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Students' Creative Thinking Cultivation in Senior High School English Teaching in the Context of "Internet+"

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Abstract

This study investigates the current state of creative thinking cultivation in Chinese senior high school English teaching in the context of "Internet+", focusing on the perspectives of both teachers and students. Using a combination of questionnaire surveys and semi-structured interviews, an empirical study was conducted involving 118 English teachers and 205 students from various senior high schools in Zhejiang Province, China. The results indicate that teachers generally recognize the importance of fostering creative thinking and acknowledge the empowering role of Internet technologies in enhancing the fluency, flexibility, originality, and elaboration of students' creative thinking. However, several significant challenges persist in practice: insufficient teacher competence in technology application, a decline in innovative practices in senior grades due to exam-oriented pressure, and low levels of creative output and self-efficacy among students. Furthermore, excessive use of Internet technologies may lead to over-reliance and restricted creative thinking. Based on these findings, this study proposes strategies such as tiered teacher training, deeper integration of technology into teaching scenarios, and the establishment of resource and evaluation support systems to systematically enhance the effectiveness of creative thinking cultivation in senior high school English teaching within the "Internet+" environment.

Keywords

Cultivation of Creative Thinking, Senior High School English Teaching, Internet+

1. Introduction

Innovation is not only a new productive force for national development and a key

driver for enhancing comprehensive national strength, but also an essential personal competency in the Education 4.0 era (Wang et al., 2020). However, results from the PISA assessments indicate that Chinese students' learning efficiency, collaborative skills, and problem-solving abilities—dimensions closely related to creative thinking—remain at a middling level (Geng et al., 2020). For adolescents, the improvement of innovation capability depends fundamentally on the cultivation of creative thinking, and the senior high school stage represents a "golden period" for the development of students' thinking. The "General Senior High School English Curriculum Standards" in China (Ministry of Education, 2020) points out that in addition to focusing on the cultivation of students' language abilities, senior high school English courses should also attach importance to the development of students' thinking qualities, requiring students to express their viewpoints creatively and possess the awareness of multi-dimensional thinking and the ability of creative thinking. What's more, information technology has a revolutionary impact on the development of education and must be given high attention. The huge pace of Internet informatization nowadays has brought both opportunities and challenges to the cultivation of students' creative thinking. On the one hand, the vast and abundant Internet resources provide more materials for English teaching. On the other hand, the wide range and diversity of Internet+ technology also offer convenience for enlivening the classroom atmosphere and activating students' thinking. However, the convenience of information acquisition and technology may lead students to overly rely on the Internet, thereby weakening their ability to explore and solve problems, and ultimately having a negative impact on their independent thinking and innovation capabilities. For teachers, they should give full play to the supporting and service functions of modern educational technology for teaching and learning, and ensure that the application of new technologies such as virtual reality, artificial intelligence and big data is conducive to the improvement of students' creative thinking.

Therefore, it is of great practical significance to conduct an investigation and research on the current situation of Chinese senior high school English teachers' use of Internet+ technology in teaching and their understanding and practice of cultivating creative thinking, because only on the basis of in-depth investigation of these issues, can we fully understand the actual situation of current senior high school English teachers in cultivating students' creative thinking and the influence of "Internet+" technology on the cultivation of creative thinking, and provide empirical data and specific suggestions for enhancing students' creative thinking under the background of "Internet+".

2. Literature Review

2.1. Internet+

"Internet+" represents a new form of education in the information age. It is the most effective way for Internet technology and Internet thinking to reintegrate various resources, achieve a more efficient allocation of these resources, and en-

hance product quality and service convenience (Chen, 2016). "Internet+" technology applied to senior high school English teaching is a student-centered model that aims to improve learning and promote cognitive development. It utilizes new technologies and media, such as multimedia, the Internet, artificial intelligence, social media, and learning analytics. By creating task-based learning environment, it combines various teaching and learning resources to encourage students to construct knowledge and engage in deep learning through inquiry-based methods, ultimately fostering the acquisition of knowledge and the development of abilities (Jiang, 2017).

The "Internet + Education" model, which integrates the Internet with traditional education, aims to update educational concepts, expand the breadth of learning resources but also diversify teaching methods and reconstruct the educational environment. It creates conditions for truly implementing student-centered autonomous learning and stimulating critical thinking, thereby improving teaching efficiency and quality, and ultimately achieving the goal of innovative education (Feng, 2023). For instance, Internet platforms like smart teaching platforms and online digital resource libraries provide opportunities for personalized learning. Short video and image-text platforms such as TikTok and REDnote offer students innovative ways to participate through visual and interactive content, stimulating diverse perspectives for exploration. Also, the widespread use of Seewo interactive whiteboards in classrooms has increased classroom participation and opportunities for creative expression. These platforms support real-time interaction through gamified activities and collaborative tasks, encouraging students to apply language skills in context, transforming passive learning into active participation, and stimulating creativity through practical exploration.

