource repository for all teachers and students.
16	Schools should regularly conduct digital teaching training to enhance teachers' ability to integrate and utilize resources.
17	Current online learning behaviors of students are already very standardized and do not require additional optimization measures.
18	Classroom teaching should include specific content to guide students in screening and effectively using online resources.

19	Regular home-school communication channels should be established to unify management standards for online learning.
20	Teaching research teams should regularly screen and update standardized online resources aligned with the curriculum standards and grade levels.

In-depth Interview Method

Semi-structured, one-on-one interviews were conducted with a subset of participants to explore underlying issues, subjective feelings, and practical difficulties not captured by questionnaire data. A total of 18 interviews were conducted: 6 students (2 from primary, 2 from junior high, and 2 from senior high), 8 parents (selected based on their children's different grade levels and varying levels of self-reported online learning engagement), and 4 teachers (representing different subject areas). Participants were recruited through convenience sampling during the field visits. The interviews followed a semi-structured guide with open-ended questions exploring experiences with online learning, perceived advantages and disadvantages, supervision challenges, and suggestions for improvement. Each interview lasted approximately 20-30 minutes and was audio-recorded with the participant's verbal consent. All recordings were transcribed verbatim, and data were analyzed using thematic analysis, which involved coding the transcripts, grouping codes into potential themes, and reviewing and refining these themes to ensure they accurately represented the data. To enhance trustworthiness, two researchers independently coded a subset of the transcripts, and the results were compared to reach a consensus (researcher triangulation). Ethical considerations were addressed by obtaining informed consent from all adult participants and from parents/guardians for student participants, ensuring anonymity and confidentiality of all data, and allowing participants to withdraw at any time.

Inductive Analysis Method

Collected questionnaire data, interview materials, and literature findings were integrated and summarized. Core conclusions were categorized from the positive/negative and three-perspective framework, problems were identified, and optimization approaches were synthesized.

Survey Implementation Process

This survey on the dual effects of online learning resources on the academic development of primary and secondary school students was conducted over seven days. The process followed a structured sequence: problem identification → questionnaire design → field visits → questionnaire distribution → data compilation → report writing. The specific implementation was as follows:

Day 1: Questionnaire Design. Based on daily observations and literature reviews, the research team identified that online learning resources have dual effects on students' academic development and that students, parents, and teachers hold significantly different perceptions. Drawing on established scales and questionnaire frameworks, a comprehensive survey questionnaire was designed. It addressed both the positive value and negative drawbacks of online resources and included differentiated questions for the three groups, ensuring comprehensive and targeted content.

Days 2 to 5: Field Visits and In-depth Interviews. The survey was conducted in various communities within Changguo Subdistrict, with face-to-face interviews conducted by group and level. Day 2 focused on primary school students to understand their basic usage and perceptions. Day 3 interviewed junior and senior high school students, focusing on learning efficiency, existing problems, and real experiences of online learning. Day 4 interviewed parents, exploring their supervision methods, concerns, and suggestions for improvement. Day 5 interviewed teachers, gathering their perspectives on the dual effects of online resources on classroom teaching

and student autonomy, as well as optimization needs. These interviews systematically collected authentic views from different groups.

Day 6: Simultaneous Online and Offline Questionnaire Distribution. Based on the initial interviews, the team distributed questionnaires offline in public areas with high foot traffic and diverse resident populations within Changguo Subdistrict. Simultaneously, online distribution was conducted through internet platforms to expand sample coverage and ensure representativeness.

Day 7: Data Organization, Analysis, and Report Writing. After excluding invalid questionnaires, the team consolidated interview records and returned questionnaires. They conducted categorical statistics, comparative analyses, and summarized the dual effects. Based on multi-stakeholder survey views, they identified key issues in the current use of online learning resources and completed the final research report, proposing optimization pathways suitable for students, parents, teachers, schools, and platforms.

