The Development of Humanities and Social Sciences

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On the Recognition of Eligible Plaintiffs for Third-Party Avoidance Claims in China

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Abstract

This article focuses on the identification of qualified plaintiffs in China's third-party avoidance system. On the basis of combing the Civil Procedure Law and relevant judicial interpretations of the third-party avoidance of qualified plaintiffs, the article reveals the main problems in the legislation and judicial practice, such as irrational legislative structure, the scope of qualified plaintiffs is too narrow and vaguely defined, etc., which have led to inconsistencies in the judicial application and litigation abuse phenomenon. In view of these problems, the article puts forward specific improvement paths: it is suggested to position the third-party avoidance action as an independent special relief procedure, in order to protect the outsiders who are victimized by false lawsuits in a wider scope; to clarify the scope of the eligible plaintiffs, to ensure that only the eligible third parties can initiate the procedure; at the same time, to construct the abuse of the right to litigation control mechanism, to prevent the system from being maliciously exploited, and these measures are aimed at providing strong support for the improvement of the third-party avoidance action system, in order to improve the system of third-party avoidance. These measures are aimed at providing strong support for the improvement of the third-party avoidance system, so as to better realize its legislative purpose of curbing false litigation and safeguarding the rights and interests of outsiders.

Keywords: Third-Party Avoidance Claims; Competent Plaintiffs; Sham

1. Introduction

When the Civil Procedure Law of the People's Republic of China was amended in 2012, the system of third-party avoidance claims was formally introduced, and as an important innovation in the system of civil litigation procedural rules, the system was further refined and supplemented in the Interpretation on the Application of the Civil Procedure Law of the People's Republic of China promulgated by the Supreme People's Court in 2015. The legislative intent of this system is

to curb the spread of the phenomenon of false litigation by constructing special relief procedures, thus forming a three-dimensional protection mechanism for the legitimate rights and interests of third parties outside the case in the field of civil litigation. However, at the beginning of the legislation, due to the purpose of the system, the scope of the subject of prosecution, the prosecution conditions and the nature of the system itself, there are many disputes, resulting in the system since its birth has been accompanied by continuous theoretical disputes. 2019 the supreme people's court issued the "national court civil and commercial trial work conference summary" of the third party to withdraw the plaintiff qualification criteria for the interpretation of the system to clarify the judicial Refereeing standards, but the operation of the system in judicial practice is still facing multiple dilemmas, and the problem of determining the qualification of the eligible plaintiff has always been the core issue of long-term concern in the theoretical and practical circles. In the context of the current judicial reform to deepen the qualifying plaintiff subject qualification standards for the theoretical study, for the improvement of civil litigation third party system, to protect the exercise of third party right of action, to realize the value of the system to achieve the full realization of the value of the function are of great theoretical value and practical guidance significance.

2. Legal Requirements for Plaintiffs in Third-Party Avoidance Claims

2.1. Provisions of the Civil Procedure Law and the Interpretation of the Civil Procedure Law on third-party avoidance claims

When the Civil Procedure Law was amended in 2012, the system of the third party's revocation claim was established for the first time in Article 56(3), and the system was further elaborated in Articles 292 to 303 of the Judicial Interpretation of 2015, which stipulated that an outsider who did not take part in the litigation due to reasons other than his own and who can prove that the effective decision is wrong in part or in whole and has harmed his rights and interests can file a lawsuit with the court of first instance within six months from the date of knowledge of the harm. According to the current regulations, eligible plaintiffs include third parties with independent claims and third parties without independent claims, and must satisfy both substantive and procedural requirements. The third party with an independent claim participates in the litigation on the basis of a substantive claim, while the third party without an independent claim intervenes because it has a legal interest in the outcome of the case.

2.1.1. Third parties with independent claims

A third party with an independent claim refers to a subject who joins in the litigation proceedings already conducted by another person by filing a lawsuit based on a claim of property or claim in substantive law, and asserts an independent litigation claim and exercises litigation rights independently. This kind of subject can either take the initiative to participate in the litigation by filing a lawsuit in the original trial procedure, or propose a remedy based on the substantive right claim after the decision has come into effect. It is worth noting that, the third-party complaint system for the creation of a special way of relief, and the ordinary way of relief with a separate lawsuit together constitute a double relief mechanism. At the early stage of the

implementation of the system, there were differentiated adjudication standards in judicial practice, which triggered theoretical discussions in the academic community on the value of the system.

2.1.2. Third parties without independent claimants

A third party without independent claim refers to a subject who has no independent claim to the subject matter of the litigation, but who has a legal interest in the outcome of the case and participates in the litigation. Due to the ambiguity of the legal definition of "legal interest", the criteria for determining this type of subject have long been controversial. Judicial decisions mainly rely on individual discretion to determine the existence of interest, the practice of false lawsuit victims have the plaintiff qualification as well as auxiliary and defendant-type third-party eligibility disputes lead to the subject qualification standard is not uniform. According to the current legal provisions of the third party to file a third party to withdraw the lawsuit to meet the dual conditions: first, the third party outside the case of the subject matter of the lawsuit enjoys the substantive rights or legal interest; the second is that it did not participate in the original litigation for reasons not attributable to him. When examining the complaint, if the court finds that the plaintiff is ineligible, it will rule inadmissible according to the law; if it finds that the plaintiff is ineligible during the trial, it will directly reject the lawsuit. The current legislation explicitly limits the scope of eligible plaintiffs to third parties with and without independent claims, excluding the possibility of other subjects bringing such a claim.

2.1.3. Expanded Exposition of the Scope of Competent Plaintiffs in the Minutes of the Nine People's Conference

Since the creation of the system of third-party avoidance of claims in 2012, the effect of its judicial practice has deviated somewhat from legislative expectations. It is worth noting that outsiders who suffer damage to their rights and interests due to false litigation often find it difficult to obtain relief because they do not meet the two types of qualifying plaintiff elements stipulated in the current law. In response to the high incidence of false lawsuits in judicial practice, in 2019, the Supreme People's Court issued the Proceedings of the Working Conference of the National Courts on Civil and Commercial Trials (hereinafter referred to as the "Nine Minutes"), which systematically expounded the applicable rules of the third-party avoidance lawsuit, and made it clear that creditors could break through the traditional restrictions on the eligibility of plaintiffs under specific circumstances. According to the Nine Minutes, a creditor can be recognized as an eligible plaintiff when it meets any of the following conditions: first, the claim belongs to the type specially protected by the law; second, the creditor loses the right of avoidance provided for in Articles 538-539 of the Civil Code and Article 31 of the Enterprise Bankruptcy Law due to the effective judgment; and third, the creditor is able to provide sufficient evidence to prove that the original litigation has been fraudulent. The judicial interpretation, through enumerative legislative techniques, responds to the relief needs of victims of false litigation while maintaining legal stability, reflecting the dynamic adjustment of judicial standards.

2.1.4. Plaintiff qualification for special protection creditors

Special protection claims refer to special priority claims expressly provided for in the law, such as the right of priority compensation for the price of construction works established in Article 807

of the Civil Code of the People's Republic of China. The purpose of this system is to indirectly realize the protection of construction workers' wage rights and interests through the protection of contractors' claims for the price of construction works. Taking the case of Supreme People's Court (2021) Civil Final No. 822 as an example, Company A enjoyed the right of priority compensation for the construction price owed by Company B, and then filed a third-party avoidance lawsuit due to the impairment of its substantive rights caused by the civil conciliation agreement of other cases. The Supreme People's Court clarified in this case that creditors with special protection claims meet the qualification requirements for plaintiffs in third-party avoidance claims.

2.1.5. Analysis of plaintiff standing of avoidance loss creditors

When a debtor disposes of its property without compensation or in bad faith, resulting in the creditor's inability to realize its claim and thus losing the right of avoidance provided for in the Civil Code , the creditor is entitled to file a third-party avoidance action. This provision was introduced to regulate the debtor's disposal of its liable property and to prevent the legitimate rights and interests of creditors from being affected by improper manipulation. Taking (2022) Supreme People's Court Civil Re-arbitration No. 60 as an example, Company A, as a creditor of Company B, reduced its claim and exempted its guarantee liability due to a mediation agreement reached between Company B and others in another case, thus affecting the realization of Company A's claim. The Supreme People's Court held that Company A, as a creditor that had lost its right of avoidance, was qualified to bring a third-party avoidance claim.

2.1.6. Exploring Plaintiff Standing for Creditors in Sham Actions

With regard to false litigation behaviors that fictionalize legal relationships and falsify evidentiary materials to file lawsuits with the intention of obtaining erroneous adjudication results, the relevant creditors have the right to file a third-party avoidance lawsuit in accordance with the law. This rule aims to maintain the order of litigation, protect the legitimate rights and interests of the parties and the credibility of the judiciary. Taking the case of Supreme People's Court (2021) Civil Re-357 as an example, Company A claimed that the litigation between Companies B and C constituted a false litigation in the capacity of a mortgagee and submitted prima facie evidence materials. The Supreme People's Court, upon examination, determined that Company A, as a third party with no legal interest in the outcome of the case and having completed its initial burden of proof, met the conditions for the prosecution of a third-party avoidance claim.

In summary, the Minutes of the Nine People's Conferences, on the basis of judicial practice, reasonably expanded the eligible subjects of third-party avoidance claims to include creditors under specific circumstances, which not only solved the problem of eligible plaintiffs, but also gave full play to the function of the system and provided a strong guidance for judicial practice.

2.2. Multi-dimensional Theoretical Deconstruction of Plaintiff's Qualification

The determination of the plaintiff's qualification is essentially a dynamic balance between the protection of substantive rights and procedural justice in the litigation process, which needs to be viewed from the theoretical perspective of the three intertwined dimensions of substantive rights and obligations, procedural safeguards, and judicial discretion. Substantive rights and obligations of the dimension concerned with the third party and the trial decision of the legal relationship

between the substance of the correlation, this correlation may be manifested in the subject matter of the lawsuit for the independent right to claim (such as property rights of the person claiming the return of property), may also be reflected in the results of the decision indirectly assume obligations or loss of rights (such as joint and several debtors because of the litigation of other people was increased responsibility). Substantive legitimacy requires that there be a normative causal relationship between the third party's rights and obligations and the trial decision, which constitutes the logical starting point for plaintiff standing.

The procedural safeguards dimension, on the other hand, emphasises the role of due process in underpinning the third party's right to relief. If a third party who has not participated in the original litigation suffers damage to his or her rights as a result of procedural defects (e.g., the court's failure to fulfil its notification obligation), his or her eligibility for remedies should be recognised on the basis of the principle of procedural subjectivity. This dimension consists of a threefold progression: firstly, the right to procedural participation, i.e., the third party should have a reasonable opportunity to participate in the trial proceedings; secondly, the right to a hearing, i.e., the right to be heard and debated should be safeguarded; and lastly, the allocation of the risk of error, when the third party fails to participate in the litigation due to reasons that are not attributable to him/her, his/her risk of being harmed by the judgement should be borne by the party whose procedure is in violation of the law. The procedural safeguard dimension breaks through the limitations of the purely substantive standard and ties the plaintiff's eligibility closely to the degree of procedural justice achieved.

The judicial discretion dimension assumes the regulating function of case-by-case justice beyond the substantive and procedural standards. When the law lacks a clear definition of 'legal interest' (e.g., new types of claims or expectancy rights), the judge needs to fill the loopholes in the rules through value judgement; and between the protection of third-party rights and the preservation of the res judicata of the judge, the judge needs to coordinate the conflict of interest measurement. The exercise of discretion should follow the principle of proportionality to ensure that the severity of the damage to the rights and interests of the third party is proportional to the probability of the error of the original judgement, and that the means of relief are necessary and appropriate. This dimension through the dynamic balance mechanism, make up for the entity rules of the lag and procedural safeguards of the formal defects.

The three dimensions in the plaintiff's eligibility to form a three-dimensional interactive relationship: the substantive dimension delineates the scope of rights protection should be, the procedural dimension sets the legitimate boundaries of relief initiation, the discretionary dimension through the value judgement to achieve individual correction. The root cause of the contradiction of the current system is over-reliance on substantive standards, resulting in procedural safeguards and discretionary disorder, and ultimately weakening the overall effectiveness of the third-party relief system. Only by organically unifying the three, can we build a plaintiff's qualification system that not only maintains the stability of the judgement but also protects the rights of the third party.

3. Challenges to the Plaintiff Qualification System for Third-Party Avoidance Claims in China

Although China's third-party avoidance system has been implemented for some time, many problems have gradually emerged. The system lacks comprehensive and systematic provisions, and the legislative content deviates from the original legislative objectives. Should be the core objective of the system to curb false litigation, not only in the legislation has not been fully reflected, but will be part of the subject should be entitled to the right to revoke the subject excluded. In fact, the range of plaintiffs eligible to bring third-party avoidance actions is much broader than that provided for in the current legislation. In the early days of the system, there are scholars after in-depth study pointed out that the system may be difficult to achieve its original legislative intent. And all kinds of dilemma in judicial practice, also further confirmed this view. Whether in the legislative level, or in the specific case of the trial process, the third-party avoidance of the system has not been able to give full play to its due effectiveness, but may increase the burden of litigation. Therefore, from the problem-oriented, we need to analyze the system in depth, dig the existing problems, and seek effective solutions.

3.1. Inadequate organization of the legislative structure

The current legislative system has an institutional design that conflicts with the basic principles of civil procedure. This system is stipulated in the "parties" clause of the "participants" chapter of the General Provisions of the Civil Procedure Law, resulting in a conflict between the normative rank of the system and the integrity of the system of procedural rules. It is worth noting that, China's civil litigation in the field of registration system requires the court to meet the legal conditions of the prosecution must be accepted by the law and entity trial; however, if the third-party revocation of the part of the ordinary procedure, need to go through the first trial, second trial, retrial and so on the multiple processes, and the prosecution of the conditions of the conventional cases and differences in the review criteria closer to the trial supervision procedures, which is obviously as special as the nature of the after-the-fact relief procedure does not match. This is obviously inconsistent with its nature as a special ex post facto relief program. Therefore, the third party's revocation should be independently set up as a non-conventional procedure, formulate exclusive procedural rules, and be categorized as an ex post facto relief procedure. The current legislation places them under ordinary procedures, which not only misaligns them, but also weakens their proper remedial function.

There are structural defects in the current system design, the scope of eligible plaintiffs of the third-party avoidance lawsuit is dependent on the two types of third parties in the litigation participant system, which formally covers the full range of subjects, but in essence, the scope of the main body has been narrowed. The third party with independent right to claim the existence of double salvation economic path to choose, both through the third party to seek special relief, but also through a separate lawsuit to obtain conventional relief, this system design and the basic principles of civil litigation procedure conflict. The third party without independent claim because of the vague legal definition of the subject qualification standard is not uniform, judicial decision scale there are big differences. Although the supreme people's court through the "nine people's meeting minutes" and other judicial guiding documents to try to standardize the adjudication

standards, but because of its non-legal sources of the effectiveness of the hierarchy, it is difficult to fundamentally solve the structural contradiction of the legislation. This disconnect between legislation and the judiciary has made it difficult to fully realize the unique value of the system, which may result in duplicative litigation that wastes judicial resources, and may also harm the legitimate rights and interests of third parties outside the case due to poor relief channels.

In the future, when improving the system of third-party avoidance claims, it is necessary to reconstruct its legislative positioning and normative system. In view of the special nature of this system of ex post facto relief, it is recommended that it be divested from the General Provisions of the Civil Procedure Law, "participants in the proceedings" chapter, and set up a separate special program to be stipulated. This institutional arrangement not only avoids conceptual confusion with the third-party system, but also highlights its independent procedural value. Existing legislation will be eligible plaintiffs limited to litigation third person theoretical obstacles. Litigation in the third person system "third person" refers to the litigation process in the active participation in the litigation subject, its system function is to realize the effectiveness of the judgment expansion and dispute resolution. And the plaintiff of the third party to revoke the plaintiff is not involved in the original trial of the third party, the purpose of the lawsuit is to correct the effective decision on their own rights and interests. The two types of subjects in the procedural participation, rights relief path and system value orientation there are essential differences, not to be confused. It is recommended that the legislation clearly distinguish between the application of the two systems of boundaries: the third party litigation system should return to the "litigation participants" chapter, focusing on the regulation of its litigation rights and obligations; the third-party cancellation of claims should be used as an independent special relief procedures, the construction of a complete normative system that includes the conditions of the prosecution, the rules of the trial, and the effectiveness of the decision. This legislative model can not only maintain the logical self-consistency of the civil procedure law, but also provide accurate rights relief for the third party outside the case, in line with the development trend of civil procedure refinement.

3.2. Reflection on the Improper Restriction of the Scope of the Subject Matter of Third-Party Avoidance Claims

The scope of eligible plaintiffs for third-party avoidance claims should break through the restrictions of the traditional third-party litigation system from the viewpoint of legislative purpose. The current legislation will qualify the plaintiff to have an independent right to claim the third party and no independent right to claim the third party, the formation of systematic exclusion effect, so that by the malicious litigation, false litigation damage to the ordinary creditors, the necessary co-litigants and other subjects can not get relief. As the main victim group of false lawsuits, the current law does not specify the qualification of the plaintiff. In judicial practice, the court strictly follows the examination standard of Article 56 of the Civil Procedure Law, "the third party stipulated in the first two paragraphs", which results in the ordinary creditors being dismissed due to the lack of both substantive claims (with the sole three elements) and legal interest (without the sole three elements). Despite the exceptions created by the Minutes of the Ninth Civil Conference, the creditor is required to prove the existence of a fraudulent claim in the

previous claim as provided for in Articles 538-539 of the Civil Code, and the burden of proof is heavy. Coupled with the hidden nature of mediation and litigation procedures, it is often difficult for ordinary creditors to complete the initial proof.

Future legislation should build open-ended plaintiff qualification standards, and extend the object of relief to all third parties outside the case whose civil rights and interests have been harmed by the effective judgment. This system design not only conforms to the normative meaning of "outsiders" in Article 56(3) of the Civil Procedure Law, but also effectively responds to the demand for the governance of false litigation. It is recommended that, on the basis of retaining the existing two types of third parties, "other outsiders who have a legal interest in the outcome of the case" should be added as an additional provision, and the criteria for determining "legal interest" should be clarified through judicial interpretations. At the same time, a mechanism should be established to link the procedures of the third-party litigation system and to ensure the independence and integrity of the special relief procedures.