In addition, the innovative application of Generative Artificial Intelligence (GAI) in the field of education has created technological possibilities for integrating active learning with thought-provoking classrooms. During senior high school English teaching in the context of "Internet+", Generative Artificial Intelligence (GAI) tools, with their dynamic generation, instant interaction, and multimodal output capabilities, offer innovative pathways for cultivating the fluency, flexibility, originality, and elaboration of creative thinking. For example, GAI quickly generates diverse language materials, solving the traditional classroom problems of slow idea generation and limited interaction, thereby enhancing the fluency of creative thinking. GAI's multimodal conversion capability also provides a new medium for training thinking flexibility. Additionally, guided by a teacher's critical reconstruction, GAI inspires originality by offering unconventional ideas that break students' conventional thought patterns. For fostering elaboration, GAI's real-time feedback helps students refine their thinking during language practice. For instance, writing tools like Grammarly not only highlight grammatical errors but also suggest "expandable details", guiding students to improve their expression and organization. In conclusion, in GAI-assisted instruction, students, teachers, peers, and GAI tools form a learning community (Gu et al., 2025), which pro-

motes the development of teaching activities and a deep construction of the unknown, thereby fostering higher-order thinking in students.

2.2. Creative Thinking

Creative thinking is a mental process with divergence at its core (Guilford, 1959), and it consistently maintains distinct qualities of "openness" and "originality." "Openness" refers to the ability to "broaden one's horizons" and "unleash one's creativity" during the thinking process. "Originality" points to the novel and unique nature of the thoughts produced, which is the fundamental characteristic that distinguishes creative thinking from conventional thinking (Zhu & Lin, 1986). There are also scholars (Zhang & Bai, 2006) who summarized the meaning of creative thinking as discovery, invention, and development—that is, discovering old things that have not yet been recognized, inventing new things that do not yet exist, and developing existing known outcomes. This provides a comprehensive explanation of the essence of creative thinking.

From the perspective of classroom instruction, Lan and Zheng (2024) define creative thinking as a way of thinking that generates new ideas and new knowledge. Its characteristics include going from nothing to something, from something to many things, from old to new, and from one point to another. It does not seek absolute accuracy but rather a diversity of information, with a focus on quantity often outweighing a focus on quality. Therefore, based on the different ways teachers' classroom discourse is presented, creative thinking can be categorized into three types: inferential thinking, design thinking, and constructive thinking.

2.3. Students' Creative Thinking Cultivation in Senior High School English Teaching

For a long time, scholars from different countries have focused on how to cultivate and test students' creative thinking in the classroom teaching. In his Torrance Tests of Creative Thinking, American psychologist E. Paul Torrance (1966) clearly proposed that the core metrics for evaluating creative thinking can be divided into four dimensions: fluency, flexibility, originality, and elaboration. Fluency refers to generating many different ideas and solutions, in other words, thinking more. Flexibility is the ability to view problems from multiple perspectives and to think outside the box—that is, thinking differently. Originality involves producing unique and novel ideas or insights, in short, thinking new. Elaboration means delving into details and developing initial ideas into more complete and intricate ones, simply put, thinking deeply. The Torrance Tests have become the foundational framework for many scholars to construct their own creative thinking tests. They have been translated into over 35 languages and used in more than 2,000 studies, making them the most cited creative thinking test.

In addition, Scholars have proposed numerous training methods for fostering creative thinking. Osborn (1951) introduced Brainstorming, which uses group thinking and the collision of ideas to spark creative thought. Crawford (1954) had

students first list the various attributes of a problem or object they were studying and then propose multiple ways to improve those attributes, thereby helping students develop innovative thinking in their English language learning. Chen (1999) proposed the ATDE (Asking, Thinking, Doing, Evaluation) creative thinking teaching method, which integrates creative thinking training into every stage of classroom instruction. Qiu (2019) used a case study approach to research English teaching methods that cultivate students' creative thinking, focusing on aspects like fluency and flexibility. These studies show that scholars consistently emphasize the relationship between teaching activities and the enhancement of students' creative thinking abilities, indicating that purposeful and effective teaching strategies can foster the development of students' innovative thinking. Scholars from different countries focus on encouraging students to use language creatively to express ideas and solve problems, thereby developing their creativity. In contrast, Chinese scholars place a greater emphasis on the crucial role of the teacher in the development of students' creative thinking.

However, fostering creative thinking is challenging with traditional, step-by-step classroom instruction alone. Teachers must leverage modern information technology to open vast learning spaces for students to promote personalized learning (Shang, 2013). This can include using generative AI tools like ChatGPT to assist with creative ideation during the writing process, utilizing multimedia tools like CapCut to externalize creative ideas, and facilitating the collision of thoughts through collaborative platforms such as Tencent Docs. Granic & Lamey (2000) suggested that the self-organizing nature of the Internet can lead to four changes in a user's thinking patterns: a shift from elemental to a sense of illusion, the development of situational critical thinking skills, an increase in thinking fluidity, and the development of a sense of efficacy. George Siemens (2006) also pointed out that while Internet technology has made knowledge abundant, it has also led to the half-life of knowledge, imposing new demands on people's cognitive abilities, critical spirit, and innovative capabilities.