Data Analysis and Organization

A total of 76 questionnaires were collected. After excluding 3 invalid questionnaires with response times under 30 seconds or with excessive missing data, 73 valid questionnaires were included in the final analysis. These consisted of 36 student responses, 32 parent responses, and 5 teacher responses.

Due to the small and non-random nature of the sample, the analysis primarily employed descriptive statistics (means and standard deviations) to summarize the perceptions of the respondents. Inferential statistics (e.g., significance tests) were not conducted as the sample size, particularly for teachers, does not meet the assumptions required for such tests. The five teacher responses are therefore treated as exploratory qualitative/contextual evidence to complement the student and parent data, rather than as a basis for quantitative generalization. All negatively worded items in the questionnaires were reverse-coded before analysis to ensure that for all items, a higher score indicated a more positive perception (e.g., less distraction, better self-discipline).

The following sections present the findings systematically in terms of reliability and validity testing, descriptive statistics, and difference analysis.

Reliability Analysis

Given the different natures of the three groups, reliability (Cronbach's α) was calculated separately for each questionnaire. However, due to the limited sample size, the following overall alpha values are provided as a general reference for internal consistency. The Cronbach's α coefficient for the student version was 0.820, and for the parent version was 0.893, both above 0.8. This indicates high internal consistency and stable, reliable measurement results. The teacher version had an α of 0.726, which, given the very small sample ($n=5$), is reported only for descriptive purposes and, as stated, is not used to support formal conclusions.

Table 4: Summary of Reliability for Each Scale

Scale	Sample Size	Cronbach's α
Student	36	0.820
Parent	32	0.893
Teacher	5	0.726

Note: For the teacher version, due to the limited sample size, the α value is provided for reference only and does not support quantitative generalization.

Overall, the student and parent questionnaire demonstrated acceptable internal consistency, providing a basis for valid data support for subsequent descriptive analysis.

Positive Effects of Online Learning Resources

Based on item scores, the positive effects of online learning resources on the academic development of primary and secondary school students were consistently recognized by all three groups, primarily reflected in the following aspects.

First, the function of filling gaps and consolidating key/difficult points was most prominent. For the student version, the item "Online learning resources can help me make up for knowledge points I didn't understand in class" had a mean score of 4.31 (SD = 0.82), and "Online playback and Q&A features are convenient for me to review key and difficult points repeatedly" had a mean of 4.28 (SD = 0.85). For the parent version, "Online learning resources can help my child fill gaps after class" scored 4.41 (SD = 0.71). This indicates that the "replayable" nature of online resources effectively compensates for the one-time, irreversible nature of classroom teaching, serving as a crucial supplement for after-class digestion and absorption.

Second, the effects on knowledge enrichment and personalized learning were notable. For the student version, "Online micro-lectures, question banks, and popular science content can broaden my knowledge" scored 4.53 (SD = 0.74), and "When encountering learning difficulties, online resources can provide multiple problem-solving approaches and inspire thinking" scored 4.47 (SD = 0.70). For the parent version, "Enrichment-oriented online resources can broaden my child's extracurricular knowledge and interests" scored 4.38 (SD = 0.79). This shows that online resources hold unique value in broadening horizons, stimulating interest, and inspiring thinking.

Third, they alleviate the pressure of family education to some extent. For the parent version, "Free high-quality online learning resources can reduce the financial burden of extracurricular tutoring" scored 4.16 (SD = 0.88), and "Online synchronous courses and Q&A content can compensate for my own limited ability to tutor my child in certain subjects" scored 4.22 (SD = 0.87). For parents with limited tutoring ability, online resources serve as a supplementary aid, lowering the economic barrier to extracurricular enrichment.

Negative Effects of Online Learning Resources

Negative effects were also clearly reflected in the data, mainly concentrated in three areas: distraction, vision damage, and insufficient self-discipline.