3.3. Vague definition of the subject matter of third-party avoidance claims leads to litigation abuse

With the booming economic development, legal relations are becoming more and more complex, the public legal awareness has increased significantly, but in the active use of legal weapons at the same time, but also gave birth to infringement of the rights and interests of others, obstructing the functions of state organs, delaying the execution of the judgment and other malpractices, and this trend with the popularization of legal awareness and the more serious. The phenomenon of litigation abuse, and China's third-party avoidance of the legislative level is not unrelated to the sloppy. Malicious litigation and false litigation parties in the infringement of the rights and interests of third parties, will often anticipate the other party's defense strategy, and accordingly plan their own litigation strategy. As an important means of defense, third-party avoidance claims naturally become part of its consideration. However, due to the system of eligible plaintiffs is too narrow, many of the actual interests of those who do not meet the legislation of the subject qualification and can not obtain relief. From the comparison of the number of inadmissible and dismissed cases, it is not difficult to glimpse the cruel reality that many cases were lost due to the incompatibility of the plaintiff's qualifications. This status quo, on the contrary, prompted some malicious litigants more unscrupulous trample on the authority of the law, resulting in litigation abuses increasingly serious problem. At the same time, there is no lack of third party for the purpose of obstructing the smooth progress of the case of others, maliciously filed a third party revocation of the claim, even if it can not achieve the desired results, but also to the process of the case constitutes interference.

Third-party revocation of the definition of the system deficiencies of eligible plaintiffs, the objective formation of a vicious circle mechanism: malicious litigants to take advantage of the loopholes in the system to implement litigation fraud, the rights and interests of damaged third parties outside the case is forced to seek relief through the procedure, resulting in a surge in the number of cases. Excessive consumption of judicial resources and litigation costs of the parties climbed, has become a constraint on the function of the system to play a real obstacle. China's current laws have built a multi-level litigation regulatory system: Article 112 of the Civil

Procedure Law establishes the civil sanction rules of malicious collusion, "Criminal Law Amendment (IX)" to add the crime of false litigation to strengthen the criminal accountability. However, it is worth paying attention to the fact that in judicial practice, there is the paradox of "sufficient legislative supply but insufficient implementation effectiveness". The low cost of litigation abuse and the inefficiency of the criminal accountability mechanism, so that the deterrent effect of the system has not been effectively transformed into a practical binding force. This norms and facts of the rupture, resulting in civil litigation procedures in the governance of false litigation in the "rules of the empty" phenomenon, not only can not curb malicious litigation behavior, but also difficult to eliminate the third party outside the case of excessive reliance on the system.

4. The Path of Improving the Qualified Plaintiff System of China's Third-Party Avoidance Claims

In order to improve this system, it is necessary to clarify the original purpose of its establishment, clarify the boundaries between third-party avoidance claims and the third-party system, redefine the status of third-party avoidance claims, and rationalize the legislative structure. Specifically, third-party rescission should be made an independent chapter, and the criteria for eligible plaintiffs should be reset, so as to ensure that all third-party parties who have been adversely affected by the judgment of the preceding case can obtain final procedural relief. At the same time, parties who file lawsuits in bad faith should be held criminally liable in accordance with the law as a disciplinary measure.

4.1. Positioning Third-Party Avoidance Claims as an Extraordinary Remedy Procedure

It is proposed that third-party avoidance claims be categorized under the system of extraordinary remedial procedures. This system is designed to protect those who should have participated in the original trial, but for some reason were unable to do so, and whose legitimate rights and interests have been jeopardized as a result. As the trial supervision program has the same corrective function of the system, the third party to revoke the decision by changing or revoking the effective documents, constituting a special post facto relief mechanism different from the ordinary litigation procedures, its procedural attributes more similar to the trial supervision program. Based on this, our country in perfecting the system, should first clarify its independent status in the litigation system, break through the traditional legislative framework, re-orientation and design of the system. Specifically, the third party can be set up independently in the trial supervision program chapter, build a complete system of procedural rules. This arrangement not only can highlight its ex post facto relief characteristics, but also can effectively safeguard the legitimate rights and interests of program participants.

4.2. Redefining the Scope of Eligible Plaintiffs for Third-Party Avoidance Claims

In reconstructing the system of third-party avoidance claims, the scope of eligible plaintiffs should be adjusted at the same time, so that they are independent of the third-party participation system. The following principles should be followed in judging the suitability of the parties: firstly, "ex post facto" review should be the benchmark, requiring that the plaintiffs are not parties

to the original case, and that there is a possibility that they may participate in the original lawsuit in a specific capacity. Secondly, to entity rights and interests as the core standard, as long as the outsider can prove that its rights and obligations by the effective decision of the substantive impact, can be recognized as eligible. The scope should break through the third-party framework of the Civil Procedure Law, without the need to maintain a connection with the litigation participation system. At the same time, it should expand the types of remedies available, eliminate the differentiated restrictions on claims in rem, and return to the original intent of the system design. In addition, plaintiffs should be required to file lawsuits within the statutory period and exhaust other remedies. In particular, it should be emphasized that ordinary creditors, as subjects outside the original case, should be included in the category of eligible plaintiffs if their legitimate rights and interests have been damaged by the decision of the previous lawsuit and meet the above requirements. According to the principle of comprehensive protection established in Article 1164 of the Civil Code, claims are also protected by the Tort Liability Section. Necessary co-litigants should also be included in the scope of eligibility to eliminate conflicts between judicial practice and legislative norms. In order to ensure the effectiveness of the system, the criteria for judicial review of the plaintiff's qualifications should be appropriately relaxed, and the review of substantive rights and interests should be postponed to the trial stage of the case.

4.3. Construction of a mechanism to regulate abuse of the right of action

In view of the high incidence of abusive litigation behavior, there is an urgent need to build a systematic regulatory mechanism. Malicious litigation not only destroys the judicial order and judicial credibility, but also violates the principle of honesty and credit in civil litigation. Suggest the establishment of "criminal accountability, civil sanctions as a complementary" double punishment system. The people's court in the trial found that false litigation suspected, should strengthen the authority to review the strength. If the substantive review confirms the existence of malicious litigation, the subjective intent of the perpetrator shall be recognized, and the perpetrator shall be ordered to bear the corresponding legal responsibility. Specifically, the court may, in accordance with the law, revoke the effective judgment documents generated by the false litigation, and at the same time transfer the case to the public security organs for investigation and the procuratorial organs for public prosecution. Eventually by the trial organ according to the "Criminal Law Amendment (IX)" Article 307 one of the false lawsuit crime provisions, to pursue the perpetrator of criminal liability and fines. Only through the rigid legal sanctions to form an effective deterrent, in order to effectively maintain judicial authority and social integrity system.

5. Conclusion

The core mission of the third-party avoidance action is to curb false litigation behavior. In view of the litigation caseload rising year by year, the definition of eligible plaintiffs has become a major challenge to the court, there is an urgent need to start from the legislative and judicial levels, improve the third-party avoidance of eligible plaintiffs in the relevant provisions of the relevant provisions and practical operation. However, improve this system is not overnight, need to work persistently, in the process of building a more sound legal system, must be based on reality, taking into account the concept. Ensure that the system is designed to meet the practical needs, but also

reflects the spirit of the rule of law, thereby creating a more just, efficient and authoritative judicial environment.

Author Contributions:

Conceptualization, K.H.; methodology, K.H.; software, K.H.; validation, K.H.; formal analysis, K.H.; investigation, K.H.; resources, K.H.; data curation, K.H.; writing—original draft preparation, K.H.; writing—review and editing, K.H.; visualization, K.H.; supervision, K.H.; project administration, K.H.; funding acquisition, K.H. All authors have read and agreed to the published version of the manuscript.

Funding:

This research received no external funding.

Institutional Review Board Statement:

Not applicable.

Informed Consent Statement:

Not applicable.

Data Availability Statement:

Not applicable.

Conflict of Interest:

The authors declare no conflict of interest.

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Research on the Integration Path of Chinese Culture and Thai Native Culture under the Background of "Belt and Road Initiative"

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Abstract

Belt and Road Initiativehas set up a new platform for economic and cultural exchanges between China and countries along the route, and also provided an opportunity for the international spread of Chinese culture. As an important node country in Southeast Asia, Thailand has attracted much attention in the spread of Chinese culture. Through literature research, field investigation and case analysis, this paper comprehensively sorts out the history and present situation of Chinese culture spread in Thailand, analyzes language learning barriers, cultural cognitive differences and challenges of uneven distribution of resources, and reveals the opportunities faced by Chinese culture spread under Belt and Road Initiative. The research shows that under the joint promotion of education, cultural activities, digital platforms and other fields, the integration of Chinese culture and Thai local culture has achieved certain results, but it is still necessary to further tap the potential of their in-depth interaction. This paper proposes that strategies such as strengthening cultural exchanges, promoting localization of educational content, developing digital cultural communication channels, and cross-disciplinary integration practices can effectively deal with obstacles in communication and promote the deep integration of the two cultures. This not only helps to enhance the international influence of Chinese culture, but also provides a practical reference for the cultural integration of countries along Belt and Road Initiative.

Keywords: Belt and Road Initiative; Chinese Culture; Indigenous Thai Culture; Fusion Path

1. Introduction

Since Chinese President Xi Jinping proposed Belt and Road Initiative in 2013, China's economic and cultural exchanges with other countries around the world have deepened day by day. In recent years, Thailand, as an important partner of China in Southeast Asia, has seen increasing exchanges between the two sides in the political, economic and cultural fields, and the number of people learning Chinese has also been increasing. The spread of Chinese and Chinese

culture in Thailand has gradually accelerated. However, cross-cultural communication is not only language exchange, but also the collision and interaction of cultural cognition and values. Especially under Belt and Road Initiative, the two sides are facing unique opportunities and challenges in cultural exchange and integration. Thailand has a long history of Buddhist culture and social value system, which is obviously different from Chinese Confucianism and traditional culture. This kind of cultural difference may become a potential obstacle in the process of Chinese culture spread. Although Thai society is open to Chinese culture, there are still differences in cultural identity and acceptance. How to realize mutual learning and integration of the two cultures on the basis of respect and tolerance is an important issue in cultural exchanges between China and Thailand.

According to the data of foreign tourists visiting Thailand in 2024 released by the Ministry of Tourism and Sports of Thailand on January 3, from January 1 to December 31, 2024, a total of approximately 35.54 million foreign tourists entered Thailand, including China (mainland) There are 6,733,162 people and China (Taiwan) 1,089,910 people, ranking among the top 1 foreign tourists visiting Thailand. Under this background, Thailand's demand for Chinese is gradually increasing, and promoting the spread of Chinese culture not only helps to improve Thai people's understanding and recognition of China, but also creates favorable conditions for political and economic cooperation between China and Thailand, and promotes the development of tourism in Thailand. In the field of education, Chinese is included in the compulsory course of Thailand's education system. According to the data of the global portal website of Confucius Institutes, there are 17 Confucius Institutes and 11 Confucius Classrooms in Thailand. Colleges and universities have also offered business Chinese and international Chinese education majors, which have provided strong support for the spread of Chinese culture in Thailand. Although the Chinese education system in Thailand is gradually improving, the difficulty of language dissemination and the challenge of cultural integration still exist.

In recent years, scholars have conducted extensive research on Sino-Thai cultural exchanges and Chinese cultural communication, mainly focusing on issues such as communication status, challenges and cultural integration paths. Zhang (2022) pointed out that there are some problems in Chinese cross-cultural communication, such as fragmented cultural knowledge, lagging communication methods and low audience recognition, and it is necessary to improve the communicational effect through optimization strategies . Yao (2023) emphasized the constraints of insufficient cultural awareness and lack of high-quality carriers, and suggested enhancing communication power through top-level design, teaching material delvelopment and "all-media +" model . Liu (2023) proposed the complementarity of language and culture, and advocated the use of network technology to innovate communication paths . Yan(2022) emphasizes the richness of Chinese perspectives and communication channels, and pays attention to strategic adjustment to meet cross-cultural needs. In addition, Li (2020) put forward the importance of practical teaching and "multilingual +" talent training mode to international Chinese education; Li (2024) discusses the key role of educational cooperation in language teaching and cultural integration based on the background of Belt and Road Initiative. These studies reveal that there is still much room for

improvement in theory and practice of Sino-Thai cultural exchanges, which provide an important reference for follow-up research.

To sum up, it is particularly important to explore how Chinese culture interacts and integrates with Thai local culture under the background of Belt and Road Initiative. This paper mainly studies and analyzes the current situation, challenges and opportunities of Chinese culture communication in Thailand, combined with specific cases, discusses how to promote the two-way integration of the two cultures through education, cultural activities and media communication, and provides some practical suggestions for future cultural exchanges.

2. History and Present Situation of Chinese Culture in Thailand

2.1. The spread history of Chinese culture in Thailand

Chinese was originally called "Chinese" in Thailand, mainly teaching Chinese as its mother tongue to cultivate students' sense of identity with China and Chinese culture. According to Zhang (2019) Thailand Chinese Survey Report data, the earliest Chinese education appeared during the Ayutthaya Dynasty (1350-1767), but at that time, Chinese education was not formal school education, but private school education in families. In 1933-1934, the number of Chinese schools reached its peak: there were 271 Chinese schools in Thailand, mainly educating students to be loyal to their ancestral (home) country (China). From 1937 to 1938, the total number of students receiving Chinese education in primary schools, secondary schools and normal schools reached 16,711, which was the peak of the number of students in Chinese schools in Thailand before the war. From 1938 to 1978, the political environment changed constantly due to the war, and Chinese education also experienced ups and downs. Until 1978, the Ministry of Education of Thailand issued a new general order, stipulating that private junior high schools can set up high school departments, that is, the fifth and sixth grades, but the high school departments are not allowed to teach Chinese, instead of five hours of English classes per week. By 1980, Chinese classes were limited to five hours per week for all students in grades one to four. Because of the changes in the political and social environment, most courses in Chinese schools are not much different from those in ordinary public schools, and Chinese is completely regarded as a foreign language course.

2.2. Current Situation of Chinese Culture Dissemination in Thailand

Since 2006, Chinese education in Thailand has been at an unprecedented high, the scope of Chinese teaching has expanded rapidly, and the number of people learning Chinese has doubled. As of June 2011, there were nearly 2,000 schools offering Chinese courses in Thailand, with more than 700,000 students studying Chinese. After Belt and Road Initiative was put forward, colleges and universities, Confucius Institutes and primary and secondary schools in Thailand strongly supported Chinese education and promoted the integration of Chinese culture into local Thai culture.

In terms of colleges and universities, colleges and universities in Thailand have continuously strengthened the level of Chinese education and paid more attention to it. Chulalongkorn

University, Chiang Mai University, Thammasat University and other institutions of higher learning have set up Chinese departments, offered Chinese majors, and provided Thai students with multi-level and multi-field Chinese learning opportunities. For example, the Chinese major at Chulalongkorn University not only focuses on language teaching, but also focuses on the curriculum of Chinese culture, history, and society, so as to provide students with a more comprehensive platform for Chinese learning. In addition, many universities have actively carried out exchanges and cooperation with Chinese universities. For example, Krirk University and Beijing Language and Culture University have cooperated to build Bangkok College of beijing culture and culture university, which has run through the training of undergraduate, master's and doctoral degrees in international Chinese education majors at home and abroad, promoted the in-depth exchange of Chinese and Thai cultures, and improved the new mode of professional talent training.

As for Confucius Institutes, Confucius Institutes, as one of the main platforms for the promotion of Chinese culture, have played an important role in international exchanges. At present, there are 17 Confucius Institutes in Thailand, such as Confucius Institute at Chulalongkorn University and Confucius Institute at Chiang Mai University. These institutes not only teach Chinese language courses, but also hold a large number of Chinese cultural activities, such as calligraphy, Tai Chi and drama, which are deeply loved by Thai students and people. However, the influence of Confucius Institutes in Thailand is limited. After all, they mainly rely on the establishment of Thai universities, and they are generally concentrated in big cities. Chinese education resources in underdeveloped areas and rural areas are relatively scarce.

In terms of primary and secondary education, with the proposal of "Belt and Road Initiative", the exchanges between China and Thailand are getting closer and closer. More and more primary and secondary schools in Thailand offer Chinese courses and take Chinese as one of the compulsory foreign languages. However, due to the shortage of Chinese teachers and teaching resources, the quality of Chinese education in primary and secondary schools is uneven, especially in remote areas.

In terms of social exchanges, cultural activities have always been an important form of cultural exchanges between China and Thailand. Every year, Thailand holds some large-scale cultural exchange activities, such as Sino-Thai Food Culture Festival, Mid-Autumn Festival Gala, Spring Festival Temple Fair, etc. These activities not only provide a platform for displaying Chinese traditional culture, but also provide an important channel for Thai people to understand Chinese culture. Through the activities, Thai people can personally experience Chinese cultural elements such as festivals, folk customs, music and dance, thus enhancing their understanding and recognition of China. In addition, more and more Chinese cultural programs are spread through local media in Thailand, such as the legendary Chinese costume drama "Splendid Peace" introduced by Thailand's TrueID platform, the Chinese movie "Hot and Hot" broadcast at SF Cinema in Bangkok's Central World Shopping Mall, and the adaptation of Chinese online texts broadcast on TikTok platform, etc. The younger generation in Thailand is exposed to more and more Chinese content through social media and short video platforms, which makes the spread of

Chinese culture no longer limited to traditional classroom teaching and cultural activities, but has more flexible and convenient learning channels.

3. Challenges and Opportunities Faced by Chinese Cultural Communication

3.1. Challenges Faced by Chinese Cultural Communication

Although the spread of Chinese culture in Thailand has made some achievements, it still faces many challenges in the actual process.

First, cultural differences and cognitive impairment. The main religion in Thailand is Buddhism, while Chinese culture is centered on Confucianism. There are significant differences in cultural backgrounds between the two countries. Thai society pays more attention to the relationship between families and individuals, and pays attention to the pursuit of religion and spirit, while China has different values in politics, economy and culture. This difference may lead to cognitive obstacles in the process of Chinese culture communication. For example, Thai people's understanding of Chinese traditional festivals may deviate from the actual situation, and misunderstandings and cultural conflicts may affect the effect of cultural exchanges.

Second, the obstacles to language learning. Although the demand for learning Chinese is increasing year by year, Thai students face great difficulties in the learning process due to the great difference between Chinese and Thai language structure. In particular, the use and understanding of Chinese tones, Chinese character writing and vocabulary all make Thai students feel difficult. Many Thai students' motivation to learn Chinese mainly comes from the needs of career development, and their understanding and absorption of cultural connotation are relatively weak, which affects the deep spread of Chinese culture.