So, what is the current level of attention and emphasis among Chinese senior high school English teachers regarding the cultivation of students' creative thinking in the context of "Internet+"? What are the actual practices and potential impacts of using Internet technology in the classroom to empower students' innovative thinking? Given that teachers are the leading force in senior high school English education and students are the primary subjects of creative thinking development, this study will focus mainly on senior high school English teachers, supplemented by students' feedback. It will investigate the current state of creative thinking cultivation in senior high school English teaching under the "Internet+" background. The research design proposes to use questionnaires and interviews to understand the importance Chinese teachers place on fostering creative thinking in senior high school English instruction. It aims to identify urgent problems that need to be addressed and provide a rationale for the "Internet+" transformation of thinking-oriented English classrooms.

3. Research Design

3.1. Research Questions

This study is designed primarily with quantitative analysis, supplemented by qualitative interview analysis and student questionnaire feedback. It references the dimensional definitions of creative thinking tests proposed by Torrance (1966). The goal is to understand the current acceptance and practical application of internet+ technology by Chinese senior high school English teachers in fostering students' creative thinking. The study aims to address three main questions:

(1) What is the level of attention and importance teachers place on integrating "Internet+" into teaching and cultivating creative thinking?

(2) How do teachers cultivate creative thinking in their instruction within the context of "Internet+"?

(3) What are the effects and challenges of using "Internet+" to foster students' creative thinking in Chinese senior high school English teaching?

3.2. Research Instruments

This study will be conducted using a combination of questionnaires and semi-structured interviews. The teacher questionnaire consists of two parts. The first part includes information such as gender, education level, years of teaching experience, and the grade level taught. The second part covers dimensions like teachers' perceptions and practices regarding the integration of "Internet+" into senior high school English instruction for creative thinking development, as well as the effects and challenges encountered. The full questionnaire includes 3 multiple-choice questions and 14 single-choice questions, with 10 questions using a 5-point Likert scale. Scores on the Likert scale range from 5 to 1, with higher scores indicating a stronger understanding or higher level of implementation in the corresponding area. For convenience, the survey will be administered via an online platform (Wen juan xing), and relevant teachers will be invited to complete it honestly. SPSS 22.0 will be used for reliability and validity analysis. The statistical results show a Cronbach's α coefficient of 0.794, indicating good reliability for the questionnaire.

The student questionnaire also combines multiple-choice and single-choice questions. It primarily focuses on students' perceptions of the outcomes of their creative thinking development when teachers use "Internet+" technology to assist with instruction. This questionnaire has a Cronbach's α coefficient of 0.792, also indicating good reliability.

The semi-structured interview guide is designed around five dimensions: Perceptions of creative thinking cultivation and "Internet+" by both teachers and students, the purpose behind teachers' instructional design, the status of creative thinking cultivation, the influence of "Internet+" on fostering creative thinking and analysis of challenges and needs for cultivation. 10 front-line senior high school English teachers (with varying degrees, years of experience, and professional titles) and 10 students (of different genders, grades, and English proficiency

levels) will be interviewed and the interview content will be transcribed, statistically analyzed, and reviewed in detail to provide qualitative support for the questionnaire results.

3.3. Research Objects

The subjects participating in this questionnaire survey were 120 senior high school English teachers from various cities in Zhejiang province, China. The core group of participants came from Shaoxing, Jinhua, and Hangzhou, with a smaller number of teachers from Jiaxing, Ningbo, and a few other cities. Before distributing the questionnaires, the research team members explained the significance and importance of the study to the participating teachers in detail. A total of 120 questionnaires were distributed, and 119 were returned, for a return rate of 99.2%. After removing questionnaires with patterned or incomplete answers based on criteria like duration and completeness, a final count of 118 valid questionnaires was obtained, for an effective rate of 98.3%. According to the teacher background information collected in the first part of the questionnaire, 60.2% of the teachers have more than 10 years of teaching experience, indicating that the participating teachers are highly familiar with senior high school English instruction.

At the same time, the author also distributed 225 student questionnaires at a key senior high school in S city to supplement the teacher questionnaires and interviews. A total of 205 valid questionnaires were returned, for an effective rate of 91%. Of the 205 questionnaires, 106 were completed by male students and 99 by female students. By grade level, there were 99 students from the 10th grade, 70 from the 11th grade, and 36 from the 12th grade. The specific demographics of the participants are shown in Table 1.

Table 1. Distribution of survey respondents.