First, the issue of distraction is relatively common. For the student version (after reverse-coding), the item "During online learning, short videos, games, and entertainment pop-ups easily distract my attention" had a mean of 3.58 (SD = 1.18), with 61.1% of students selecting "Agree" or "Strongly Agree." For the parent version, "My child is highly self-disciplined during online learning and is not easily distracted by short videos or online games" had a mean of only 2.94 (SD = 1.21), with over half of parents expressing disagreement. There is a noticeable gap between the two sets of data: students tend to affirm their own self-discipline, while parents generally remain skeptical.

Second, concerns about eye strain and physical health are significant. For the student version, "When using electronic devices for online learning, I rarely experience eye strain or mental fatigue" had a mean of only 2.81 (SD = 1.28), with 58.3% of students indicating "Disagree" or "Strongly Disagree." The corresponding parent item had a mean of 2.91 (SD = 1.22). Vision problems are a near-universal concern among parents and are one of the most difficult negative consequences to address technologically.

Third, the erosion of deep learning by fragmented content is becoming apparent. For the student version, "Fragmented online content does not reduce my ability to engage in long periods of deep focused learning" had a mean of 3.33 (SD = 1.15), and "I have never been troubled by the efficiency issues of online learning" had a mean of only 2.92 (SD = 1.22). The corresponding parent item had a mean of 2.88 (SD = 1.21). The data suggest that fragmented information acquisition is subtly affecting students' capacity for deep concentration and systematic thinking, at least from the perceptions of the respondents.

Cognitive Differences Among the Three Groups

Comparing the data from students, parents, and teachers reveals notable cognitive discrepancies on several key issues.

First, there is a significant generational gap in self-discipline assessment. The student item "I do not use the pretext of online learning to browse entertainment videos or play online games" scored 3.58 (SD = 1.20), while the parent item "My child does not use learning as a pretext for entertainment online" scored only 2.59 (SD = 1.24), and the teacher item "Primary and secondary school students have the ability to discern information and are not easily misled by fragmented or non-standard learning resources" scored only 2.80 (SD = 1.30, n=5). Students tend to overestimate their self-discipline, while parents and teachers remain skeptical. This discrepancy can lead to parent-child conflicts—students feel they are studying seriously, while parents believe they are just playing on their phones.

Second, there is a mismatch between self-perception and others' evaluation regarding resource screening ability. The student item "The quality of online learning resources varies greatly, but I can quickly identify high-quality learning content" scored 3.61 (SD = 1.13); the parent item "I have the professional judgment to accurately select high-quality learning resources suitable for my child" scored 3.25 (SD = 1.22); and the teacher item "The existence of a large number of homogenized and low-quality online resources does not increase my workload in screening teaching materials" scored only 2.40 (SD = 1.14, n=5). Both students and parents tend to overestimate their screening abilities, while teachers feel the burden of selection most acutely.

Third, teachers hold the most conservative evaluation of the current state of online learning. The item "With on-site supervision, the quality of students' home-based online learning can be ensured" scored 3.80 (SD = 1.10, n=5); "Parents have a high level of digital supervision capability, and home-school management standards for online learning can be unified" scored only 2.20 (SD = 1.30, n=5); and "Current online learning behaviors of students are already very standardized and do not require additional optimization measures" scored only 1.60 (SD = 0.89, n=5). It is evident that teachers are the most critical of the existing online learning ecosystem, believing that students' self-discipline, parents' supervision, and institutional arrangements all fall short of the ideal.

Consensus on Optimization Needs

Although the three parties differ in their assessment of the current situation, they show a high degree of consensus on improvement directions.

For the student version, "I hope teachers can systematically teach us methods for screening legitimate and high-quality online learning resources" scored 4.44 (SD=0.77); "Online learning platforms should add a youth focus mode to reduce distractions from entertainment content pushes" scored 4.53 (SD=0.70); and "If schools uniformly integrate authoritative learning resources, it can reduce the time I spend blindly searching for materials" scored 4.42 (SD=0.84). Students clearly express a need for external norms and institutional support.