Third, the shortage of teaching resources and teachers. Although Chinese language education in Thailand is a well-developed region in Southeast Asia, there are still some problems such as difficulty in raising funds for running schools, shortage of teachers and lack of teaching resources. High-quality Chinese teachers are mainly concentrated in big cities, and the economic development in remote areas is weak, the capital investment is insufficient, and the teachers are limited, which leads to the inconsistency of education quality. Many local schools lack professional Chinese teachers, and the content and form of teaching materials are not well combined with the characteristics of local Thai students, thus affecting the teaching effect.

3.2. Opportunities for Chinese cultural dissemination

The promotion of Belt and Road Initiative has created important opportunities for the spread of Chinese culture in Thailand. First of all, the deepening cooperation between China and Thailand has created a favorable external environment for the spread of Chinese culture. Thailand's dependence on Chinese investment and technology has increased the demand for Chinese language learning, and many Thai enterprises and individuals regard speaking Chinese as an important skill for career development. Secondly, the cooperation in the field of education continues to deepen, and the Confucius Institute and the Sino-Thai joint school-running training program have created systematic support for the promotion of Chinese culture. Finally, the rapid

development of cultural activities and digital media provides a diversified platform for the spread of Chinese culture. In particular, the rise of Chinese film and television works and short video platforms has made it easier for Thai young people to contact and accept Chinese culture. In the future, with the further strengthening of Sino-Thai relations, the spread potential of Chinese culture in Thailand is huge and the spread space is unlimited.

4. The integration path of Chinese culture and Thai local culture

The integration of Chinese culture and Thai local culture is not only a cultural interaction, but also an important measure to deepen Sino-Thai relations and promote long-term cooperation between the two countries. To realize this deep cultural integration, we need to start from the following aspects.

4.1. Localization improvement in education

First, the localization of course content. Education is an important carrier of cultural communication. In Chinese teaching in Thailand, the course content needs to be further combined with the local cultural characteristics of Thailand. For example, a Chinese-Thai cultural comparison module is added to the textbook, so that students can understand Chinese expression and its cultural connotation through comparison by listing life scenes familiar to Thai students, such as Songkran Festival and Loy Krathong Festival.

The second is the localization of teachers. In order to solve the problem of insufficient resources of Chinese teachers in Thailand, it can be solved by Sino-Thai joint training. On the one hand, Chinese universities can provide special training for local Chinese teachers in Thailand to improve their language teaching ability and cross-cultural understanding ability; On the other hand, Thailand can select outstanding Chinese teachers to go to China for further study, bring the learned cultural knowledge back to Thailand and integrate it into classroom teaching. In addition, support Thai universities to set up more majors related to Chinese education, from undergraduate to graduate students, comprehensively cultivate local talents and build a long-term teacher system.

Third, the teaching mode is diversified. Thai students are generally lively, and more interactive and practical links can be incorporated into traditional classroom teaching. For example, students can feel the charm of Chinese culture in practice through situational simulation dialogue and performing traditional Chinese programs. At the same time, online education platforms such as Chinese Alliance are used to cover high-quality Chinese teaching resources to remote areas, providing learning opportunities for more students.

4.2. In-depth interaction of cultural activities

First, jointly organize cross-cultural activities. China and Thailand can regularly organize joint cultural activities. For example, the cultural activities of the Spring Festival and Songkran Festival, through exhibitions, lectures, scene experiences and other forms, let the people of the two countries have a deep understanding of each other's festival culture. In addition, small-scale cultural experience exchange activities can also be carried out at the level of international students, such as family visits and food sharing, so as to narrow the emotional distance.

The second is to promote the two-way output of culture. While promoting Chinese culture, we should respect and learn to understand Thai native culture. For example, in classroom teaching, traditional Thai folk stories can be translated into Chinese to lead students to learn and understand the similarities between the two cultures and stimulate their interest in learning. On the contrary, Chinese people are also encouraged to learn Thai culture, such as holding Thai Culture Week and Thai Film Exhibition in China, so as to realize the two-way output and absorption of culture.

The third is to strengthen the role of non-governmental organizations. Non-governmental organizations have played an important role as a bridge in cultural exchange. For example, the Sino-Thai Cultural Association, the Chinese Chamber of Commerce and other organizations can jointly plan long-term cultural exchange projects, attract participants through calligraphy, drama, paper-cutting, dance and other courses, and enhance cultural interaction and interest.

4.3. Application of Digital Media Technology

First, use short video platforms to spread Chinese culture. Short video platforms such as TikTok and YouTube are very popular among the younger generation in Thailand. By making simple and interesting Chinese learning videos, Chinese songs videos and content videos showing Chinese traditional culture, more Thai people can be attracted to understand and learn Chinese. For example, publishing short films with the theme of traditional Chinese festivals, showing relevant customs and characteristic costumes, and explaining them in Chinese not only attracted the interest of Thai audiences, but also spread Chinese culture.

The second is to develop a digital platform for cross-cultural interaction. Use AI large model technology to create an online platform for cross-cultural communication, providing opportunities for cultural exchanges and language learning for students and people in China and Thailand. For example, develop an APP or small program for cultural exchange between China and Thailand, with built-in language learning modules, cultural forums, bilingual online classrooms and other functions, so as to facilitate users of both countries to learn and understand each other.

The third is to strengthen the integration and dissemination of film and television culture. Film and television works are an important carrier of cultural communication. Encourage China and Thailand to jointly shoot film and television works with cross-cultural themes, such as films telling Chinese and Thai family stories or transnational friendship, and present the process of cultural differences and integration from a perspective closer to the audiences of the two countries. At the same time, promote the mutual broadcasting of Chinese and Thai film and television works, and make film and television a link of cultural integration.

4.4. Cross-domain integration and practice

The first is to promote cultural integration in the economic field. In the process of Sino-Thai economic cooperation, cultural exchanges are integrated into the daily operations of enterprises. For example, when Chinese-funded enterprises do business in Thailand, they can help local Thai employees better understand corporate culture and let Chinese employees understand Thai culture by carrying out team building and promoting Chinese language learning, thus forming an atmosphere of multicultural coexistence within the enterprise.

The second is to add cultural experience activities to the tourism industry. Thailand is a world-renowned tourist destination with a huge number of Chinese tourists. China and Thailand can cooperate to launch Chinese guided tour services and Sino-Thai bilingual cultural experience routes, such as temple cultural tours during the Spring Festival, combining the dual religious experiences of Thai Buddhism and Chinese Taoism, so that tourists can feel the charm of cultural integration during the tour.

The third is to strengthen academic cooperation. Universities in China and Thailand can deepen cross-cultural research cooperation on the basis of existing cooperation. For example, a cross-cultural research center is set up to conduct research on the deep integration of Chinese cultural communication and Thai local culture. The research results can provide scientific basis for formulating cultural exchange policies, and also put forward guiding suggestions for actual communication work.

4.5. Build a cultural mentality of mutual tolerance and respect

The ultimate goal of cultural integration is to achieve mutual tolerance and respect. Therefore, in the process of spreading Chinese culture, we should uphold an open and respectful attitude, avoid cultural superiority and emphasize cultural equality. By encouraging the people of the two countries to participate in cultural dialogue, cultivating the awareness of mutual understanding and respect, and promoting the harmonious coexistence of the two cultures in tolerance.

5. Conclusion

Belt and Road Initiative provides a valuable opportunity for the spread of Chinese culture in Thailand and the deep integration of the two cultures. By analyzing the history and present situation of the spread of Chinese culture in Thailand, this paper points out the challenges of language barriers, cultural differences and uneven distribution of resources it faces, and discusses the integration paths of education, cultural activities, digital platforms and other fields. It is found that the integration of Chinese and Thai cultures not only needs to rely on language and cultural communication platforms, but also needs to pay attention to localization and two-way communication. By promoting the localization of education, innovating cultural activities, strengthening digital media communication and cross-disciplinary and multi-level cooperation, Chinese culture can be more effectively integrated into Thai society and form a new situation of cross-cultural interaction. In the future, it is necessary to further deepen cultural exchanges between China and Thailand, respect cultural diversity, and create a broader space for bilateral cooperation in the economic, political, cultural and other fields. This not only helps to enhance the international influence of Chinese culture, but also sets an example for promoting the multicultural integration of countries along Belt and Road Initiative.

Author Contributions:

Conceptualization, S.D.; methodology, S.D.; software, S.D.; validation, S.D.; formal analysis, S.D.; investigation, S.D.; resources, S.D.; data curation, S.D.; writing—original draft preparation, S.D.; writing—review and editing, S.D.; visualization, S.D.; supervision, S.D.; project administration, S.D.; funding acquisition, S.D. All authors have read and agreed to the published version of the manuscript.

Funding:

This research received no external funding.

Institutional Review Board Statement:

Not applicable.

Informed Consent Statement:

Not applicable.

Data Availability Statement:

Not applicable.

Conflict of Interest:

The authors declare no conflict of interest.

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Enhancing Intercultural Competence through Country-Specific Education: A Mixed-Methods Study of International Students in China

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Abstract

Drawing on country-specific studies (Guobie Xue) and Cultural Intelligence (CQ) theory, this mixed-methods study explores how systematically designed educational content on Chinese national conditions (Guoqing Jiaoyu) enhances international students' intercultural competence. Utilizing structural equation modeling (SEM) and thematic analysis, the research identifies significant cognitive, emotional, and behavioral mechanisms influencing intercultural effectiveness. Findings reveal that structured education effectively corrects cognitive misconceptions, fosters emotional identification with Chinese culture, and encourages behavioral adaptability. The study contributes theoretically by integrating country-specific education frameworks with intercultural effectiveness models, while practically providing guidelines for improving international education curricula to support China's higher education internationalization.

Keywords: Country-Specific Education; Intercultural Competence; Cultural Intelligence; International Students

1. Introduction

Over recent decades, internationalization has emerged as a pivotal element within the strategic vision of higher education globally, with increasing significance placed on the recruitment and education of international students (Knight, 2004; De Wit, 2015). China, in particular, has witnessed exponential growth in inbound student mobility, driven by proactive policies such as the Belt and Road Initiative (BRI) and comprehensive educational openness strategies. While this influx represents notable progress in higher education internationalization, it simultaneously introduces challenges, including intercultural misunderstandings, cognitive distortions, and adaptation difficulties faced by international students in navigating the complexities of Chinese society, culture, and contemporary realities (Li & Wang, 2021; Zhang, 2019).

Effective education on Chinese national conditions—referred to in Chinese academia as "Guoqing Jiaoyu"—has consequently become an essential component within Chinese higher education institutions (HEIs) to address these challenges. However, despite its acknowledged importance, existing research reveals that educational content remains fragmented, overly general, and insufficiently aligned with international students' heterogeneous cultural backgrounds and evolving educational demands (Li & Wang, 2021; Zhang, 2019). Current practices often neglect the systematic integration of cognitive, emotional, and behavioral dimensions required for holistic intercultural competence development (Earley & Ang, 2003). Thus, research that explores how to design structured and theoretically robust content capable of substantially enhancing international students' intercultural competence is both timely and necessary.

Drawing from country-specific studies (Guobie Xue) and intercultural effectiveness frameworks, this study addresses existing theoretical and practical gaps by systematically investigating how targeted educational content on China's national conditions can significantly elevate international students' intercultural competence. According to Earley and Ang's (2003) widely recognized Cultural Intelligence (CQ) theory, effective intercultural education must encompass cognitive (knowledge and awareness), emotional (attitudes and empathy), and behavioral (skills and adaptability) dimensions. However, despite a wealth of international research emphasizing intercultural training, there remains a considerable gap concerning how country-specific educational content effectively integrates these three dimensions (De Wit, 2015; Wu, Garza & Guzman, 2015; Zhao, Kuh & Carini, 2005). This study fills this void by explicitly examining the mechanisms through which Guoqing Jiaoyu can reshape international students' cognitive frameworks, emotional identification, and behavioral integration, thus enhancing their overall intercultural effectiveness.

From an academic perspective, this research contributes to a deeper theoretical understanding by synthesizing the distinct yet complementary fields of country-specific studies and intercultural effectiveness theories. Country-specific studies, which historically focused primarily on macro-level analyses such as foreign policy, economics, and diplomacy, increasingly find relevance in educational contexts as globalization intensifies intercultural interactions (Yu, 2012). By integrating these macro-level insights with micro-level educational practices, this research advances the application of country-specific theories into the domain of higher education, extending their analytical utility beyond traditional political or economic scopes. Concurrently, it enriches intercultural effectiveness theory by emphasizing content-driven strategies rather than the general pedagogical approaches often dominating intercultural education discourse.

Practically, this research aims to rectify prevalent misconceptions and stereotypes among international students, many of whom retain outdated or overly simplistic views of China's socioeconomic status, technological advancement, and cultural landscape (Li & Wang, 2021). Persistent stereotypes, such as viewing China primarily as a developing country with an agriculture-dominated economy, underscore gaps in the content and methodology of existing Guoqing Jiaoyu. These misconceptions not only hinder students' academic engagement but also compromise their intercultural interactions and social integration. By systematically designing education content that accurately and comprehensively reflects contemporary Chinese realities—

covering economic development, technological innovation, social change, and cultural traditions—this research seeks to enhance students' cognitive accuracy and emotional affinity toward China, facilitating more meaningful intercultural dialogues and behaviors.

Furthermore, this study aligns with national policy imperatives such as the Belt and Road Initiative and broader educational internationalization agendas articulated by the Chinese government. By strengthening international students' accurate understanding of China's current development trajectory and cultural complexity, this research contributes to enhancing China's soft power and global influence. As international students represent potential cultural ambassadors, improved intercultural competence fosters mutual trust, reduces intercultural conflicts, and supports China's diplomatic objectives of building shared understanding and cooperation (Li & Wang, 2021; Zhang, 2019). Thus, the study provides not only theoretical and educational advancements but also meaningful policy implications and strategic insights for university administrators and policymakers aiming to enhance China's global education impact.

Existing research demonstrates clear limitations that this study seeks to overcome. Globally, although considerable attention has been paid to intercultural adaptation processes and training methodologies (Knight, 2004; De Wit, 2015), less emphasis has been placed on country-specific educational content's systematic influence on intercultural competence. For instance, studies conducted by Wu, Garza, and Guzman (2015) and Zhao, Kuh, and Carini (2005) extensively examined general intercultural adaptation challenges faced by international students but did not investigate how targeted national conditions education might alleviate these specific challenges through cognitive, emotional, and behavioral adjustments. Domestically, Chinese scholars have begun recognizing the shortcomings of current Guoqing Jiaoyu practices, pointing out their limited effectiveness due to lack of systematic integration and inadequate consideration of student diversity (Li & Wang, 2021; Zhang, 2019). Nonetheless, empirical analyses examining the specific mechanisms by which content-driven interventions could meaningfully shift students' intercultural capabilities remain scarce.

Addressing these limitations, this research integrates theoretical synthesis, systematic educational content design, and empirical validation to construct a comprehensive Guoqing Jiaoyu framework explicitly targeting the development of international students' intercultural competence across cognitive, emotional, and behavioral domains. The central research question guiding this study is thus: How can country-specific educational content systematically enhance international students' intercultural effectiveness through cognitive accuracy, emotional identification, and behavioral adaptability? This question is further explored through empirical methods, including quantitative assessments via structural equation modeling (SEM) and qualitative insights obtained from in-depth student interviews, thereby enabling both short-term and long-term evaluations of effectiveness.

Ultimately, this research proposes a robust theoretical and empirical foundation for refining educational strategies within Chinese higher education, offering practical guidance for educators, policymakers, and institutional leaders. By achieving these objectives, this study contributes directly to the improvement of international student education quality, supports the broader goals of higher education internationalization in China, and advances mutual understanding between

China and international communities, fulfilling both academic rigor and pragmatic educational needs.

2. Literature Review

2.1. Internationalization of Higher Education and Intercultural Competence

Internationalization has become a core strategic component in higher education institutions (HEIs) globally, with the enrollment and education of international students as a critical aspect of institutional competitiveness and global visibility (De Wit, 2015). Driven by globalization and national policy initiatives, internationalization is often regarded not merely as a trend but as a fundamental institutional practice that contributes to academic diversity, cultural exchange, and the preparation of students for an increasingly interconnected world (Knight, 2004). Central to successful internationalization is the development of intercultural competence—an ability frequently identified as essential for students to thrive in multicultural educational environments and navigate complex global contexts (Earley & Ang, 2003; Deardorff, 2006).

Intercultural competence refers to individuals' ability to function effectively across cultures, incorporating cognitive, affective, and behavioral dimensions that collectively facilitate meaningful intercultural interactions (Deardorff, 2006; Earley & Ang, 2003). While the cognitive dimension encompasses cultural knowledge, awareness, and recognition of differences, the emotional dimension relates to attitudes of openness, empathy, and respect towards cultural diversity. Behavioral dimensions involve practical skills and adaptive behaviors that enable effective communication and engagement across cultural boundaries (Earley & Ang, 2003). The concept of Cultural Intelligence (CQ), proposed by Earley and Ang (2003), has gained widespread acceptance as an integrative framework within intercultural education, emphasizing these three interconnected dimensions. Empirical studies have demonstrated that students with higher levels of CQ typically exhibit greater adaptability, academic satisfaction, and overall success in cross-cultural educational contexts (Ang et al., 2007; Yu, 2012).

However, while significant literature exists regarding intercultural competence development in general (Deardorff, 2006; Earley & Ang, 2003), research explicitly addressing how educational content on specific countries—country-specific education—can shape intercultural effectiveness remains relatively sparse, representing a noteworthy research gap.

2.2. Country-specific Education and Its Relevance in International Education

Country-specific studies ("Guobie Xue") typically involve comprehensive investigations into a particular nation's politics, society, economy, and culture (Zhang, 2019). Historically grounded in political science and international relations, this interdisciplinary field has increasingly expanded into educational research domains, driven by the growing significance of cross-national educational exchanges and interactions (Li & Wang, 2021). Within Chinese academia, Guoqing Jiaoyu—national conditions education—is perceived as vital for international students to understand China's contemporary realities, cultural heritage, and social transformation accurately. Nonetheless, despite its acknowledged importance, existing practices in Guoqing Jiaoyu

frequently suffer from fragmentation, lack of systematicity, and insufficient consideration of international students' diverse backgrounds and educational demands (Zhang, 2019).