Respondents	Basic Variables		Number	Proportion (%)
Teacher	Gender	Male	23	19.5
		Female	95	80.5
	Education Background	Bachelor's Degree	87	73.7
		Master's Degree	31	26.3
	Year of Experience	Less than 3 years	16	13.6
		3 - 5 years	13	11
		6 - 10 years	18	15.2
		11 years and above	71	60.2
	Grade Taught	Grade10	39	33
		Grade11	33	28
		Grade12	46	39
	Region	Shaoxing	39	33.1
		Jinhua	32	27.1

Continued

		Hangzhou	22	18.7
		Jiaxing	11	9.3
		Ningbo	5	4.2
		Other Cities	9	7.6
Student	Gender	Male	106	51.7
		Female	99	48.3
	Grade	Grade 10	99	48.3
		Grade 11	70	34.1
		Grade 12	36	17.6

4. Results and Discussion

4.1. Teachers' Perception and Practice of "Internet + Education"

The perception of "Internet + Education" refers to teachers' general understanding of applying Internet+ technology in the educational field. Data analysis shows that the average familiarity score for teachers with "Internet+" teaching technology is 3.44. Only 6.78% of teachers are "very familiar," while 54.24% describe their familiarity as "average." Interviews revealed that most teachers feel that technologies, whether it's PowerPoint or GAI tools, are only used at a basic level. They have not received systematic training on how to operate them, so their use in actual teaching is more about being "able to use" rather than "skilled at using." Despite this, 61.87% of teachers frequently use Internet technologies or platforms in their daily instruction.

Cross-analysis exploring the influence of individual teacher characteristics on the perception and use of "Internet+" in teaching revealed several findings. Among teachers familiar with Internet teaching technology, a higher proportion held a master's degree, especially at higher levels of familiarity, indicating a positive correlation between education level and familiarity. Additionally, teachers with more years of experience scored higher on the frequency of using "Internet+" technology in their teaching compared to their less-experienced counterparts. Furthermore, a significant decrease in technology use was observed at the 12th-grade level, reflecting how the pressure of exams is squeezing out innovative practices.

To further understand how teachers use "Internet+" technology in their instruction, a multiple-choice question in the survey asked teachers about the main situations in which they use these technologies in senior high school English teaching. The teachers' responses indicated that 91.53% of teachers heavily rely on Internet technology to access and prepare teaching materials. This reflects the core role that the convenience and richness of online resources play in English instruction. 40.68% of teachers use Internet technology for classroom interaction and online collaboration. This shows that Internet technology is not only active in pre-class preparation but is also increasingly moving to the forefront and be-

coming involved in classroom applications (see Figure 1).

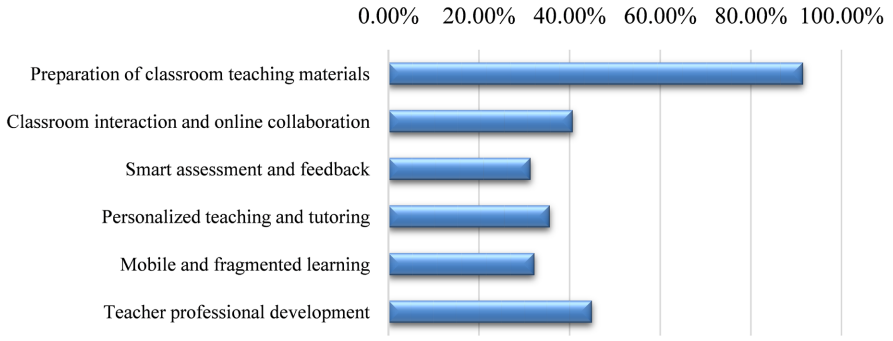

Figure 1. Teachers' applications of internet technology in senior high school English teaching.

4.2. Teachers' Perception and Practice of Integrating "Internet+" into the Cultivation of Creative Thinking

4.2.1. Teachers' Perception of Cultivating Creative Thinking

Senior high school is a critical stage for students' thinking to shift from empirical to theoretical, and systematic thin Scenarios king training can promote the rapid development of innovative thinking abilities (Hu & Lin, 2003). The survey shows that over 97% of teachers believe that fostering students' creative thinking in senior high school English instruction is either "very important" or "relatively important." This view is most strongly held by veteran teachers with over 11 years of experience, who gave an average score of 4.66. This indicates that with national support for innovative education and teachers' in-depth study of the new curriculum standards in China, the "absence of critical thinking" in foreign language learning is gradually being alleviated, and the focus on cultivating creative thinking is increasingly integrated into English instruction from primary to high school. However, 12.5% of novice teachers with less than three years of experience consider its importance to be only "average." A possible reason for this is that new teachers, having just started their careers, tend to focus more on the accumulation of linguistic knowledge.