For the parent version, "I hope the school can offer parent education classes to teach scientific methods for guiding children's online learning" scored 4.72 (SD=0.63); "Online education platforms need to improve youth time limits and automatic blocking functions for inappropriate content" scored 4.75 (SD=0.57); "I expect subject teachers to regularly recommend high-quality online learning resources suitable for the grade level" scored 4.69 (SD=0.64); and "I am willing to cooperate with the school to establish a home-school collaboration mechanism" scored 4.66 (SD=0.65). While acknowledging their limited supervisory capacity, parents place high expectations on school intervention and technological controls.

For the teacher version, "Schools should establish a unified high-quality online learning resource repository for all teachers and students" scored 4.80 (SD=0.54,n=5); "Schools should regularly conduct digital teaching training to enhance teachers' ability to integrate and utilize resources" scored 5.00 (SD=0.00,n=5); "Classroom teaching should include specific content to guide students in screening and effectively using online resources" scored 5.00 (SD=0.00,n=5); and "Regular home-school communication channels should be established to unify management standards for online learning" scored 4.80 (SD=0.54,n=5). Teachers' most urgent needs center on school-level resource integration, professional training, and institutional standardization.

Overall, the three parties converge on the optimization direction: relying solely on individual self-discipline cannot solve the current problems. It is necessary to build a collaborative mechanism involving "platform technology restrictions + school-level unified screening + teacher professional guidance + parental companion supervision."

CONCLUSIONS AND RECOMMENDATIONS

Research Conclusions

Through questionnaires and interviews with students, parents, and teachers of primary and secondary schools in Changguo Subdistrict, this study comprehensively examined the dual effects of online learning resources on students' academic development and reached the following conclusions.

The positive role of online learning resources has become deeply integrated into daily learning. Data indicate that online resources play a significant role in after-class gap-filling, broadening knowledge horizons, and supporting personalized learning, while also reducing the educational burden on families. Students, parents, and teachers all affirm the educational value of online resources.

Negative effects cannot be overlooked, particularly in attention distraction, vision damage, and the weakening of deep thinking abilities. The immediate stimulation of entertainment content conflicts with the sustained concentration required for deep learning. Primary and secondary school students are in a critical period for developing attentional habits, and frequent fragmented information input is affecting their capacity for systematic thinking and deep focus. Vision problems are the most acute concern for parents.

Insufficient self-discipline among students and the lack of external supervision amplify the negative effects. Data show that students generally overestimate their self-discipline, while parents and teachers remain skeptical. This cognitive gap makes it difficult to implement precise regulatory measures. Students lack internal constraints, parents lack scientific methods, and teachers lack institutional support, resulting in insufficient tripartite collaboration.

The solution lies not in "prohibition" or "laissez-faire" but in systematic governance through multi-stakeholder collaboration. Students, parents, and teachers show high consensus on optimization directions, all recognizing the need for a combined force of platform technology restrictions, school-level unified screening, teacher

professional guidance, and parental companion supervision to create a standardized, safe, and efficient digital learning environment for primary and secondary school students.

Optimization Recommendations

Student Level

Data indicate that students often have vague goals and low efficiency when using online resources. The item "I have never been troubled by the efficiency issues of online learning" had a mean score of only 2.92 (SD=1.22), and interviews revealed students admitting, "I felt I understood after seeing the answer, but when I closed the phone, I couldn't do it again." This suggests that many students equate "watching" with "learning," lacking clear verification standards. It is recommended that before each online learning session, students clearly identify what problem they want to solve. After learning, they should test their understanding by asking: "Can I independently solve a related problem?" or "Can I explain the solution to someone else?" This helps convert "input" into "output."

Parent Level

Parent data show that parents know companionship and negotiation are more effective than monitoring, but interviews revealed that actual practices still revolve around "occasionally peeking through the door." A mother's remark was telling: "If I watch over him, he says I don't trust him; if I don't, he sneaks in playtime." The solution is not a binary choice but to shift supervision to pre-learning agreements. Before the child starts learning, both parties agree on study duration, break times, and whether videos can be watched during breaks. Once agreed, write it down and place it on the desk. This reduces the child's resistance during execution. If issues arise, adjust the rules together. This approach was validated by several students and parents; although it requires time for communication, it is ultimately more effective and less exhausting than the "cat-and-mouse" style of supervision.