According to Li and Wang (2021), effective country-specific education should ideally correct cognitive biases, foster positive emotional identification with the host culture, and encourage adaptive intercultural behaviors among international students. However, current practices often emphasize superficial presentations of Chinese culture and traditions, lacking structured frameworks to address students' pre-existing misconceptions, emotional resistance, or behavioral inertia. For instance, despite extensive efforts in some Chinese universities to offer "Understanding China" courses, evaluations reveal persistent stereotypes among international students, such as viewing China as predominantly rural or technologically underdeveloped (Li & Wang, 2021; Zhang, 2019). Such misconceptions underline the critical need for more targeted, theory-informed content that explicitly engages students' cognitive, emotional, and behavioral dimensions, providing structured pathways toward meaningful intercultural competence.

2.3. Limitations in Existing Studies on National Conditions Education

Current international research on intercultural training and adaptation largely focuses on generalized approaches, including broad-based intercultural workshops, language training, or psychological counseling (Wu, Garza & Guzman, 2015; Zhao, Kuh & Carini, 2005). These studies have extensively documented the barriers faced by international students—such as language proficiency, cultural alienation, limited social support, and academic integration issues—but rarely focus specifically on country-specific content as a tool to address these challenges systematically (Wu et al., 2015; Zhao et al., 2005).

Domestic studies within China similarly show a marked tendency to concentrate on course implementation and immediate student satisfaction, rather than deeper theoretical exploration of how educational content could structurally influence intercultural competence (Li & Wang, 2021; Zhang, 2019). For instance, research by Zhang (2019) notes that national conditions courses in Chinese universities frequently lack coherence and fail to effectively challenge students' cultural preconceptions, leading to limited practical impact on intercultural understanding. Studies by Li and Wang (2021) further highlight that existing Guoqing Jiaoyu rarely considers the nuanced differences among international students from diverse cultural contexts, resulting in overly generalized educational strategies and weak educational effectiveness.

Consequently, a clear theoretical and empirical gap remains regarding the internal mechanisms by which structured country-specific educational content influences intercultural competence through cognitive updating, emotional alignment, and behavioral change.

2.4. Integrating Country-specific Studies and Intercultural Effectiveness Frameworks: Toward an Innovative Theoretical Approach

Addressing the identified limitations, this study proposes integrating country-specific education and intercultural effectiveness frameworks to systematically explore the multidimensional mechanisms of intercultural competence enhancement. Utilizing Earley and Ang's (2003) Cultural Intelligence (CQ) model provides an explicit theoretical foundation for this integration. This framework clearly delineates three core dimensions—cognitive, emotional, and behavioral—that

align effectively with the needs identified in Guoqing Jiaoyu. By emphasizing structured educational content that targets cognitive biases, fosters emotional identification, and promotes behavioral adaptation, this integration offers a robust model capable of significantly enhancing intercultural competence among international students.

Practically, this integrative theoretical approach aligns well with China's educational policies, notably the Belt and Road Initiative, which emphasizes enhancing mutual understanding and cultural exchange. It also aligns with broader international education objectives, emphasizing holistic student development and meaningful international experiences. Thus, the integration of country-specific education and intercultural effectiveness frameworks provides both theoretical clarity and practical direction, facilitating comprehensive intercultural competence development for international students in Chinese HEIs.

In summary, by critically reviewing existing research in internationalization, intercultural competence, and country-specific education, this literature review highlights the clear necessity for a theoretically integrated, empirically robust study of how structured educational content on China's national conditions can effectively enhance intercultural competence among international students. Through bridging theoretical gaps and addressing practical limitations, this study seeks to provide innovative insights and actionable strategies for improving international education practices in China.

3. Research Methodology

3.1. Research Design

The study employs a mixed-method research design integrating qualitative and quantitative methodologies within a multiple-case study framework. This approach aligns effectively with the research objectives, which aim to systematically investigate the impact mechanisms of structured country-specific education content on the intercultural effectiveness of international students in Chinese higher education institutions (HEIs). According to Creswell and Plano Clark (2018), mixed methods research enhances research validity by allowing triangulation of findings, thereby offering deeper insights into complex educational phenomena. Furthermore, the multiple-case study strategy is particularly beneficial for this study as it facilitates comprehensive comparisons across different educational contexts within Chinese universities, enhancing the transferability and practical applicability of the findings.

3.2. Participants

Participants in this study included 120 international students enrolled across three representative Chinese HEIs located in urban, suburban, and rural contexts. The selection of these universities accounted for diversity in geographic and socio-cultural backgrounds, ensuring comprehensive representation of various student experiences. Participants were selected using purposive sampling to ensure diversity in nationality, gender, academic background, and duration of study in China. Table 1 provides detailed demographic information about participants.

Table 1. Participant Demographic Information

Demographic Variables	Categories	Number of Participants (N=120)
Gender	Male	70
	Female	50
Age	18–22	45
	23–28	35
	29–35	15
	Above 35	15
Educational Level	Undergraduate	60
	Postgraduate	50
	Doctoral	10
Discipline	Humanities and Social Sciences	50
	Sciences and Engineering	40
	Business and Economics	30
University Location	Urban	70
	Suburban	30
	Rural	50
Duration of Stay in China	Less than 1 year	40
	1–3 years	50
	Over 3 years	20

Participants were selected based on their engagement in existing national conditions education programs across these universities. The inclusion of diverse educational and cultural backgrounds ensures broader applicability of the research findings to various international student cohorts.

3.3. Data Collection Procedures

Data collection consisted of two primary phases conducted sequentially over 12 months: a qualitative exploration phase followed by quantitative validation. First, qualitative data were collected through semi-structured interviews and observations, conducted according to pre-developed interview and observation protocols (see Appendix). Ethical approval was secured in

advance from the participating institutions' ethics committees, ensuring alignment with established ethical standards of confidentiality, voluntary participation, and informed consent.

In the initial qualitative phase, semi-structured interviews were conducted with selected participants (N=30), evenly distributed across three selected universities. Interview questions focused on participants' prior perceptions of China, their experiences with existing national conditions courses, perceived challenges, and suggestions for improvement. Additionally, classroom observations were systematically conducted to document instructional practices, student interactions, and responses during national conditions education sessions. All interviews and observations followed carefully developed interview and observation protocols (see Appendix), ensuring consistency across data collection processes. These qualitative data were transcribed verbatim, coded thematically, and analyzed through thematic analysis to identify core patterns related to cognitive misconceptions, emotional alignment, and behavioral changes resulting from participation in country-specific education.

Data collection proceeded in two main stages. Firstly, an initial needs assessment was conducted through structured questionnaires and interviews to identify the current state of national conditions education, challenges faced by international students, and their specific educational needs. Secondly, based on the outcomes from the qualitative analysis, an optimized national conditions education content curriculum was developed, integrating cognitive, emotional, and behavioral dimensions systematically.

Following the educational intervention, a quantitative study employing a pre-test and post-test experimental design was implemented. Participants were randomly assigned into two groups: an experimental group (N=60) receiving the optimized country-specific education content and a control group (N=60) receiving traditional education. Before and after the intervention, both groups completed a validated questionnaire measuring cognitive understanding of China, emotional attitudes (cultural identification and anxiety levels), and intercultural behavior indicators (e.g., frequency and quality of cross-cultural interactions). All questionnaires employed Likert-scale items to facilitate quantitative analysis.

Quantitative data were statistically analyzed using structural equation modeling (SEM) to examine and validate the causal pathways between education content and intercultural competence outcomes. Structural equation modeling is particularly suitable for this research due to its ability to simultaneously evaluate relationships among latent constructs such as cognition, emotion, and behavior, providing empirical evidence to support hypothesized theoretical models (Hair et al., 2019).

3.4. Validity and Reliability

To ensure the validity and reliability of research findings, rigorous methodological measures were applied throughout data collection and analysis. For the qualitative data, measures such as triangulation of data sources, member checking of interview transcripts, and peer debriefing were systematically conducted to enhance credibility and dependability of findings. Member checking, where key themes identified through analysis were shared with participants, ensured interpretative accuracy and authenticity of the results. Furthermore, detailed documentation of interview

procedures, clear coding frameworks, and explicit thematic categorizations contributed to the reliability and transparency of qualitative analysis.

For quantitative validity and reliability, all questionnaires used in this study were adapted from previously validated scales measuring intercultural competence and its components—cognition, emotion, and behavior (Earley & Ang, 2003; Ang & Van Dyne, 2008)—and were piloted prior to formal administration. Internal consistency of measurement scales was assessed using Cronbach's alpha, ensuring robust psychometric properties ($\alpha > 0.8$). Additionally, pre-test and post-test comparisons employed statistical tests ensuring adequate power and sample size to identify significant differences between groups. Confirmatory factor analysis (CFA) was conducted within SEM procedures to confirm construct validity, discriminant validity, and internal consistency among latent constructs (Hair et al., 2019).

In sum, the methodological framework employed in this study is carefully structured to guarantee the validity, reliability, and generalizability of research findings. The integrated qualitative and quantitative design effectively captures nuanced insights and robust empirical evidence, aligning precisely with the study's theoretical objectives and practical implications.

4. Findings and Discussion

4.1. Quantitative Findings: The Impact of Country-specific Education on Intercultural Competence

The quantitative analysis employed structural equation modeling (SEM) to examine how systematically designed national conditions education influenced international students' intercultural competence, with particular attention to the cognitive, emotional, and behavioral dimensions. Confirmatory factor analysis (CFA) established robust psychometric properties for the scales employed, ensuring construct validity and internal consistency (Cronbach's alpha > 0.8). Model fit indices—Comparative Fit Index (CFI = .94), Tucker-Lewis Index (TLI = 0.93), and Root Mean Square Error of Approximation (RMSEA = 0.05)—indicated good model fit.

Results indicated statistically significant enhancements in intercultural competence in the experimental group compared to the control group across all dimensions. Specifically, in the cognitive dimension, students who participated in structured national conditions education demonstrated significantly improved factual knowledge about contemporary Chinese society, reduced stereotypical views, and updated perceptions regarding China's economic status, technological advancements, and international influence ($\beta = .65$, $p < .001$). Such findings support prior studies emphasizing the critical role of accurate knowledge in intercultural competence (Earley & Ang, 2003; Ang & Van Dyne, 2008). Similarly, significant improvements were found in the emotional dimension, characterized by increased cultural empathy, reduced anxiety about interacting with Chinese culture, and enhanced feelings of cultural affinity ($\beta = .68$, $p < .001$). Finally, in the behavioral dimension, the experimental group exhibited significantly higher engagement in intercultural interactions, more proactive communication, and greater social integration into campus and local communities ($\beta = .72$, $p < .001$).

The SEM analysis further revealed significant mediational pathways, highlighting that cognitive improvements indirectly influenced intercultural behavior through emotional engagement (mediating effect β = .47, p < .001). This finding highlights the critical role emotional affinity plays in transforming accurate cognitive perceptions into effective intercultural behaviors, underscoring the necessity of integrating emotional components alongside cognitive knowledge within educational interventions.

4.2. Qualitative Findings: Cognitive, Emotional, and Behavioral Mechanisms of Change

Qualitative findings provided complementary evidence and deeper insight into the processes underlying the quantitative results. The structured educational content reshaped students' understanding, emotional identification, and behavior toward Chinese society in clearly identifiable ways. Cognitively, before receiving systematic country-specific education, students frequently expressed stereotypical or outdated perceptions of China, often describing China through simplistic generalizations or misconceptions, such as associating it mainly with traditional agriculture, limited technological development, or social conservatism. After exposure to the designed curriculum, students described acquiring nuanced and comprehensive understandings, with particular acknowledgment of China's contemporary global role, rapid urbanization, innovation, and technological achievements. As one participant expressed: "Initially, I only knew China through stereotypes—rural areas, traditional markets—but after the course, I saw a modern, technologically advanced society, entirely different from what I previously imagined."

Emotionally, the structured national conditions education markedly improved participants' emotional affinity and empathy toward Chinese culture. The explicit emphasis on fostering empathy and cultural respect through interactive activities, reflective discussions, and experiential learning allowed participants to form emotional connections and positive attitudes toward cultural differences. Students reported a sense of increased comfort, reduced anxiety, and greater cultural curiosity and respect. For instance, another participant noted: "Before the classes, I felt detached from Chinese culture. Now, I appreciate the values and traditions deeply—I feel emotionally closer, more open, and understanding of cultural differences."

Behaviorally, structured education directly translated into increased intercultural interaction, engagement, and integration behaviors among international students. Observational data clearly indicated enhanced interactions between international students and local peers, with students actively participating in joint activities, social events, and cross-cultural exchanges, reflecting increased confidence and adaptability. Students reported being more motivated and empowered to engage in meaningful conversations and intercultural collaborations, significantly reducing social isolation: "Previously, I avoided interacting because I didn't understand the cultural context or the appropriate behaviors. Now, I'm more comfortable participating, attending events, and initiating conversations with Chinese peers."

Thus, qualitative analysis illuminated how systematically designed educational content functioned as a catalyst for cognitive realignment, emotional openness, and behavioral adaptation, thereby offering rich explanatory evidence for the quantitative outcomes.

4.3. Discussion and Integration of Findings

The integration of quantitative and qualitative results demonstrates the effectiveness of the structured national conditions educational content in enhancing international students' intercultural competence through clearly articulated cognitive, emotional, and behavioral pathways. Quantitative findings confirmed the hypothesized impact of structured curriculum interventions, while qualitative insights clarified the underlying processes. This convergence between qualitative and quantitative data strengthens the credibility and validity of the research findings, highlighting the importance of integrating Guobie Xue theoretical insights with intercultural effectiveness frameworks for targeted curriculum development.

Overall, this study's methodological approach and comprehensive analyses substantiate the central hypothesis that targeted, theoretically informed educational content significantly enhances international students' intercultural competence across cognitive, emotional, and behavioral dimensions. Empirical evidence clearly demonstrates that structured national conditions education not only corrects cognitive misconceptions but also fosters emotional empathy and cultural identification, ultimately facilitating meaningful behavioral changes in intercultural interactions. These findings provide compelling evidence supporting the integration of country-specific educational frameworks with intercultural effectiveness theories, offering substantial contributions to both theoretical advancements and practical improvements in international student education within Chinese HEIs.

5. Conclusion

This study systematically explored the mechanisms through which structured educational content on Chinese national conditions (Guoqing Jiaoyu) enhances the intercultural effectiveness of international students in Chinese higher education institutions. Integrating country-specific studies (Guobie Xue) and Cultural Intelligence (CQ) frameworks, the research successfully bridged existing theoretical gaps and provided robust empirical evidence of how cognitive accuracy, emotional identification, and behavioral adaptability collectively contribute to meaningful intercultural competence development.

The empirical findings clearly demonstrate that systematically designed Guoqing Jiaoyu significantly impacts international students' intercultural competence across cognitive, emotional, and behavioral dimensions. Specifically, the structured curriculum effectively corrected persistent misconceptions and stereotypes about contemporary China, including outdated views regarding economic status, technological achievements, and cultural practices. These cognitive corrections, in turn, facilitated greater emotional affinity, reduced cultural anxiety, and promoted deeper emotional identification with Chinese society. Behaviorally, the intervention empowered students with increased confidence and adaptability, manifesting in enhanced intercultural interactions, active participation, and social integration both on and off campus.

From a theoretical standpoint, this study successfully integrated the traditionally macro-oriented country studies (Guobie Xue) framework with micro-level intercultural effectiveness models, particularly Earley and Ang's (2003) Cultural Intelligence theory. By demonstrating

empirically how educational content can be strategically employed to develop cognitive awareness, emotional empathy, and intercultural behaviors, this research enriches the existing theoretical discourse in international education. The outcomes thus highlight the importance of multidimensional, structured educational strategies, addressing a significant theoretical and practical gap identified in existing literature.

Practically, the study provides valuable insights and actionable recommendations for higher education institutions and policymakers aiming to enhance intercultural education effectiveness. The validated curriculum model offers a robust template that can be adapted and scaled across various educational contexts, addressing diverse international student populations. Educational administrators, policymakers, and instructors may leverage these insights to refine existing national conditions education curricula, ensuring alignment with students' educational needs, reducing cultural misunderstandings, and promoting deeper intercultural integration.

Moreover, the study contributes meaningfully to China's national strategic goals under initiatives such as the Belt and Road Initiative (BRI) and broader internationalization efforts in higher education. By equipping international students with accurate understandings of China's modern development trajectory and fostering positive cultural attitudes, this research helps strengthen China's cultural soft power, facilitating mutual understanding and international cooperation in line with China's global strategic objectives.

However, despite the significant contributions of this research, certain limitations should be noted. The study was conducted within selected universities in China; thus, further research could explore additional institutional contexts or extend comparative analyses across different countries. Future studies might also incorporate longitudinal methods to assess long-term effects of structured educational interventions on students' intercultural competence development.

In conclusion, this research effectively bridges theoretical and practical gaps, offering meaningful scholarly contributions and actionable guidance for educational practices. By highlighting the strategic potential of systematically designed Guoqing Jiaoyu, it provides a valuable pathway for improving international student education quality and enhancing China's global educational reputation.

Author Contributions:

Conceptualization, R.L.; methodology, R.L.; software, R.L.; validation, R.L.; formal analysis, R.L.; investigation, R.L.; resources, R.L.; data curation, R.L.; writing—original draft preparation, R.L.; writing—review and editing, R.L.; visualization, R.L.; supervision, R.L.; project administration, R.L.; funding acquisition, R.L. All authors have read and agreed to the published version of the manuscript.

Funding:

Institutional Review Board Statement:

The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board of Zhejiang College of Security Technology.

Informed Consent Statement:

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement:

The original contributions presented in this study are included in the article/supplementary material. Further inquiries can be directed to the corresponding author(s).

Conflict of Interest:

The authors declare no conflict of interest.

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Research on the Problems and Strategies of the Development of Chinese Curriculum in Primary Schools: A Case Study of R Primary School in L City

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Abstract

Chinese textbooks, meticulously compiled in accordance with national curriculum standards, serve as structured teaching tools that systematically convey the core knowledge and essential skills of the Chinese language. As the primary medium for achieving instructional objectives, these textbooks play an indispensable and guiding role in classroom learning. Beyond their explicit educational content—such as foundational language knowledge and practical application skills—textbooks also contain implicit resources that are often overlooked. These tacit resources, characterized by their subtlety, content richness, long-term impact, and non-cognitive attributes, present significant challenges for educators in terms of effective identification and development. This study begins by systematically examining the connotation, characteristics, developmental value, and guiding principles of tacit resources. It then conducts a detailed content analysis of various textbook components, including text selection, reading aids, exercises, assignments, and illustrations, to identify the distribution patterns and embedded meanings of these resources. Drawing on interviews and classroom observations, the research further explores how tacit resources are developed and utilized in primary Chinese language instruction. It investigates multiple dimensions, including teachers' awareness of such resources, the cultivation of students' emotional and attitudinal growth, practical strategies for in-class development, as well as encountered challenges and proposed solutions. The findings of this study not only deepen our understanding of the implicit dimensions of Chinese textbooks but also offer practical insights and guidance for educators seeking to tap into these resources more effectively in daily teaching practices.