Additionally, regarding the question of whether "Internet+" technology helps students with creative thinking, over 90% of teachers believe it has a positive and promotional effect. Cross-analysis revealed that among various teaching scenarios, the use of Internet technology for classroom interaction and online collaboration was considered most helpful for fostering students' creative thinking, with an average score of 4.54 (see Table 2). This suggests that using Internet technology to support classroom interaction and online collaboration in senior high school English classes can effectively enhance students' creative thinking skills.

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Table 2. Teachers' perceptions towards the applications of internet technology in helping students' creative thinking cultivation.

	Extremely Helpful	Relatively Helpful	Average	Not Very Helpful	Not Helpful at All	Total	Average Score
Preparation of classroom materials	38 (35.19%)	62 (57.41%)	8 (7.41%)	0 (0.00%)	0 (0.00%)	108	4.28
Classroom interaction and online collaboration	26 (54.17%)	22 (45.83%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	48	4.54
Smart assessment and feedback	17 (45.95%)	17 (45.95%)	3 (8.11%)	0 (0.00%)	0 (0.00%)	37	4.38
Personalized teaching and tutoring	19 (45.24%)	21 (50%)	2 (4.76%)	0 (0.00%)	0 (0.00%)	42	4.4
Mobile and fragmented learning	14 (36.84%)	23 (60.53%)	1 (2.63%)	0 (0.00%)	0 (0.00%)	38	4.34
Teacher professional development	19 (35.85%)	32 (60.38%)	2 (3.77%)	0 (0.00%)	0 (0.00%)	53	4.32

However, 9.32% of respondents still felt that its helpfulness was only "average". Combined with the interviews, the main reason for this perception is that while these teachers frequently use the technology, its application is often limited to single-directional output scenarios, such as playing materials or providing online quizzes. In these cases, "Internet+" technology merely serves as a substitute for a "blackboard or workbook" and does not involve designs that could truly inspire creativity.

4.2.2. Teachers' Practice in Cultivating Creative Thinking

(1) The Cultivation of Creative Thinking in Senior High School English Teaching

Through teachers' interviews, it was found that teachers are consciously encouraging students to offer unique and original insights on reading texts, and to engage in creative oral or written expression in English, such as continuing a story, debating a topic, or writing poetry. When designing lessons, they also consider creating novel English learning projects or activities. Furthermore, critical thinking and creative thinking are closely linked, with the former being an important prerequisite and component of the latter. Without criticism, it's difficult to innovate (Chen et al., 2019). Therefore, while fostering students' creative thinking, teachers also try to guide students to critically analyze information and cultural phenomena.

(2) The Cultivation of Creative Thinking in High School English Teaching under the Background of "Internet+"

The survey data reveals that approximately 78.81% of teachers reported "sometimes" or "often" guiding students to use online searches to find information from multiple perspectives and to engage in critical thinking and the synthesis of ideas. Since online information is of mixed quality, it is especially important to critically evaluate it before attempting to be creative. Furthermore, **Table 3** presents an overview of the frequency of teachers' classroom practices based on the four dimensions of creative thinking proposed by Torrance (1966). The sum of effective percentages, from highest to lowest, is for fluency, flexibility, originality, and elaboration, with percentages of 45.8%, 38.1%, 37.3%, and 35.6%, respectively. All these percentages are below 50%. This indicates that, among the 118 teachers surveyed, although there is a clear understanding of the importance of using "Internet+" technology to enhance students' creative thinking, there is still room for improvement in its practical application in teaching. The survey data reveals that approximately 78.81% of teachers reported "sometimes" or "often" guiding students to use online searches to find information from multiple perspectives and to engage in critical thinking and the synthesis of ideas. Since online information is of mixed quality, it is especially important to critically evaluate it before attempting to be innovative.

Furthermore, **Table 3** presents an overview of the frequency of teachers' classroom practices based on the four dimensions of creative thinking proposed by Torrance (1966). The sum of effective percentages, from highest to lowest, is for fluency, flexibility, originality, and elaboration, with percentages of 45.8%, 38.1%, 37.3%, and 35.6%, respectively. All these percentages are below 50%. This indicates that, among the 118 teachers surveyed, although there is a clear understanding of the importance of using "Internet+" technology to enhance students' creative thinking, there is still room for improvement in its practical application in teaching. For example, for the fluency dimension of creative thinking, only 13 teachers "always" use online resources (such as video clips and image-text materials) to guide students in quickly generating multiple questions or associative ideas within a short time. For the flexibility dimension, only 8 teachers "always" use multi-element materials provided by online platforms (such as news or short videos) to have students switch between different perspectives and discuss the same topic.

Table 3. Effective percentages in the cultivation of creative thinking.