Teacher Level

The teacher item "Classroom teaching should include specific content to guide students in screening and effectively using online resources" received a mean score of 5.00 (SD=0.00, n=5), the highest among all teacher items, indicating teachers recognize the need for specialized training in online learning skills. However, interviews revealed that almost no teachers explicitly teach "how to learn online" in class. Yet data show that students' discernment ability is far weaker than they believe. This gap indicates that students lack the necessary judgment, and schools have not incorporated such training into the curriculum. It is recommended that at least one to two lessons be arranged each semester to teach three basic skills: (1) how to judge whether a resource is reliable; (2) how to find explanations that match their comprehension level for the same knowledge point; and (3) how to consciously manage attention and actively block irrelevant information during learning.

School Level

The direction of "schools uniformly integrating authoritative learning resources" scored high across all three questionnaires, indicating widespread expectation for schools to act as gatekeepers. However, multiple teachers in interviews reported that current school practices typically amount to "recommending a few websites" or "providing a resource list," with little substantive screening or integration. It is recommended that subject teaching research groups take the lead in compiling a set of online resource packages aligned with textbook chapters. This package should include which video explanations are clear, which question banks are suitable for tiered practice, and which enrichment materials can supplement classroom content. These resources should be centrally stored on the school platform. This approach ensures resource quality, reduces repetitive work for teachers, and frees parents from the need to search blindly online.

Platform and Industry Level

The parent item "Online education platforms need to improve youth time limits and automatic blocking functions for inappropriate content" scored 4.75 (SD=0.57), and the student item "Platforms should add a youth focus mode to reduce distractions from entertainment content pushes" scored 4.53 (SD=0.70). Both sets of data point to a common issue: both students and parents regard platform-level technological control as a core means to address the drawbacks of online learning. However, interviews uncovered a neglected detail—many parents do not even know that phones and tablets have a youth mode, let alone how to set it up. Therefore, platforms should first make existing features more visible and user-friendly, such as forcing users to complete setup upon the first opening of the app. Second, platforms should re-examine the product logic of learning apps. Multiple students admitted to "browsing off-topic content after studying for a while." This cannot be entirely attributed to lack of self-control, as many learning platforms' recommendation algorithms are designed to "maximize user dwell time." Learning apps should completely cut off the recommendation chain for entertainment content in learning mode, making the default interface the focus mode rather than requiring users to manually turn on the "focus switch."

Research Limitations and Future Directions

This study, while providing valuable insights, has several limitations that must be acknowledged. First and foremost, the sample size is small (N=73, with only five teachers) and was drawn from a single subdistrict (Changguo) using a convenience sampling strategy. This limits the generalizability of the findings to the broader population of primary and secondary school students, parents, and teachers. The teacher data, in particular, should be viewed as exploratory and contextual rather than statistically representative. Second, the study relied on self-reported perceptions, which are subject to social desirability bias and may not fully reflect actual behaviors. For example, students may over-report their self-discipline, while parents and teachers may hold more critical views. Third, the cross-sectional design of the survey captures perceptions at a single point in time and cannot establish causal relationships between online resource use and academic outcomes such as reduced attention or weakened deep learning. Claims about these effects are based on respondent perceptions and should be interpreted as such.

Future research should aim to recruit a larger, more diverse, and randomly selected sample from multiple regions to enhance the generalizability and statistical power of the findings. Longitudinal studies are needed to track changes in students' online learning behaviors and academic development over time and to better understand the causal mechanisms underlying the observed perceptions. Additionally, more objective measures, such as actual learning analytics data or academic performance records, could be incorporated alongside self-reports to provide a more comprehensive picture. Finally, intervention studies that implement and test the proposed optimization strategies would be valuable to assess their effectiveness in real-world educational settings.

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