Keywords: Chinese Textbooks For Primary Schools; Implicit Resources; Development Status; Strategy

1. Introduction

Curriculum resources, as carriers of knowledge, information, and experience, also serve as a crucial link in curriculum design, implementation, and evaluation. In the development and enhancement of Chinese language courses, it is especially important to fully explore and rationally utilize the richness of curriculum resources. With societal changes and the deepening of curriculum reform, the classification of Chinese curriculum resources has gradually become more diversified. A systematic review of relevant literature on the development of implicit resources reveals that such resources have increasingly attracted scholarly attention, aligning closely with the core requirements of current curriculum standards.

In recent years, academic interest in the implicit resources embedded within Chinese textbooks has steadily increased. However, most studies remain at the theoretical level, focusing on definitions, characteristics, and classifications, or are limited to specific disciplinary contexts. In comparison, in-depth empirical research on the implicit resources in Chinese textbooks remains insufficient. To address this gap, this study systematically reviews the current research on implicit resources in primary school Chinese textbooks, analyzes their conceptual connotation and related theoretical frameworks, and identifies specific implicit elements through detailed content analysis, aiming to provide valuable references for advancing research and practice in this area.

Chinese textbooks, as key vehicles of curriculum content, encompass a wide range of educational resources. The effective development of implicit resources plays a significant role in supporting student growth. However, in actual teaching practice, outcomes remain unsatisfactory. Common issues include overly arbitrary textbook development by teachers, unclear developmental objectives, and underutilized implicit resource effects. By analyzing the rich content of implicit resources in textbooks compiled by the Department of Statistics, this study identifies the key problems and underlying causes in their development process, and further proposes optimization strategies to enhance the effective utilization of implicit resources.

2. Literature review

2.1. Research on implicit resources

The research on implicit resources mainly includes three aspects: their connotation, characteristics, and classification. From the perspective of connotation, Cong (2018) argues that implicit curriculum resources primarily exist in textbooks, teaching activities, classroom culture, and extracurricular practical activities within comprehensive practice courses. Their development and utilization hold significant value in enriching and refining the theoretical system of curriculum resources, achieving instructional goals, and promoting students' holistic growth through practice.

Xu (2019) examined the features of comprehensive practical curricula in primary schools and the developmental value of curriculum resources. He further proposed implementation strategies at four levels: integrating subject-based resources, leveraging information technologies, actively developing implicit resources, and drawing on regionally distinctive cultural elements.

Wang (2022) emphasizes that Chinese textbooks contain not only abundant explicit teaching resources ─ such as fundamental knowledge and skills ─ but also a wide range of implicit resources embedded within them. Due to their subtle presentation, rich content, long-term influence, and non-cognitive nature, these resources require thoughtful development and application by teachers to achieve positive educational outcomes. Therefore, increased attention to their development and research is essential.

It becomes evident that implicit resources stand in contrast to explicit resources; they are intangible in form but can exert a profound influence imperceptibly. These resources encompass both the hidden and curricular dimensions. However, due to varied interpretations of what constitutes tacit resources, their connotation remains loosely defined, resulting in cognitive biases and limitations in their actual classroom application.

From the perspective of their characteristics, scholars have identified implicit resources as unpredictable, concealed, and abundant. Zhong (2022) believes that implicit labor education resources consist of four main dimensions: material, psychological, institutional, and practical. Structurally, they complement explicit curricula in building a comprehensive labor education system. In terms of curricular objectives, they address students' emotional needs and highlight the formative value of modern school education. Content-wise, they enrich students' labor experience and provide immersive learning stimuli.

Drawing on Erikson's theory of psychosocial development, Zhong further argues that primary school students' courage to express themselves is easily influenced by others, while secondary school students have stronger emotional and achievement needs. In this context, Chinese language teachers should shift their developmental perspective, enhance awareness of implicit curriculum resources, and adopt strategies targeting material, spiritual, and institutional resources. By broadening the scope of available Chinese curriculum materials and employing multi-channel approaches, they can improve the quality of Chinese language education.

Ananda (2022) noted that discontinuous texts ─ such as charts and diagrams ─ form a key component of practical reading and communication tasks. However, these are often underrepresented in current standardized textbooks. Thus, it is necessary to develop the implicit instructional value of such texts. Through mining textbook content, integrating interdisciplinary knowledge, and designing extracurricular activities, educators can utilize methods like image-text comparison, comparative reading, and scenario-based instruction. These approaches enhance students' ability to interpret non-continuous texts, supporting the implementation of task-based reading curricula.

From the perspective of typological research, implicit resources are diverse in form and embedded across various aspects of daily life. Zhang (2023) pointed out that the ongoing national curriculum reform has brought increasing attention to the development and use of curriculum resources. Multiple stakeholders are involved, each playing distinct roles. Based on principles of school-based curriculum development, Yang (2023) stressed the importance of aligning with the new curriculum standards. He advocated for connecting curriculum development to the goals of

the "double reduction" policy, setting clear objectives, diversifying formats, and adapting content flexibly. In addition, he emphasized effective use of after-school service time and enhancement of evaluation systems to support curriculum implementation. Through the development of school-based Chinese language curricula, the quality of instruction can be improved, ultimately fostering students' core literacy.

2.2. Research on the necessity of the development of implicit resources

Li (2019) believes that in the 80s of the 20th century, China proposed that middle school students should achieve the comprehensive development of morality, intelligence, physical fitness, art and labor, and the construction of morality in the five educations ranks first, which also shows the important position and value of moral education in the construction and development of primary and secondary school students. In the current primary and secondary education and teaching, the way of moral education construction mainly comes from two aspects: first, the guidance of school teachers and the cultivation of students' quality; The second is the demonstration of family education and the improvement of students' quality. This article will focus on the elements of the first aspect of the composition of moral education. Wang (2019) proposed that the campus invisible curriculum is the understanding of values, the cognition of social norms, and the pursuit of life attitude that students learn outside the curriculum. It is not like the knowledge to be learned in the curriculum, which can be taught to students in a systematic and regular manner in accordance with the order in the textbook, combined with the teaching methods summarized by the teacher in the teaching process, so that students can understand and master. Through the activities in the course of classroom teaching or extracurricular activities organized by school teachers, the invisible curriculum allows students to imperceptibly learn the knowledge that unexpected or unplanned performance has a positive impact on the physical and mental health development of students, and promotes students to establish correct values and establish a sound personality. Xu (2022) believes that curriculum resources are the carrier of knowledge, information and experience, as well as the medium of curriculum design, implementation and evaluation. Chinese courses are inseparable from the development and rational use of rich curriculum resources. With the development of the times and the advancement of curriculum reform, the classification of Chinese curriculum resources has shown a trend of diversification. The development and utilization of curriculum resources is an effective guarantee for the design of Chinese courses and the implementation of high-quality education and teaching activities, which should follow the principles of orientation, openness, applicability and sharing, select high-quality curriculum resources according to curriculum standards and teaching objectives, fully interpret teaching materials, mobilize multiple subjects, continuously enrich the types of resources and construct a curriculum resource system, pay attention to the educational function of curriculum resources, create learning situations, optimize teaching activities, reasonably evaluate the value of curriculum resources, and continuously improve the development path and utilization methods of curriculum resourcesIt lays a solid foundation for realizing a virtuous circle of curriculum resource development and utilization, improving teachers' professional ability, and promoting students' all-round development.

Therefore, the development of positive implicit resources is necessary and of great significance to the entire education system, students, and teachers.

2.3. A review of existing literature research

Through the systematic collection and careful combing of the existing literature, the research on the development of implicit resources within the theoretical framework mainly focuses on the discussion of their connotation, characteristics, functions and classification. However, there is no unified understanding of the clear definition of the connotation of tacit resources, and different scholars hold different views and have not yet reached a general consensus. The in-depth exploration in theory and the development and utilization in specific practice have jointly promoted the significant development of implicit resources, especially at the practical level, which provides a valuable experience reference for the development and optimization of implicit resources in textbooks.

3. Research methods

(1) Literature research method

Literature research method is a method for researchers to collect a large number of relevant literature materials and sort out and analyze them according to the research purpose, so as to understand the development history and research status of the topic. Through consulting Internet materials and reading related monographs and articles, the relevant research on tacit resources and their development at home and abroad is collated, which provides a theoretical basis for this paper.

(2) Content analysis

This study takes the first and second volumes of the Chinese textbook compiled by the sixth grade of primary school as the analysis object, clarifies the implicit resources and rich content, and uses the content of the textbooks to illustrate the focus of the implicit resources contained in each system.

(3) Interview method

The interview method is a research method that uses face-to-face conversations between the interviewer and the interviewee to understand the psychology and behavior of the interviewee. Based on the purpose of this study, an interview outline was designed, and semi-structured interviews were conducted with 10 primary 6th grade Chinese teachers to gain an in-depth understanding of the development status of implicit resources in textbooks, analyze the existing problems and causes of them, and then put forward optimization strategies.

(4) Classroom observation

In order to find out the problems and reasons for the development of implicit resources in primary school Chinese textbooks, and to lay a foundation for the optimization strategy of curriculum development in the later stage.

(5) Questionnaire method

In order to ensure the reliability and validity of the questionnaire, the questionnaire survey was based on the research papers of relevant scholars, and on this basis, the questionnaire was distributed to conduct the survey, and the credibility and validity of the questionnaire were tested by using the SPSS professional conversion, so as to understand the development of implicit curriculum resources in primary school Chinese.

4. Sorting out the connotation of implicit curriculum resources

4.1. The connotation of implicit resources

As a classification of educational resources, the "hidden" characteristics of implicit resources are mainly reflected in the function, which is in contrast to the explicit resources. This "recessiveness" means that its potential function behind the vector has not yet been fully explored and is waiting to be activated. Implicit resources can be defined as educational resources that exist in a latent form, are difficult to predict directly, and appear together with formal teaching content, which can have a profound impact on students' cognitive and non-cognitive levels, and then expand the teaching function. In the subject of language, textbooks not only cover explicit educational resources such as basic knowledge and skills of language, but also contain abundant implicit resources, which are attached to explicit resources. Therefore, in this study, the implicit resources in the textbooks refer to the educational resources that teachers use primary school Chinese textbooks to educate students at the implicit level such as traditional culture education, moral education, and aesthetic education through texts and images.

4.2. The significance of implicit resource development

As an auxiliary educational resource in Chinese teaching, the value of implicit resources in the education system cannot be ignored. We should dig deep and make full use of the implicit resources in the textbooks, which is not only of positive significance for the improvement of the entire educational resource system, but also has a significant impact on the comprehensive acquisition of students' knowledge and the enrichment of teachers' teaching methods.

4.2.1. It is conducive to the enrichment and optimization of explicit resources

Traditional teaching methods tend to be "cramming" of theoretical knowledge, that is, unilaterally imparting the content of textbooks and supplementary materials, which is more rigid and inflexible. Although books provide students with a great deal of knowledge, their effect on shaping students' moral character, logical thinking and behavioral habits is still insufficient. Implicit resources cover a wide range, including not only material resources such as school environment and classroom layout, but also institutional resources such as social system, school discipline and school rules, as well as spiritual and cultural resources such as school spirit and school motto and personal ideology. In addition, in the process of interpersonal communication, many generative resources are generated. In view of the abundance and importance of implicit resources, with the in-depth development of the new curriculum reform concept, the development of implicit resources has gradually been placed in an important position. This initiative not only helps to enrich and optimize the content of explicit resources, but also further improves the entire

educational resource system, so that students can subtly transcend the limitations of textbook knowledge and achieve all-round development of ability.

4.2.2. It helps students to cultivate their interests and potential

The ideological embodiment of implicit resources in Chinese teaching plays a pivotal role in shaping students' noble moral character, healthy personality and cultivating good behavior habits. Through the development of implicit resources, the teaching content can go beyond the traditional knowledge framework, expand students' learning horizons, and further deepen the accumulation of real-life experience. The influence of this resource not only promotes the improvement of students' knowledge and culture, but also greatly enriches their emotional experience and enhances their perceptual cognition. In this process, students can feel the rich diversity of life more deeply, and through the teacher's personality charm and the communication and interaction between teachers and students, guide them to establish correct values and cultivate good humanistic qualities. This process not only cultivates students' sentiments, but also effectively improves their comprehensive literacy.

4.2.3. It is conducive to improving teachers' professional development ability

Teachers are the direct subject of the development of implicit resources, and the new curriculum reform requires teachers to continuously improve their professional level, update their teaching concepts, and change the traditional single teaching method.

For the student group, if teachers can skillfully integrate diversified resources such as emotional problems and life perceptions into classroom teaching while teaching the content of teaching materials, it will help to invisibly influence and shape students' logical thinking and moral emotions and other deep-seated literacy. Through the appropriate guidance of teachers, students can change from passive learning to active learning attitude, and closely relate the knowledge they have learned to their daily life, so as to gradually form personal emotional attitudes and values. Therefore, on the basis of mastering basic teaching skills, teachers need to continuously improve their ability and awareness of developing tacit resources, and continue to enrich their professional knowledge system.

4.3. The principle of implicit resource development

Due to the concealed nature of the presentation of tacit resources and the non-cognitive nature of their role, the development process of tacit resources should be rigorous and orderly. When promoting the development of hidden resources, we must be guided by modern educational concepts, measure their normativity with scientific standards, and ensure that every step meets the professional requirements in the field of education. In addition, we should fully respect the physical and mental development characteristics of students, and follow the inherent laws of resource development itself, so as to promote the all-round development of students, teachers and schools. Therefore, the development of implicit resources should follow the following principles:

4.3.1. Purposefulness

In view of the inherent hidden nature of tacit resources, we should be goal-oriented and strive to discover the implicit resources in teaching materials and transform them into explicit forms to

have a positive impact on students. In this process, the selection and use of implicit resources should be closely combined with the actual needs of students' physical and mental development. When designing and developing implicit resources, students' cognitive level and receptivity should be fully considered, and students' personality differences should be respected to ensure the individualization and differentiation of teaching methods. For example, in view of the characteristics of primary school students' immature psychology, relatively weak logical thinking ability and strong curiosity, we can use intuitive display and entertaining methods when developing implicit resources, so that students can be positively affected invisibly. In addition, we need to comprehensively consider the actual situation of the school, fully explore and make use of the unique spiritual culture and historical accumulation of the local area, so as to realize the education strategy adapted to local conditions.

4.3.2. Scientific

In the process of developing hidden resources, scientific principles occupy a pivotal position. The so-called scientificity means that when developing implicit resources, we must strictly follow the curriculum standards, take the educational objectives as the cornerstone, and ensure that the educational purpose pursued by the curriculum can be clearly realized and meet the requirements of the national top-level design. At the same time, in order to ensure the systematization and integrity of education, it is necessary to maintain a dynamic balance between implicit resources and other implicit resources in teaching materials. We should carefully identify and carefully select useful implicit resources based on scientific standards to ensure the rationality of the development process, so as to lay a solid foundation for the all-round development of students' aesthetic tastes, moral qualities, learning habits, and emotions, attitudes and values.

4.3.3. Systematic

Implicit resources are a complex and multi-dimensional system that covers material, institutional, cultural, and spiritual levels. These levels are intertwined and mutually influencing each other, and together they form an organic unity with comprehensive benefits. Therefore, in the development of implicit resources, we must abide by the principle of systematization, and use scientific and reasonable methods to organize and carefully design the elements of educational resources at all levels. In this process, it is important to ensure that the various elements are closely linked in the system, so as to give full play to the core function of the primary Chinese curriculum in educating people. We are committed to stimulating students' subjective initiative, cultivating their creativity and imagination, and developing and perfecting students' personalities, so as to comprehensively improve students' comprehensive literacy.

4.3.4. Subjectivity

The development of implicit resources covers multiple subjects such as teachers, school administrators, students and parents. In the process of development, the implicit resources generated by these subjects are also different due to their different understanding of implicit resources, development ability and mastery of students' psychological states. In particular, teachers, as the main force of development, should give full play to their personal characteristics and ensure that the tacit resources developed have distinctive and personalized characteristics. At

the same time, for some teachers with relatively weak development ability, training should be organized in time to update their teaching concepts, strengthen their development awareness, and improve their development ability. In addition, as students are the main body of learning, teachers should take moral cultivation as the core task in their cultivation process, pay attention to shaping students' healthy psychology and sound emotions, and actively guide and improve students' minds. In the process of developing implicit Chinese resources, teachers should actively encourage and guide students to participate, fully mobilize their initiative and enthusiasm, so as to stimulate students' interest in learning, so as to build a more efficient Chinese classroom.

5. The current situation of the development of implicit resources in primary school Chinese textbooks

5.1. Establishment of research concepts

This study focuses on the development of implicit resources in textbooks, and aims to deeply analyze the implicit resources contained in five aspects: text selection system, reading aid system, practice system, assignment system and image system in the first and second volumes of the sixth grade textbook. Through detailed investigation, we find that the structural design and resource content of these systems present extensive and rich characteristics, and are highly in line with students' learning rules, reflecting a spiraling teaching logic. In order to gain an in-depth understanding of the actual situation of Chinese teachers on the development of implicit resources in textbooks, this study interviewed the sixth-grade Chinese teachers and some students of L school in Q City, and observed the actual implementation of Chinese classroom teaching. Through these field investigations, we deeply explored the problems and causes of teachers in the process of implicit resource development, and then put forward targeted optimization strategies based on these findings, in order to better play the teaching value of implicit resources in teaching materials.

5.2. Research objects

In this study, 10 Chinese teachers from L primary school in Q city were selected for interviews to understand the development of curriculum resources. In this study, several of the respondents were selected to observe the actual classroom observations, and the observation objects and their related observation records were recorded.

5.3. Research plan design

5.3.1. Interview design

According to the reading of relevant literature, the questionnaire was produced, distributed and data collated, and the primary school Chinese teachers were selected as the overall research focus and students were selected as the auxiliary research focus according to the topic of the paper, and the interview outline was designed according to the specific research direction and related content.