Dimensions	The Frequencies of "often"	The Frequencies of "always"	Sum of Effective Percentage	Means of Effective Percentage
Fluency	13	41	45.8	39.2
Flexibility	8	37	38.1	
Originality	11	33	37.3	
Elaboration	10	32	35.6	

A cross-data analysis also shows that teachers with less than three years of ex-

perience had an average score of 3.56 for cultivating flexibility and originality in creative thinking. This score is higher than that of teachers with more experience in these two areas. This suggests that less-experienced teachers are more inclined to frequently use multi-element materials for perspective-switching and to assign tasks that require students to use digital tools for creative expression (e.g., making short English videos, designing presentation slides, or creating digital posters). This, in turn, enhances students' creative thinking in terms of flexibility and originality, highlighting a generational difference in teachers' acceptance of new technologies.

4.3. The Influence of "Internet+" on the Cultivation of Students' Creative Thinking

4.3.1. Positive Influence

The core of creative thinking is divergent thinking, which is an expansive way of thinking that uses existing information to seek diverse answers from multiple angles and directions. This stands in contrast to convergent thinking, which seeks a single correct answer from knowledge and experience (Lin, 2018). A survey of 205 Chinese senior high school students, analyzing the number of students who selected the "always" and "often" options, yielded the following data (see **Table 4**). 72.68% of students believe that using Internet technology for English learning tasks helps them come up with more different ideas and solutions. 68.78% of students think that using Internet technology helps them view problems from more angles and break free from conventional thinking. 61.95% of students feel that Internet technology or resources help them produce unique, original ideas or expressions. And 80.49% of students use Internet technology or platforms to develop their initial ideas into more refined and detailed ones. These results indicate that Internet technology and resources can help senior high school students think more, newer, deeper, and differently in their daily studies, thereby effectively promoting the fluency, originality, elaboration, and flexibility of their creative thinking.

Table 4. Effective percentages in the influence of the cultivation of creativity.

Question No.	Sum of the Frequencies of "often" and "always"	Sum of Effective Percentage	Means of Effective Percentage
10	149	72.68	70.98
11	141	68.78	
12	127	61.95	
13	165	80.49	

Furthermore, the application of "Internet+" technology has a significant impact on the classroom atmosphere. Creating a relaxed and pleasant environment can foster creative thinking (Li, 2002). As seen in **Figure 2**, 84.74% of teachers believe that using Internet technology makes the classroom atmosphere "relatively active"

or "very active," with very few instances of it being dull. This positive effect is even stronger with teachers who are more familiar with the technology, as they understand the different ways various "Internet+" tools can stimulate students' creative thinking, allowing them to better manage the classroom environment. For example, using gamified learning platforms to engage students in challenging tasks can fully energize the class and activate students' minds, thereby promoting divergent thinking. Students' feedback also supports this, with 82.44% of students agreeing that using Internet technology to assist their English learning is "more interesting" and "more inspiring" compared to just using a textbook.

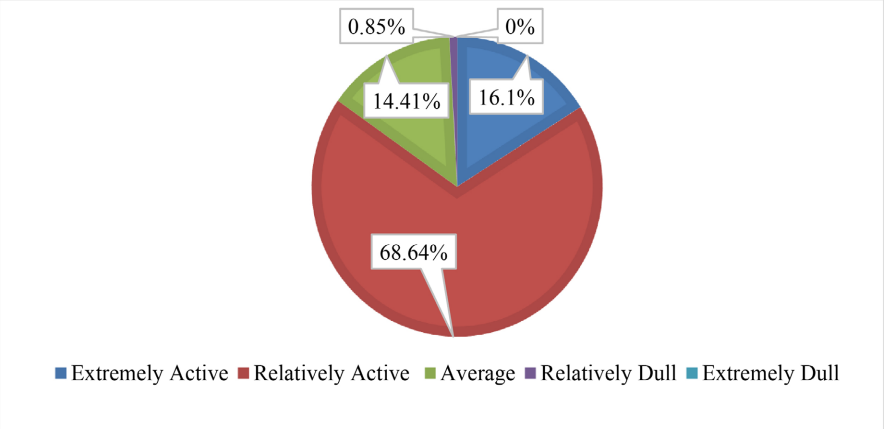

Figure 2. The classroom atmosphere that uses Internet + Technology to assist English teaching.

4.3.2. Negative Influence

However, like a double-edged sword, "Internet+" technology, while promoting thinking, also brings some negative effects. The survey (see **Figure 3**) shows that over 60% of the teachers believe that using Internet technology leads to a reliance on existing resources, which can suppress originality. Nearly half of the respondents