A total of 11 questions (see Appendix A) were designed to talk to the front-line primary school Chinese teachers, and the interview content focused on the teachers' understanding of the implicit resources in the primary school Chinese textbooks, the teachers' emotional attitudes towards students and other implicit aspects of education, the development and implementation of the implicit resources in the textbooks in classroom teaching, the difficulties encountered in the development process, and the development suggestions；   A total of 4 questions were designed in the student interview questionnaire (see Appendix B). A total of 4 questions were designed for the teacher questionnaire (see Appendix C), and a total of 100 questionnaires were distributed in this survey, of which 88 questionnaires were collected and 76 were valid. Figure 1 shows the proportion of interview dimensions.
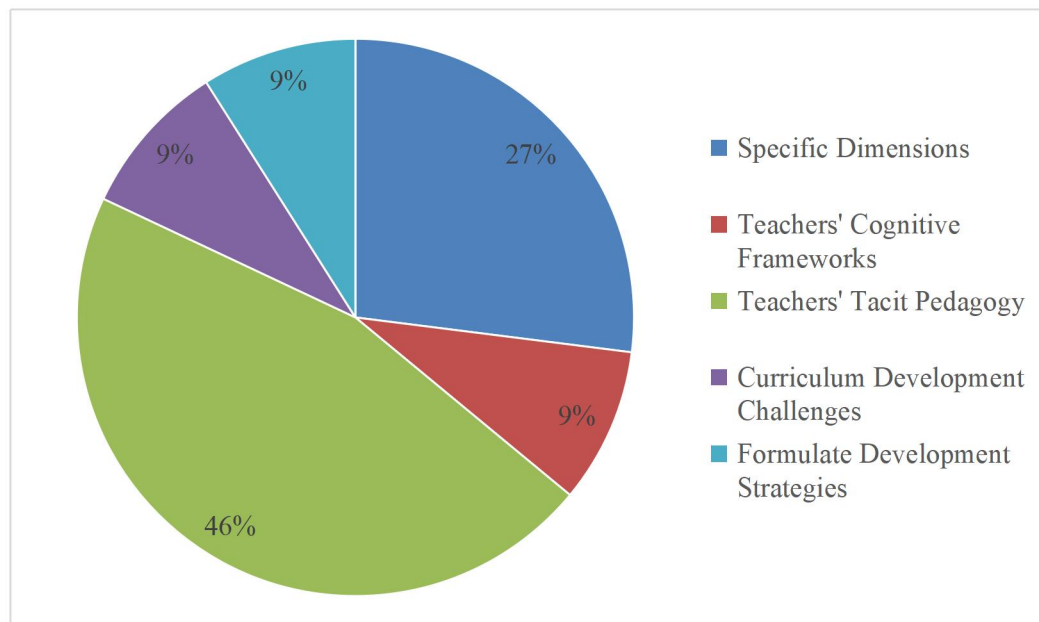

Figure 1. Proportion of Interview Dimensions

5.3.2. Classroom observation design

In order to have a more in-depth and intuitive understanding of the development status and existing problems of primary school Chinese teachers on the implicit resources in textbooks. In this study, in order to ensure the authenticity of the questionnaire survey, the questionnaire part of the master's thesis written by Wang Dongyang, a master's student of Qufu Normal University, was cited as a research tool. In order to ensure the reliability and consistency of the data, 20 samples were randomly selected from the questionnaire and rigorously tested for reliability, and the original reliability Cronbach α   coefficient was 0.8. At the same time, on the basis of the interviews, the actual observation of the classroom teaching of several interviewed teachers was carried out, including the development and implementation of the implicit resources in the teaching materials and the students' understanding and acceptance of the implicit resources in the classroom teaching.

5.4. Data reliability, validity and exploratory factor analysis were studied

5.4.1. Reliability analysis

The reliability of the five variables of the questionnaire (implementation, understanding, teaching methods, curriculum understanding and implementation, and development level) was analyzed. From Table 1, it can be seen that the Cronbach α coefficient of each variable is higher than 0.8, indicating that the scale reliability of this study is good, and the data in this study are authentic and reliable.

Table 1.Reliability analysis

Name	Total Correlation of Adjusted Terms (CITC)	The α factor for which the item has been removed	Cronbach α coefficients
Implementation	0.934	0.952	
Degree of understanding	0.821	0.968	
Teaching methods	0.924	0.952	0.965
Curriculum comprehension and implementation	0.929	0.951	
Degree of development	0.929	0.955	

Note: Normalized Cronbach α coefficient = 0.967

5.4.2. Validity analysis

The validity of the questionnaire results was analyzed to test the correctness and validity of the measurement results. Through validity analysis, whether the design of the items is reasonable and whether it can accurately reflect the purpose and requirements of the project is measured, and the method of factor analysis (exploratory factor analysis) is tested. The KMO value and Bartlett sphere test are used to see if the selected indicator is capable of factor analysis.

Table 2. KMO and Bartlett sphere test of the scale

KMO value		0.83
Bartlett Sphericity test	Approximate chi-square	122.113
	df	10
	p-value	0

As can be seen from Table 2, the KMO value of the scale is 0830, a KMO value higher than 0.8 indicates that it is very suitable for information extraction. Validity analysis requires a Bartlett test

(corresponding to a p-value of less than 0.05), indicating that the scale is suitable for factor analysis.

Table 3. Results of validity analysis of each dimension

Name	Factor load factor	Commonality (common factor variance)
Implementation	0.957	0.916
Degree of understanding	0.881	0.777
Teaching methods	0.95	0.903
Curriculum comprehension and implementation	0.957	0.916
Degree of development	0.957	0.915
Eigenroot value (before rotation)	4.426	-
Variance Interpretation % (Before Rotation)	88.53%	-
Cumulative Variance Explanation % (Before Rotation)	88.53%	-
Eigenroot value (after rotation)	4.426	-
Variance Interpretation % (after rotation)	88.53%	-
Cumulative Variance Explanation % (After Rotation)	88.53%	-
KMO value	0.83	-
Bart spherical values	122.113	-
df	10	-
p value	0	-

As can be seen from Table 3, the KMO value is 0.83; Generally speaking, if this value is higher than 0.8, it means that the research data is very suitable for extracting information (the validity is good from the side), and if this value is between 0.7~0.8, it means that the research data is suitable for extracting information (the validity of the side reflection is good); If this value is between 0.6~0.7, it means that the research data is more suitable for extracting information (the validity of the side reaction is average), and if this value is less than 0.6, it means that the data is not suitable for extracting information (the validity of the side reaction is average). From the above table, it can be seen that the corresponding commonality values of all research items are higher than 0.4, indicating that the research item information can be effectively extracted. In addition, if the KMO value is 0.830, which is greater than 0.6, the data can be effectively extracted. In addition, the variance explanation rate of one factor was 88.526%, and the cumulative variance explanation rate after rotation was 88.526% >50%, respectively. It means that the amount of information in the research item can be effectively extracted.

5.5. Analysis of the process and results of the implementation of the research

5.5.1. Teachers' understanding of the implicit resources in primary school Chinese textbooks

(1) Teachers' awareness of implicit resources

As the most direct participants in teaching activities and the main developers of implicit resources, teachers' understanding of implicit resources can directly reflect the current situation of implicit resources in primary school Chinese subjects. According to the interviews, several teachers were aware of tacit resources. As shown in Figure 2, 65% of teachers know what is included in the implicit resources, 20% of the teachers are generally aware of them, and the other 15% are not very aware of the implicit resources. According to this analysis, although the teacher group has some cognition of tacit resources, their understanding is not comprehensive and in-depth. In terms of the implicit resources of the textbooks, teachers mainly focused on the elements such as the illustrations and emotions contained in the text, while neglecting other potential resources. What's more, some teachers are not aware of the resources implicit in the textbook and focus only on the teaching of explicit lesson content.
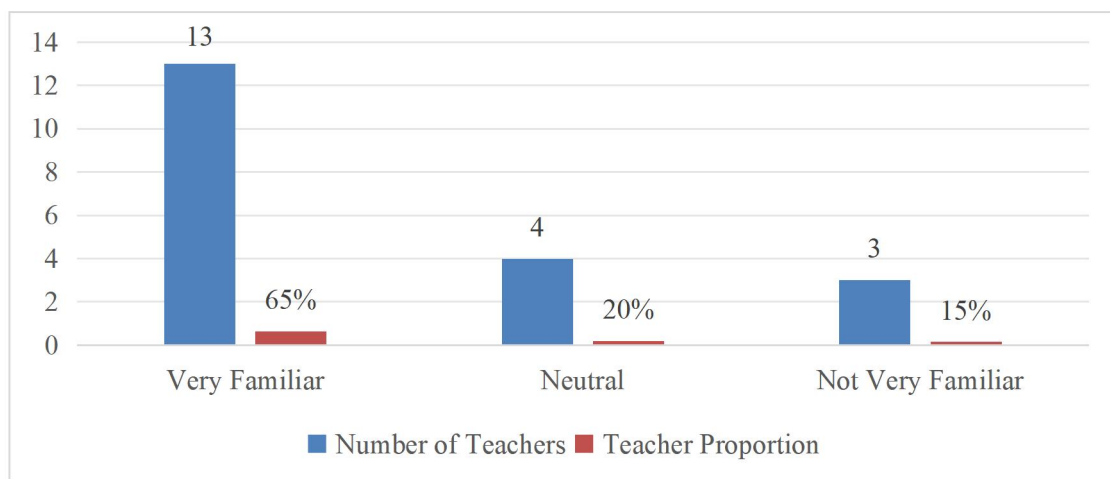

Figure 2. Teachers' Awareness Levels of Tacit Educational Resources

(2) Teachers' understanding of the implicit resources in the development of primary school Chinese textbooks

After in-depth research and analysis, it is found that teachers generally agree that the development of implicit resources in textbooks is necessary, and believe that it is of positive significance to improve students' learning ability. However, in view of the age characteristics of primary school students and the limitations of their cognitive abilities, some teachers are cautious about the development of implicit resources and do not dare to try it lightly.
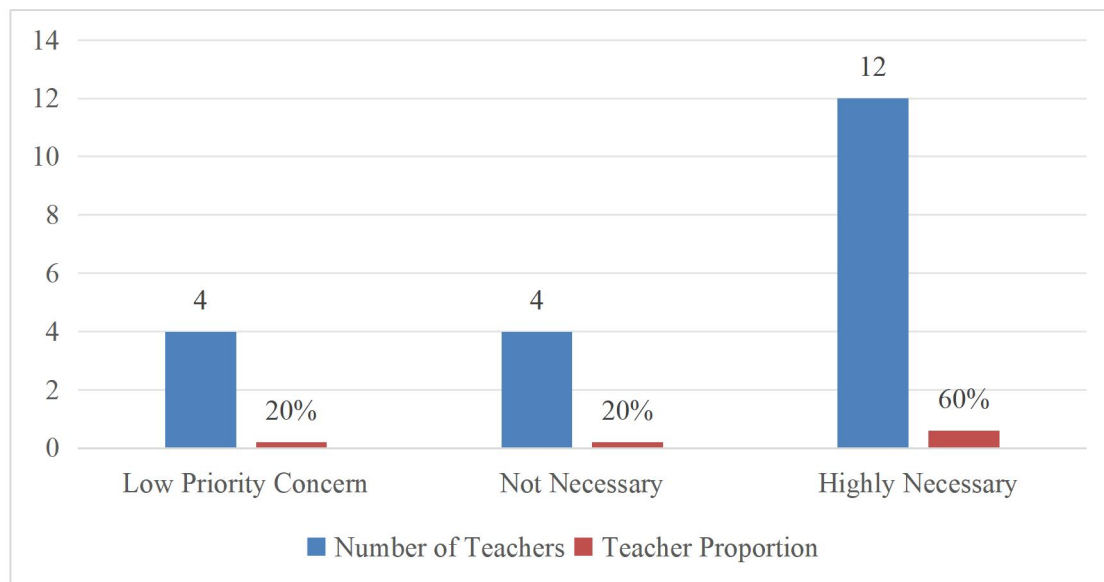
Figure 3. Teachers' Perceptions of Integrating Tacit Resources into Primary School Chinese Textbooks

20% of the teachers think that the daily teaching tasks and related teaching and research training tasks are heavier, so they do not pay much attention to the development of implicit resources in primary school Chinese textbooks, 20% of the teachers said that they have not received too formal relevant training, and the school generally only trains us in subject knowledge and teaching management, and rarely mentions the problem of developing implicit resources, and can only develop according to their actual ability, so it is not necessary; The highest 60% of teachers believe that it is very necessary to dig out those hidden things to help students better understand the content of the text, and can also deeply experience some of the impact of the text, so as to cultivate some of the students' perception ability, learning ability and language literacy. In addition, some teachers expressed a willingness to develop implicit resources, but due to the lack of corresponding guidance and support, they were confused in practice and could only focus on the superficial knowledge transfer of the textbook in the traditional way.

(3) Teachers' understanding and implementation of the curriculum objectives

It is important for teachers and students to understand the curriculum objectives, which are needed to guide the direction of teaching and learning, and in turn, to guide students to grasp the direction of learning. Teachers' grasp of curriculum objectives in classroom teaching is conducive to the rational development of curriculum resources, as shown in Figure 4.
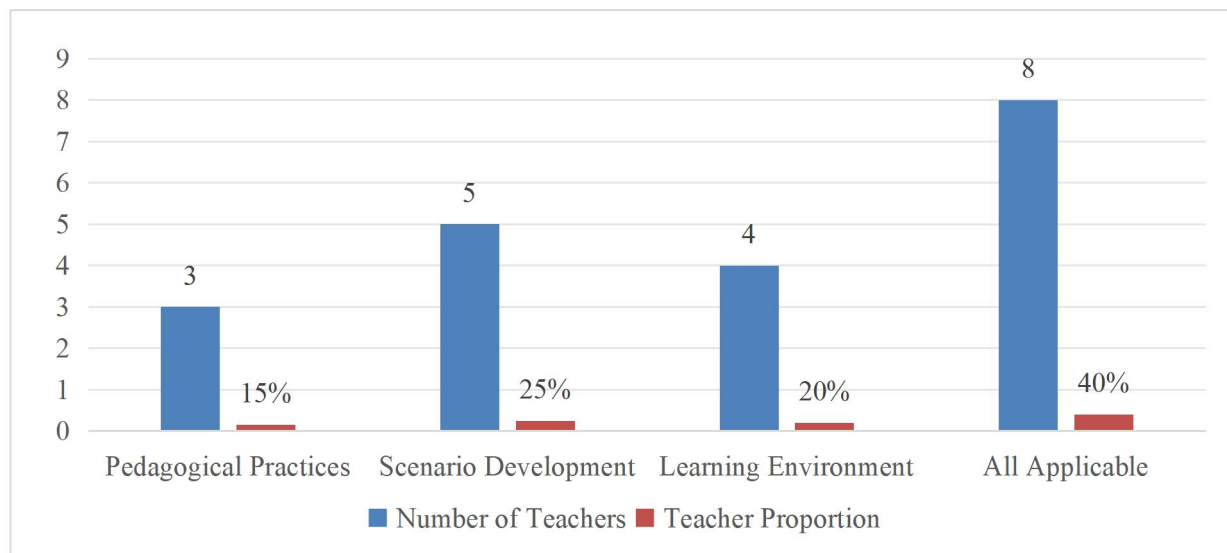
Figure 4. Teachers' Comprehension and Implementation Levels of Curriculum Goals

15% of the teachers believe that it is more advantageous to choose to creatively carry out some textbook drama activities and forms to exercise students' awareness of using language and learn Chinese on various occasions. In addition, 25% of the teachers believe that the unit objectives of the textbook are relatively clear, and guide students to use a variety of ways to read the text aloud, role-play, and create situations in classroom teaching, and use a variety of ways to guide students to master the basic knowledge and experience the main emotions of the text. 25% of teachers believe that respecting students' personality and creating a more democratic and harmonious classroom atmosphere make students feel emotionally safe; All three of the above account for 40%.

In general, teachers generally recognize the importance of curriculum objectives as a benchmark for understanding and applying language curriculum standards. They generally believe that the curriculum standards are not only the reference standards for the preparation of teaching materials, but also fully consider the physical and mental development of students when setting the curriculum objectives, which have distinctive characteristics of the times and provide a clear guiding direction for teachers' teaching work.

5.5.2. Teachers' education of hidden aspects such as students' emotional attitudes

The three-dimensional goal advocated by the new curriculum aims to cultivate useful talents in society with the ability to develop in a coordinated manner. While focusing on the fundamentals and skills, we emphasize the importance of implicit resources such as emotions, attitudes, and values. Through the interviews, we learned that teachers pay great attention to the content of relevant implicit resources in the textbooks. One teacher pointed out that "knowledge and skills are only the basis of three-dimensional goals, while emotional attitudes and values belong to the core of a higher level." "In Chinese teaching, such as traditional culture, ideological and moral education, aesthetic education, etc., have gradually changed from a marginal position to a key part of teaching design.

Talking about how to use textbooks to strengthen the implicit educational influence of students, some teachers suggested: "We should combine the actual situation of students, pay attention to stimulating their interest and guidance, and explore the implicit resources in textbooks with a rational attitude." "This shows the importance that teachers attach to the implicit aspects of their students' education. Through the study of materials and the development of implicit resources, students' interest can be strengthened and their values can be cultivated. Many teachers have integrated this educational philosophy into their teaching practice, as exemplified by Unit 6 of Volume I, "There Is Only One Earth":

Teacher: Please watch a video that shows our common home, the earth. How did you feel after watching it?

Students: Our earth is beautiful and lovely.

Teacher: Next, I will show you a series of PPT pictures, and ask you to think about why astronauts call our earth cute and fragile. Please find the relevant sentences in the text and experience the emotions and thoughts behind them.

Students: Students began to look for the key sentences in the texts and deeply understand the thoughts and feelings in them.

Teacher: Please cooperate with each other at the table and ask each other questions and answer them. Which sentence in the text are you interested in? What kind of thoughts and feelings can you experience from it?

Students: The students are actively involved and collaborating with each other to accomplish this task.

Teacher: Based on your understanding of the text, let's watch the video "The Crying Earth" again. So, what can you get away from this video?

Students: Originally, the earth was so beautiful, but now it has been severely damaged by human beings.

Teacher: Then, please express what you want to say most about the earth, to mankind, or to yourself.

Students: The students expressed their views and thoughts.

Teacher: Here, I would like to make a suggestion, please stand up, and we will take an oath together: "There is only one earth, and we must love it!" "

After an in-depth analysis of the learning situation, we confirmed that the sixth grade students were able to observe the close connection between the environment and life based on their own personal experience, and formed a certain degree of concern and awareness of environmental issues. In the teaching process, we actively create situations to guide students to understand the content of the text, and organize group collaboration and discussion to improve students' enthusiasm and participation in learning. During the question session, each student is encouraged to actively express their personal opinions and give positive feedback on their answers to boost their self-confidence. In addition, we also show movies and videos to let students intuitively feel

the changes of the earth, so as to further stimulate their desire to protect the earth and cultivate their love and gratitude for the earth.

5.5.3. The development and implementation of implicit resources in teaching materials by teachers in classroom teaching

In the classroom, it is important for teachers to make effective use of the implicit resources in the textbooks. For the Chinese textbooks compiled by the sixth grade department, the author conducted a detailed content analysis and systematically sorted out the implicit resources contained in the five major systems. After in-depth communication with teachers, we found that teachers have a comprehensive understanding of the five systems of teaching materials.

Interview Transcript:

Author: Teacher, could you please talk about how you fully explore and use the implicit resources in the textbook selection system to educate students in your teaching design and implementation?

Teacher 1: In the introduction to the unit, we have clearly set out the learning objectives of the unit and carefully presented a series of language elements to provide clear and specific guidance for teaching, so as to ensure that the teaching activities are targeted and effective.

Teacher 2: As an effective assessment tool, after-class exercises can accurately detect the achievement of teaching objectives and encourage students to learn independently. In terms of assignments, more attention is paid to the special cultivation of students' language skills.

Teacher: 3: While paying attention to the ontology of language knowledge, we should also expand it appropriately. Specifically, we should rely on the key components of the textbook: texts, exercises, annotations, and assignments. For the other components, we have assessed that the need is not significant at this stage.

After a careful analysis of the responses of the three teachers, we noticed that some of the systems chose not to give in-depth explanations because they considered certain content to be less crucial, and preferred to teach the basics. Therefore, in the process of classroom teaching, the tacit resource content of some systems is consciously screened out.

Teacher 4: In the process of education and teaching, great importance is attached to the test of basic knowledge and skills to ensure that students master solid basic skills. However, it has also been noted that some primary school students have little interest in learning about revolutionary culture and traditional culture, believing that these contents are far away from their daily lives and lack practical significance. In response to this phenomenon, the current teaching strategy is mainly to explain the content of the text, and consolidate the knowledge learned through after-class exercises to cope with the requirements of the examination. More effective teaching methods will be explored to stimulate students' interest and love for these important cultural contents.

From the perspective of the impact of the text on students and the examination, the teacher deeply analyzed the problems existing in the systematic explanation. At the same time, the

proportion of each system in the textbook system is different, and the current situation of the development and utilization of implicit resources is also different.

(1) The implementation status of the implicit resources of the textbook selection system

As a core component of the textbook, the text should be emphatically explained. It is recommended that students preview the content of the text in advance so that they can learn directly according to the teaching objectives in class. Take the lesson "The Poor" as an example, which belongs to Unit 4 of Volume I:

In the whole teaching process, the teacher carefully designed four main links: first, the introduction of the topic to guide the students to understand the author's background; The second is to read the text for the first time to help students form an overall perception of the text; This is followed by a reading of the sentence to guide students to initially feel the image of the character; Finally, there is a dialogue to delve into the inner world of the characters. In the second session, the teacher asks students to quickly read the text silently and think about what the text is about. By guiding students to perceive the whole according to the three elements of the novel, it helps students to grasp the main context of the text. In the third and fourth sessions, according to the development of the storyline of the novel, the teacher divides the text into four parts: beginning, development, climax, and ending, and explains it in stages. This teaching method helps students to better understand the structure of the text and grasp the main points of knowledge.

On the surface, the lesson "The Poor" depicts the kindness and strength of Sanna and her husband, but on a deeper level, it aims to reflect the noble qualities of the toiling masses through Sanna's image. Through this teaching design, it aims to cultivate students' gratitude and helpful spiritual qualities, and imperceptibly edify and educate students with values.

(2) The implementation status of the implicit resources of the practice system in the textbook

As an important auxiliary tool for students' learning, the reading aid system in the textbook can effectively promote the expansion of students' extracurricular knowledge and deepen their understanding of the text. Through the interviews, we learned that some teachers have fully recognized the key role of the reading aid system in the learning process of students, and they believe that the system has a certain role in cultivating students' abilities, which helps students better understand and master the content of the text in the learning process. In particular, in the process of lesson preparation, teachers should pay special attention to the guiding role of the unit introduction, because it clearly presents the language elements of the whole unit, so that students can clearly understand the learning content of the unit. Based on classroom observations, we also found that some teachers were able to make effective use of the reading aid system in the teaching process and dig deeper into the content contained in it, which had a positive impact on improving students' language literacy.

(3) the implementation status of the implicit resources of the assignment system in the textbook

In the textbook practice system, as an implicit resource, after-class practice significantly expands the depth of students' thinking, plays a significant role in breaking through the key difficulties in the article, and has a high utilization rate in practical application.

Interview Transcript:

Author: In the design and implementation of instruction, how do you fully explore and make use of the implicit resources in the assignment system to educate students?

Teacher: In the lesson preparation process, I always regard the after-class practice questions as an important benchmark for organizing teaching, and organically integrate them into the teaching process as a key component of the teaching content, and carry out planned interspersed learning. This approach aims to ensure that the teaching content is coherent and targeted, so as to help students better grasp the knowledge points and improve the learning effect.

This practice fully reflects the teacher's deep understanding of the importance of the practice system, that is, it has a non-negligible role in promoting the improvement of students' ability and can help students build a systematic knowledge system. In the actual teaching process, teachers usually carefully select suitable practice questions according to the teaching plan, and conduct in-depth analysis in combination with the content of the textbook.

(4) The implementation status of the implicit resources of the image system in the textbook

In terms of the implementation and design of the assignment system, teachers uphold a rigorous and responsible attitude, emphasizing the comprehensive cultivation of students' knowledge and skills, and paying special attention to the students' existing experience base. Through actual teaching observations, we found that some teachers will accurately extract the knowledge and requirements of the assignments in the textbooks according to the specific teaching situation, and then creatively reconstruct the assignment scenarios to teach in a way that is closer to the actual situation of students. Take, for example, a teaching segment in an observation record:

Teacher: Dear students, please read aloud this poem called "I Want to ......". This little poem is full of unique imagination and is very interesting to read. If you too had the opportunity to become one of the world's creatures, what would you want to be?

Students: ants, kittens, grass, street lights, cars, etc.

Teacher: Students are very open-minded, you can choose to be small like an ant, or you can imagine being as big as an elephant. Now, let's have a group discussion and clarify your new identity.

In the teaching process, the teacher did not follow the content of the textbook and use "The Song of Flowers" as the introduction topic of this unit, but innovatively used a poem as an introduction to the topic "Metamorphosis", which aims to create a novel teaching situation to stimulate students' interest in learning. Subsequently, the teacher organizes group exchanges with the students, aiming to strengthen the students' ability to work together as a team. However, from the perspective of the overall teaching process, there are still some shortcomings in this process. The core goal of this assignment is to stimulate students' imagination and encourage them to imagine themselves as something that has aroused their sense of novelty or impressment. In the process of teaching, although teachers provide students with examples in the textbooks for analysis, when guiding students' imagination, they tend too much to the specific things in the textbooks, and fail to fully take into account the students' individualized ability and imagination.

6. The problems existing in the development of implicit resources in primary school Chinese textbooks

6.1. Teachers' development of implicit resources in textbooks is too arbitrary and ambiguous

As the main developer of implicit resources in textbooks, teachers' understanding of implicit resources will directly affect teachers' use of textbooks and teaching effects in classroom teaching.

6.1.1. Narrow the implicit resources in the textbook to the emotions expressed in pictures and articles

Implicit resources are a kind of potential educational resources, attached to all parts of the textbook, imperceptibly affecting students, the survey found that the vast majority of teachers can be aware of the existence of implicit resources, but can not accurately express their clear meaning.

Interview Transcript:

Author: Do you know about tacit resources?

Teacher 1: I have some understanding, but I don't know it comprehensively.

Author: What are the specific contents of the implicit resources in Chinese textbooks?

Teacher 2: I believe that the content of the texts, the resource kits, etc., as well as the information contained in the illustrations, are undoubtedly of great educational significance. However, I need further clarity on what exactly it means.

Teacher 3: I think that implicit resources may be manifested in the form of regional culture and customs in a writer's work, and these elements are an important part of the work, giving the work a unique cultural color and regional characteristics.

Obviously, some teachers have limitations in understanding the implicit resources in the textbooks, and they tend to limit the scope of implicit resources to the emotions expressed in illustrations and articles, which leads to the simplification of the connotation of implicit resources. This not only prevents teachers from digging deeper into implicit resources from multiple perspectives, but can also lead to rigid and inflexible teaching content, which prevents students from understanding the textbook in depth, thus limiting their opportunities to acquire deeper knowledge from the textbook, and thus reducing the overall efficiency of the use of the textbook.

6.1.2. The development of teaching materials emphasizes knowledge and skills, and ignores emotions, attitudes and values

In the process of cultivating students' moral literacy, we need to emphasize not only the teaching of knowledge and skills, but also the comprehensive and harmonious development of knowledge, feelings, intentions and actions. According to the survey results, most teachers recognize the importance of tacit resources in cultivating students' emotional attitudes and values. In the actual teaching, they took the curriculum objectives as the guide, and developed and utilized the implicit resources of the five major systems in the textbooks to varying degrees.

Among them, due to the wide range of content, most teachers can clearly explain the emotions contained in the selected texts, so that students can deeply appreciate their educational value.

However, for the application of the practice system, most teachers mainly regard it as a tool to evaluate students' mastery of textual content, and only a few teachers will use it as an aid to the learning of texts throughout the explanation process, which limits the cultivation of students' language ability to a certain extent. In terms of the use of the reading aid system, some teachers only stay at the superficial level of explanation, but fail to conduct in-depth analysis, thus weakening its due educational significance. For the assignment system, some teachers rely too much on the content of the textbook and lack the stimulation and cultivation of students' imagination. Although the image system is spread throughout the chapters of the textbook, teachers often only select the parts directly related to the learning content for citation, and lack of in-depth analysis, resulting in students' understanding of the textbook remaining superficial, although they have mastered the basic knowledge, but lack a deep understanding of the deep emotions and life philosophy conveyed by the text.

6.2. The purpose of teachers' use of implicit resources in textbooks is not clear

Goal-oriented clearly points out that the development of implicit resources in textbooks aims to achieve the established teaching goals, thereby improving students' language literacy and promoting the all-round development of students' comprehensive quality. This process not only embodies the core purpose of education, but also lays a solid foundation for students' future growth. However, some teachers said:

Interview Transcript:

Teacher 1: In the classroom, I enjoy positive interaction with students to enhance the learning experience. I have a habit of sharing educational videos that I find with my students, first grabbing their attention and then guiding them to explore the content of the text in depth to promote knowledge absorption and understanding.

Teacher 2: In my teaching process, I usually take the form of observing other teachers' lectures or watching evening teaching videos to improve my teaching skills. In class, I systematically explain the texts in combination with teaching reference books and guide students to follow my teaching steps to ensure that they can effectively grasp the content of the texts.

After a detailed analysis of the interview records, it can be clearly observed that the starting point of the above two Chinese teachers when using the teaching materials is mainly to attract students' attention, stimulate learning motivation, and create an active classroom atmosphere, but they do not pay enough attention to the all-round development of students' comprehensive quality in the teaching process. Based on the above analysis, teachers' strategies for using textbooks in the classroom often focus on improving teaching efficiency and creating a positive classroom atmosphere, but in this process, it is easy to ignore the generative resources generated by students in the process of learning textbooks, and thus fail to pay comprehensive attention to the overall improvement of students' language literacy and comprehensive quality. All these phenomena highlight the problem that teachers are not clear about the purpose of using the implicit resources in the textbooks.

6.3. The effect of implicit resources in textbooks is not obvious

The effect of implicit resources is non-intuitive, and its influence is not only limited to students' cognitive domains, such as thinking and ability, but also plays a significant role in students' non-cognitive domains such as emotions, interests, and attitudes. At the same time, actively developing implicit resources can have a more lasting impact on students. However, after in-depth investigation, we found that the potential role of implicit resources in textbooks is not significant. Mainly embodied in:

Student: The teacher asked us to take notes, so I wrote down the important points that the teacher emphasized and what to remember.

Teacher: I will first ask the students to read the text in advance, so that they can follow me step by step to understand the content during the lesson. When explaining, I will emphasize the important words to help you grasp them. Of course, the practice questions should also be done according to the text to consolidate the knowledge learned. In the case of information kits and annotations, I will also tell you about the background of the creation of the text and the story of the author, so that you can have a more comprehensive understanding of the text.

In summary, through passive absorption of the content of the textbook, students have acquired the corresponding knowledge and skills to apply this knowledge. However, due to the lack of deep participation in the teaching process and a broad understanding of the teaching content, the improvement in students' emotional cognition and behavioral habits was not significant. All these phenomena reflect that the potential value of implicit resources in textbooks has not been fully exploited and reflected.

7. Optimization strategies for the development of implicit resources in primary school Chinese textbooks

7.1. Strengthen the school's support and supervision of the development of implicit resources

7.1.1. Carry out training activities related to the development of implicit resources

After systematic collation and analysis of the interview data, we found that there are still deficiencies in the training activities held by the school. Although teachers have participated in the training related to the teaching of textbooks, the content mainly focuses on the teaching of basic knowledge and skills in the textbooks, as well as the discussion of common question types in the exams, and does not pay enough attention to the education of students' emotions, attitudes, values and other hidden aspects. As a result, teachers' ability to exploit and utilize implicit resources is relatively weak.

In order to improve the teaching effect and promote the all-round development of students' language literacy, schools should focus on strengthening special training for teachers to develop their awareness and ability. It is necessary to fully recognize the important role of tacit resources in students' physical and mental development, and consciously pass on the knowledge concepts implicit in the textbooks to students. Schools can provide regular seminars and trainings to enhance teachers' and school leaders' understanding of the value of implicit resources in teaching

materials, and to provide them with an in-depth understanding of students' cognitive level and knowledge understanding at all stages. On this basis, this paper discusses the application status and potential problems of various systems in the teaching materials, and optimizes the teaching strategies, so as to make timely strategic adjustments in the actual teaching, stimulate the enthusiasm of teachers to study the teaching materials in depth, and make them the main force in the development of implicit resources. The training methods should be diversified, combining offline teaching observation, action research, teaching reflection and other channels, as well as online methods such as online lectures for young teachers, to form an online and offline collaborative training system, and jointly promote the comprehensive improvement of teachers' ability to develop implicit resources in teaching materials.

7.1.2. Establish an evaluation mechanism related to the development of implicit resources

The school is committed to improving the evaluation mechanism, especially emphasizing the attention to the generative resources of teachers in the teaching process, and paying attention to the comprehensive evaluation and guidance of hidden factors such as students' thinking style, emotional attitude, and behavioral habits. To this end, the school has built a multi-dimensional evaluation content system to comprehensively reflect the comprehensive quality of students. The traditional evaluation mechanism pays too much attention to students' knowledge mastery, and relatively does not consider teachers' values and students' moral literacy. In the current educational context, cultivating students' comprehensive quality requires not only attention to students' understanding and application of knowledge, but also to the cultivation of their moral character and the formation of behavioral habits. In order to change this situation, the school has adopted a diversified approach to evaluation, abandoning the traditional practice of using scores as the only criterion. Establish a multi-evaluation mechanism combining quantitative and qualitative evaluation, aiming to comprehensively improve the comprehensive literacy level of students. The purpose of this move is to enhance teachers' attention to implicit education, stimulate teachers' awareness of developing implicit resources in teaching materials, and further improve the quality of teaching and the utilization rate of teaching materials. In summary, it is of great significance for schools to establish an evaluation mechanism related to the development of implicit resources to improve teaching quality, clarify teaching objectives, and promote teachers' professional development.

7.2. Improve teachers' awareness and ability to develop implicit resources

As the leader of teaching activities and an active participant in implicit resources, teachers should have a full understanding of the content of teaching materials, students' learning progress, and students' physical and mental development. However, due to the constraints of traditional teaching concepts, some teachers have a relatively weak awareness of the development of implicit resources, and tend to adopt a single teaching method in the classroom, mainly focusing on the teaching of textbook knowledge, but lacking the importance of practical guidance. This situation leads to the low motivation of students to learn in the classroom, and the process of knowledge acceptance is passive. In order to improve the situation, enhance teachers' effective utilization of teaching materials, and enhance students' language awareness and literacy, it is urgent to strengthen teachers' understanding and attention to the development of implicit resources.

7.2.1. Update teachers' curriculum concepts and correctly understand the implicit resources in teaching materials

As a key teaching resource to achieve the curriculum objectives, textbooks also constitute an important basis for teachers' teaching and students' learning. Compared with the previous textbooks, the textbooks have shown significant changes in appearance, content and concept, emphasizing the educational value of traditional culture and moral cultivation. This transformation not only provides a solid theoretical foundation for teachers to give full play to the function of subject teaching in educating people, but also poses a higher challenge to teachers and requires them to have deeper background knowledge. Therefore, teachers must update the concept of curriculum, deeply understand and make reasonable use of the implicit resources in the textbooks, so as to adapt to the changes brought about by the new textbooks and further improve the quality of teaching.

First of all, in the teaching process, teachers should fully integrate textual educational resources based on textbook texts. The basic knowledge, skills, processes and methods in the textbooks have both explicit and potential contents, which are often attached to explicit resources and need to be consciously excavated and scientifically used by teachers. In the process of lesson preparation, teachers should grasp the structure of the texts as a whole, deeply analyze the connotation of the textbooks, and formulate the corresponding teaching framework according to the three-dimensional objectives, which is a necessary prerequisite for carrying out teaching activities. In addition to paying attention to the imparting of knowledge in textbooks, teachers should also pursue an in-depth understanding of the moral concepts, values and cultural connotations contained in the content of textbooks, so as to find teaching content that is in line with students' psychological characteristics. For example, when preparing the assignment "Flying with the Wings of Science" in Unit 5 of Volume II, teachers can adopt an innovative teaching strategy, i.e. first lead students to explore the science fiction novels they have read, jointly conceive the basic framework of science fiction stories, and write their reflections. These results were then shared within the group to summarize the core features of the science fiction story. Immediately afterwards, the group members showed and communicated with each other and shared their creative experiences. In this process, the teacher does not simply teach the content of the textbook, but sees the textbook as a medium to guide students to write independently and construct problems. Teachers play the role of facilitators, encouraging students to have the courage to imagine and at the same time cultivating their keen observation, scientific spirit and writing skills. In addition, teachers should not only pay attention to students' mastery of the knowledge of the textbooks, but also devote themselves to guiding students to deeply understand the moral concepts, values and cultural connotations contained in the textbooks, and choose the teaching content that is in line with the students' psychological characteristics.