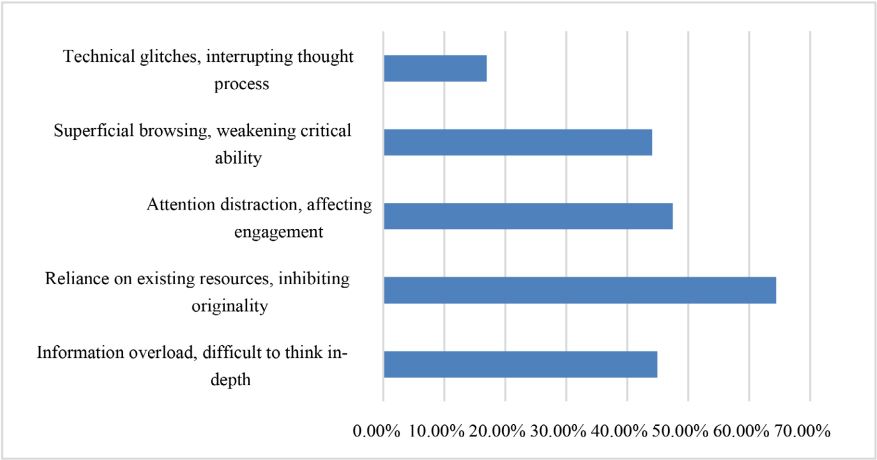

Figure 3. Teachers' perception of the negative impact of the use of Internet+ in senior high school English teaching.

are concerned that a lack of focus affects learning engagement. Additionally, about 44% of teachers believe the information overload on the Internet makes it difficult for students to think deeply, forcing them to stay at a superficial level of browsing. Student questionnaire feedback also indicates that 54.15% of senior high school students "completely agree" or "somewhat agree" that their time for independent thinking is significantly reduced when they use AI tools like DeepSeek to assist with English learning. Some students directly copy the paragraphs generated by ChatGPT into their compositions. They feel that once a command is given to the AI, the entire thinking process becomes the AI's responsibility. Over time, students' higher-order thinking skills are not effectively trained.

4.4. Challenges in Cultivating Students' Creative Thinking in the Context of "Internet+"

Figure 4 shows that integrating "Internet+" technology to promote students' creative thinking in senior high school English teaching still faces significant challenges. Over 60% of teachers believe their own technological skills are inadequate, making it difficult to effectively leverage the advantages of the Internet. Interviews reveal that some teachers only use GAI to grade homework, neglecting its value in inspiring thinking. Half of the teachers surveyed feel that with the "Internet+" trend integrating into education, there should be an emphasis on training teachers in instructional design and improving their digital literacy. Additionally, 42.37% of teachers believe that focusing on cultivating students' creative thinking increases their lesson preparation workload. They need to gather more teaching materials, and the sheer volume of online resources makes it harder for them to select and filter. Teachers also have to design more sophisticated and clever classroom activities to stimulate students' creative thinking. Finally, they must consider how to assess whether students are demonstrating creative thinking while also mastering subject knowledge, which requires adjusting the dimensions of classroom evaluation. In the GAI era, more attention should be paid to the "AI interaction trajectory", such as the number of times students modify AI suggestions and the degree of innovation. This requires the establishment of new evaluation dimensions, including the ability to critically use AI and the degree of original transformation, to avoid falling into the trap of "AI-generated high scores". For all these reasons, using "Internet+" to enhance students' creative thinking presents a considerable challenge for teachers.

Additionally, creative thinking can also be a product, an outcome generated through an act of "creation," which is the result of innovative thinking in language analysis, comprehension, and application (Huang, 2019). A survey on whether students have "ever completed creative English works using Internet technology and received recognition" found that only 4.39% of students chose "more than five times," while 61.46% have never had any English creative experience, such as adapting stories, making PPTs or videos, designing creative posters, or giving creative oral presentations. This reflects a lack of "Internet+ creativity" practical sce-

narios in teaching or curriculum design, which leads to a disconnect between technology and instructional goals. This aligns with the teacher survey, where only 31.29% of teachers reported "always" or "often" assigning Internet-based creative tasks.

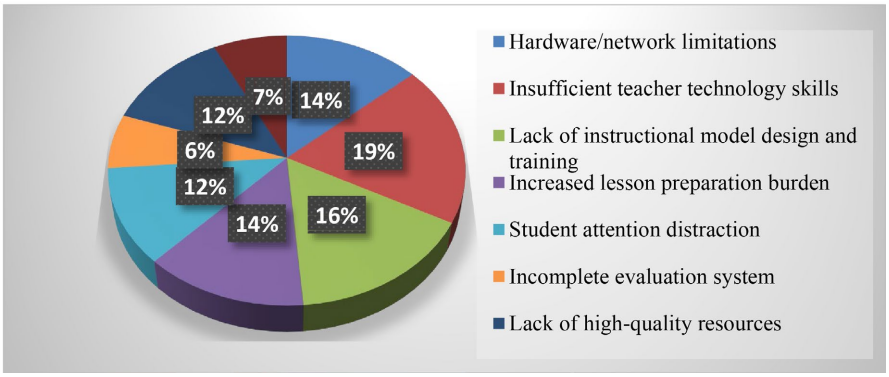

Figure 4. The challenges faced in cultivating creative thinking under the background of Internet+.

Furthermore, the data (see **Table 5**) shows that only 39.02% of senior high school students are confident in the creativity they demonstrate in their English learning (e.g., proposing new ideas, using new methods to express themselves, solving problems, etc.). The self-efficacy of students' creative thinking is notably low. One source of self-efficacy is "mastery experiences" (Bandura, 1977). As mentioned above, 61.46% of students have never produced creative work, which leads to a lack of "successful creative practice" and, consequently, self-doubt about their own creative abilities. See **Table 6** for details.

Table 5. Statistics of students' creative thinking achievements.

Question Item	Sum of the frequencies of "often" and "always"	Sum of effective percentage
Q15. How many English creative works have you ever completed through Internet technology and received recognition?	Above 5	4.39%
	4 - 5	5.85%
	2 - 3	16.1%
	1	12.2%
	0	61.46%

Table 6. Students' perception of creative self-efficacy.

Question Item	Levels	Percentage
Q16. You are very confident in the creativity you have shown in your English learning.	Strongly agree	10.73%
	Agree	28.29%
	Not sure	41.95%
	Disagree	14.63%
	Strongly disagree	4.39%

5. Suggestions for Cultivating Students' Creative Thinking in the Context of "Internet+"

To effectively leverage the empowering value of "Internet+" and help enhance students' creative thinking in senior high school English teaching, we can start with the following measures.

First, establishing a tiered training mechanism is crucial for the effective integration of technology into education. For veteran teachers, who have rich English teaching experience but may struggle with the "disconnect between technology application and teaching goals," the focus should be on training their "technological transformation ability." For example, training could cover how to integrate Canva into creative interpretations during a reading class or idea generation during a writing class; how to design semi-structured tasks and record students' thought process to avoid direct copying of GAI generated content. In contrast, novice teachers have a higher acceptance of Internet technology but lack systematic and innovative instructional design skills. This can be addressed by strengthening their ability to integrate technology into instructional design through methods like "creative task template development." This is reflected in two main ways. First, to address the issue of teachers only having basic technical skills and new teachers lacking systematic design abilities, templates offer a standardized way to integrate technology and teaching goals. These templates include clear lists of technical applications, such as the steps for using ChatGPT to generate a writing outline, and highlight the connection between technical operations and the dimensions of creative thinking. This lowers the barrier to entry, helping teachers move from simply "being able to use" technology to "using it well."

Second, to solve the problem of technology being disconnected from teaching goals (e.g., using it merely as a substitute for a blackboard), the templates embed technological tools directly into creative thinking training scenarios. This ensures that the technology serves the purpose of fostering innovation rather than becoming a formalistic tool, effectively compensating for teachers' limited ability to apply technology.

Another crucial step is to deepen the application of technology in key scenarios like classroom interaction and personalized tutoring. This can be achieved by developing models that train higher-order thinking skills, such as "multi-element material perspective-switching" and "digital creative expression." Examples include discussions based on news video clips or designing creative posters based on article content.

Finally, to truly harness the power of "Internet+" and enhance students' creative thinking, it's essential to build a robust support system. This system should be anchored in three key areas: hardware upgrades, resource optimization, and evaluation reform. First, schools should prioritize upgrading hardware to ensure classroom smart screens and student tablets are interconnected. This seamless connectivity allows for real-time creative practices, such as collaborative group projects for creating posters or recording short video presentations, to be carried

out smoothly in the classroom. Secondly, for resource optimization, it is highly recommended to establish a school-based English creative resource library. This library could categorize and collect outstanding student work from different grade levels and topics, such as adapted stories from 10th-grade texts or cultural short videos from 11th grade, providing practical and inspiring examples for future teaching; Schools should also accelerate the construction of AI teaching resource libraries, screen out tools that have been verified by education, and lower the technical threshold for teachers. Finally, and most crucially, evaluation reform is needed. A formative evaluation mechanism must be created to assess creative thinking, allowing "Internet+ English creative practices" to be included in students' regular grades. Even in the final year of senior high school, when test pressure is high, teachers can design lightweight, practical tasks for review—for instance, having students create a mind map for a college entrance exam essay topic. Including "thinking originality" as an evaluation criterion in this process would prevent the pressure of exam preparation from completely eliminating the space for creative practice.

6. Conclusion

The application of "Internet+" has gradually shifted from a mere tool to an educational philosophy for cultivating creative thinking. However, to truly unlock its revolutionary potential in fostering creativity, core issues such as the skills gap among teachers, contradictory evaluation standards, and uneven resource distribution must be addressed systematically. This study used teacher questionnaires and interviews, along with feedback from students, to understand the current state of "Internet+" technology's role in cultivating creative thinking in senior high school English teaching. Based on the Technology Acceptance Model, future research can further explore the acceptance levels of both teachers and students regarding the application of "Internet+" for cultivating creative thinking in senior high school English teaching, along with the factors that influence this acceptance.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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