Secondly, teachers should accurately grasp the connotation of teaching materials and actively integrate them into classroom teaching. As a basic subject, Chinese is of great significance for cultivating students' correct values and improving their humanistic qualities. As the core carrier of the curriculum, Chinese textbooks contain abundant teaching resources, which need to be consciously developed and excavated by teachers in order to play their active role. In the case

study of texts on students' moral development, such as "There is Only One Earth", the teacher conducted an in-depth analysis of the text in class, aiming to instill in students the core concepts of cherishing the earth and environmental protection. This is not only a reflection of the education of ecological civilization for students, but also a practical activity planned around the theme of "environmental protection" to further deepen students' understanding and experience. Subsequently, combined with the practical content, the exchange seminar was organized to strengthen the penetration of students' moral education and ensure the full achievement of educational goals.

Finally, teachers should broaden the horizon of teaching materials and deepen teaching in combination with practice. Teachers should expand and extend the knowledge of Chinese subjects on the basis of the teaching materials to broaden students' knowledge. At the same time, students are given the space to read freely, combined with the auxiliary materials of the reading aid system in the textbooks, recommend extracurricular books, and appropriately guide students to read, so as to deepen their understanding of the content of the texts and cultivate students' reading interests and habits. Through a series of reading and practical activities, it helps students improve their cultural literacy, promote emotional sublimation, and deepen their learning cognition.

7.2.2. Carry out teaching reflection and deepen the understanding of the development of hidden resources

In the context of the current reform of teacher education, teaching reflection has been established as the core link to promote the professional development of teachers, and it is an effective way for teachers to achieve self-improvement and independent development. In the teaching process, teachers should treat each student with a fair and objective attitude, set teaching tasks reasonably, and continue to track the learning status of each student to conduct in-depth analysis and research. Based on the analysis results, teachers should flexibly choose teaching strategies, identify and solve problems in a timely manner, and effectively remove obstacles on students' learning paths. At the same time, teachers should record the problems and phenomena in the teaching process, communicate and summarize with fellow teachers, or share their own highlights and shortcomings in teaching, so as to accumulate teaching experience, continuously improve the quality of teaching, and build an efficient teaching classroom.

In addition, every teacher should value their personal teaching experiences and experiences, and by recording and reviewing these experiences from time to time, they should have a more comprehensive understanding of themselves and discover their unique strengths such as knowledge structure, teaching methods and know-how. Based on their own characteristics, rich teaching experience and professional theoretical literacy, teachers should give full play to their expertise and form a unique teaching style, so as to improve their professional cultural knowledge and carry out teaching work creatively.

Teaching reflection can also promote teachers' attention to classroom curriculum resources, enhance teachers' professional knowledge and cultural literacy, and broaden the dimension of educational resources. Teachers should deepen their understanding of the development of implicit

resources, and scientifically and appropriately develop implicit Chinese resources to further enrich the teaching content and improve the teaching effect.

7.3. Enhance students' awareness of implicit resources and their ability to use them themselves

The implicit resources in the textbooks have a significant impact on students' cognitive skills, thinking patterns, behavioral habits, moral literacy, emotional attitudes and values. In view of the central position of students in learning activities, in order to ensure the smooth progress of the teaching process and achieve the set goals, teachers should strive to improve students' awareness of tacit resources and their ability to use them independently.

7.3.1. Use classroom teaching as a carrier to enhance students' awareness of hidden resources

Students' learning activities and teachers' teaching work are centered on the classroom. Through interviews, it was found that teachers sometimes deviate from the original intention of the development of implicit resources in the course of teaching, resulting in students mistakenly treating other content other than textbook knowledge as secondary, thus ignoring the valuable resources naturally generated in classroom teaching. In view of this, teachers should design problem situations based on students' individual differences and the actual needs of classroom teaching in the process of teaching implementation, so as to stimulate students' enthusiasm for learning and desire to explore. In the case of the text "There is Only One Earth", the teacher's first task is to carefully assess the students' basic knowledge of the earth and its biodiversity. This means that teachers need to think deeply about how to construct a clear and accurate image of the planet so that students have a comprehensive understanding of it. At the same time, teachers need to explore effective teaching strategies to stimulate students' deep feelings about the current state of the earth, especially the challenges and dilemmas facing the earth, so as to cultivate students' environmental awareness and sense of responsibility.

First of all, teachers should construct inspiring teaching scenarios and use appropriate intonation to interpret the content of the text, guide students to gradually integrate into the learning situation, and enhance their emotional experience and learning motivation. Secondly, through the study of texts, students can be stimulated to comprehend the deep connotation of the textbooks, cultivate their sense of moral cultivation, and realize that the textbooks not only contain explicit knowledge and skills, but also contain hidden resources that have a profound impact on individual values and behavioral habits. Finally, teachers should guide students to reflect on and summarize the learning of the lesson, and in the evaluation process, students will go deep into the textbook again, and may find more novel content, so as to enhance their non-cognitive memory, which will not only help them understand the content of the text, but also improve their literary literacy and thinking ability through the study of the text.

7.3.2. Give full play to the main position of students and improve the ability to use hidden resources

On the basis of following the curriculum standards, Chinese language teaching must be committed to stimulating students' curiosity and enthusiasm for learning, and focusing on

cultivating students' awareness of self-directed learning to ensure that students become the main body in the learning process. In classroom activities, teachers should pay close attention to students' real-time performance to ensure that all teaching activities are student-centered. As a teacher, you should act as a guide for students on their learning path, pointing them in the direction, answering their questions, and further stimulating their creativity and imagination. At the same time, "appreciation education" should be appropriately implemented to affirm and encourage students' efforts and achievements, and guide them to gradually master the methods and skills of language learning.

In the teaching process, teachers should encourage students to think deeply, respect their unique perspectives, and encourage them to express their personal opinions freely. Students should actively participate in the optimization of the teaching process, contribute wisdom to the development of tacit resources in teaching materials, and strive to apply what they have learned to real life to enrich and expand their knowledge system. In addition, students should be encouraged to share their experiences and experiences in classroom learning, and feedback their questions or suggestions on the course should be given to teachers. Teachers need to carefully analyze and judge these feedbacks to deepen their understanding of students and optimize their teaching strategies.

8. conclusion

This paper examines the theoretical framework of implicit resource development and summarizes the implicit resources in Chinese textbooks in detail. This paper carefully analyzes the main connotations and distribution rules of these implicit resources in the textbooks, and conducts an empirical investigation on the development of implicit resources in primary school Chinese textbooks with the help of interview method and classroom observation method. Based on the unique attributes of implicit resources and the current survey data, we found some problems that need to be solved urgently, such as teachers being too casual in developing implicit resources in teaching materials, not having clear goals in using these resources, and not fully utilizing the effects of implicit resources in actual teaching. In view of these problems, an in-depth exploration will be carried out from the three levels of schools, teachers and students' parents, trying to find out the root cause of the problems, and proposing corresponding development and optimization strategies. These strategies aim to better explore and make use of the implicit resources in the textbooks to improve the teaching effect.

However, there are some limitations to this study. Due to the limited ability and experience of researchers, the understanding of implicit resource development is not deep enough, the analysis and exploration of the causes of the current problems may be superficial, and the proposed optimization strategies need to be further improved. Therefore, we are well aware that in the future study and research, we need to continuously improve our own ability and professional quality, further consolidate the theoretical foundation, and accumulate more rich experience for future related research.

Institutional Review Board Statement:

Not applicable.

Informed Consent Statement:

Not applicable.

Data Availability Statement:

The raw data supporting the conclusions of this article will be made available by the authors on request.

Conflict of Interest:

The authors declare no conflict of interest.

Appendix A

Teacher Interview Outline:

1. Do you know about implicit resources? What are the implicit resources in Chinese textbooks? Do you think it is necessary to develop and use the implicit resources in textbooks in primary school language learning? What's the point of development? Please tell us more about it

2. What do you know about the Chinese textbooks? How do you realize the three-dimensional system of education of "knowledge and skills", "process and methods", and "emotional attitudes and values" through teaching materials?

3. Have you participated in any systematic training on the grasp and use of resources in Chinese textbooks?

4. How do you educate students on issues such as patriotism, environmental protection, and other emotional, volitional values? Are you using the resources in the textbook? What resources are used?

5. In the design and implementation of instruction, how do you fully explore and make use of the implicit resources in the text selection system to educate students?

6. In the design and implementation of instruction, how do you fully explore and make use of the implicit resources in the practice system (after-class exercises, unit exercises) to educate students?

7. In the design and implementation of instruction, how do you fully explore and make use of the implicit resources in the reading aid system (unit introductions, resource kits, reading links) to educate students?

8. In the design and implementation of instruction, how do you fully explore and make use of the implicit resources in the assignment system to educate students?

9. In the design and implementation of instruction, how do you fully explore and make use of the implicit resources in the image system (cover, illustration) to educate students?

10. What difficulties do you encounter in the process of developing implicit resources? What is the biggest difficulty?

11. Do you have any suggestions for developing implicit resources in textbooks? Please tell us more about it.

Appendix B

Student Interview Outline:

1. What is your favorite part of the Chinese textbook? (Text, illustrations, exercises, assignments) Why?

2. Do you like to take notes on language books? Did the teacher ask for it or did you do it yourself?

3. Do you know that there is a lot of unmarked knowledge behind these texts and exercises? Do you think this is important?

4. In addition to the content of the textbook, did your teachers teach you any other knowledge? If so, please be specific, and if not, what else do you think could be learned from the textbook?

Appendix C

Questionnaire Survey on the Implementation of the Development and Integration of Implicit Resources into the Development of Chinese Curriculum Resources in Primary Schools:

1. Do you know about implicit resources? Will it be implemented in the daily teaching of Chinese and the development of curriculum resources?

2. Do you think it is necessary to integrate implicit resources into the development of primary school Chinese curriculum resources? Why is it necessary?

3. As far as you know, as a front-line teacher, what kind of teaching methods do you usually use to implement the curriculum objectives? How do I carry out teaching activities?

4. What do you think are the limitations of integrating implicit resources into the development of Chinese curriculum resources in primary schools?

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Breaking Free from the *Other*: An Exploration of Mangy-Dog from Honwana to Ondjaki

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Abstract

This article examines the roles of Mangy-Dog and Isaura in Honwana's *We Killed Mangy-Dog* and Ondjaki's *Não Choramos pelo Cão Tinhoso (We Don't Cry for the Mangy-Dog)* through the perspective of the *Other*, reflecting on the enduring effects of colonial oppression and the trauma of inferiority. In both stories, Mangy-Dog and Isaura are symbolically linked by their shared status as marginalized figures, viewed as societal outcasts and defined as the *Other*. Honwana portrays the killing of Mangy-Dog as resistance to colonial violence, while Ondjaki reimagines the story, emphasizing the enduring trauma of colonialism on individuals and collective memory. Drawing from postcolonial insights of Fanon, Said, and Spivak on the construction of the *Other*, the article suggests that recognizing this trauma associated with the *Other* and understanding its lasting effects can help challenge this mindset, offering a potential path for resistance and transformation.

Keywords: *Other*; Mangy-Dog; Isaura; Trauma

1. Introduction

In 1964, Mozambican writer Luís Bernardo de Honwana published *Nós Matámos o Cão-Tinhoso*, a collection of seven short stories widely acknowledged as a classic of African literature. The collection was translated into English in 1969 as *We Killed Mangy-Dog and Other Mozambique Stories*, with the title story standing out as both the longest and the most significant piece. This article takes *We Killed Mangy-Dog* as a central focus to examine the symbolic and narrative roles of Mangy-Dog, as well as the portrayal of Isaura, a girl nicknamed after the dog. As an animal, the dog embodies the *Other* in contrast to human, while Isaura assumes the role of the *Other* in relation to men. Through this exploration, this article seeks to investigate Honwana's depiction of the *Other*, touching upon themes such as marginalization, inferiority, and the lingering echoes of trauma. Honwana's story is set against the historical backdrop of colonial dominance and exploitation, unfolding in a rural Mozambican village through the narration of

Ginho, where a group of children kill a repulsive dog known as Mangy-Dog. The narrative raise questions about social exploration, racial segregation, and class and education distinctions[①] within the colonial context (Laranjeira, 1995), thereby challenging and subverting the oppressive social order.

This powerful narrative has resonated deeply with later generations, notably inspiring Angolan writer Ondjaki, who published *Não Choramos pelo Cão Tinhoso (We Don't Cry for the Mangy-Dog)* four decades later. As former portuguese colonies, Angola and Mozambique have shared historical and cultural connections, allowing Honwana's narrative to find new expression and continuity in Ondjaki's work. Ondjaki's story is set in an eighth-grade Portuguese classroom, where Jacó is profoundly moved by the tragic fate of Mangy-Dog in Honwana's *We Killed Mangy-Dog*. While Jacó reading the end aloud in class, he feels a strong emotional connection, but is pressured by a classmate to suppress his tears, as showing vulnerability is seen as a sign of weakness. Building upon this, this article will further explore the transformation of Mangy-Dog and Isaura in Ondjaki's story, focusing on the ways in which the trauma and marginalization presented in *We Killed Mangy-Dog* are reinterpreted and acquire new meanings within the post-colonial context.

This study adopts a critical postcolonial approach, situating these texts within the framework of colonial discourse analysis while exploring how narrative form, voice, and characterization shape the experience of the *Other*. Colonial structures have long relied on the construction of the *Other* as a means of social and cultural exclusion, reinforcing hierarchies that persist beyond the colonial period. As theorists such as Fanon, Said, and Spivak have shown, this process not only imposes external categories of inferiority but also shapes internalized perceptions of identity, often in ways that intersect with race, gender, and class. Building on these insights, this study considers the performative dimensions of the *Other*—how characters in Honwana's and Ondjaki's works internalize, resist, or reconfigure imposed identities. Rather than treating the *Other* as a static category, this approach focus on its discursive production and potential transformation across different historical and literary contexts. By analyzing Mangy-Dog and Isaura as figures that mediate colonial trauma, imposed inferiority, and resistance, this study examines that the literature not only reflects colonial and postcolonial realities but also actively reimagines possibilities for identity and agency.

2. Rethinking the *Other* in Postcolonial Perspective

The concept of the *Other* has evolved over time, influencing discussions across various fields such as philosophy, sociology, and cultural studies. In general terms, the *Other* is anyone who is separate from one's *Self* (Ashcroft et al, 2007). Staszak (2008) notes that "a dominant in-group ('Us,' the *Self*) constructs one or many dominated out-groups ('Them,' the *Other*) by stigmatizing a difference—real or imagined—presented as a negation of identity and thus a motive for

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[①] As Laranjeira notes: "Os contos de Nós matámos o cão-tinhoso apresentam-nos questões sociais de exploração e de segregação racial, de distinção de classe e de educação".

potential discrimination". This dichotomous framework was significantly reinforced during colonization, as Western powers imposed their categories of identity and difference on colonized societies under the guise of universalist claims tied to religion and science. Colonizers were generally viewed as the *Self*, while the colonized were often positioned as the *Other*. As Bauman (2004) notes, "Dichotomy is an exercise in power and at the same time its disguise". The perceived differences between these groups are not inherent but arise through a process of differentiation enforced by power. The dominant group constructs its identity by positioning itself against the subordinate group, which is marginalized and excluded through othering, as seen in oppositions such as abnormality/norm, animal/human, woman/man, and stranger/native (Bauman, 2004).

In postcolonial studies, the focus on the *Other* serves as a critical lens for examining the cultural and social legacies of colonialism, as scholars like Al-Saidi (2014) observe that "postcolonial theory is built in large part around the concept of *Otherness*[①]". The publication of Edward Said's *Orientalism* in 1978 is widely acknowledged as a key reference of postcolonial theory. Through his analysis of the relationship between colonial knowledge and colonial power, Said offers valuable insights into how imperial discourses construct the image of the Orient. As Gandhi (2020) suggests, "Colonial/Orientalist discourses are typical of discursive activity whenever they claim the right to speak for the mute and uncomprehending Orient and, in so doing, relentlessly represent it as the negative, underground image or impoverished '*Other*' of Western rationality".

Therefore, Said (1991)characterizes Orientalism as "a Western style for dominating, restructuring, and having authority over the Orient". Rooted in a Western framework, Orientalism functions as a process of othering, portraying the people of the Orient as inferior and leading them to internalize this inferiority. Frantz Fanon also examines this process of internalization in his writings, demonstrating how colonizers use various tools to dehumanize the natives and distort their sense of self, thus providing a justification for exploitation and domination. As Fanon (1986)explains in *Black Skin, White Masks*, when a traumatic feeling of inferiority arises within the colonised, they tend to accept these civilising qualities of the coloniser to alleviate the trauma, believing that the "goal of his behavior being The *Other* (in the guise of the white man), for The *Other* alone can give him worth".

Spivak (1994) builds on these ideas by applying them to the experiences of women in colonized or Third World contexts, who face a compounded form of inferiority. She argues that "the subject of exploitation cannot know and speak the text of female exploitation even if the absurdity of the nonrepresenting intellectual making space for her to speak is achieved. The woman is doubly in shadow". This doubling occurs because colonized women are oppressed by colonial power structures that label them as inferior racialized subjects and by patriarchal systems

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[①] "The concept of Otherness sees the world 'as divided into mutually excluding opposites: if the Self is ordered, rational, masculine, good, then the Other is chaotic, irrational, feminine, and evil'". For further exploration, see Afaf Ahmed Hasan Al-Saidi's Post-colonialism Literature: The Concept of Self and the Other in Coetzee's Waiting for the Barbarians: An Analytical Approach.

within their own societies, both of which tend to position them as the *Other* of an already marginalized *Other*.

The process of internalized inferiority and alterity among the colonized can be seen as a deeply entrenched mechanism of control, intersecting with various axes of oppression, such as race, gender, and class. This intersectionality not only intensifies the experience of marginalization but also fractures the colonized individual's identity, leaving them in a state of alienation and disconnection from their cultural roots and sense of *Self*. As Fanon (1963) describes in The Wretched of the Earth, unless this oppression is resisted, it risks reducing the colonized to "individuals without an anchor, without horizon, colourless, stateless, rootless - a race of angels".

3. Killing Mangy-Dog: a struggle to shatter the label of the *Other*

Against the backdrop of colonial Mozambique, Honwana's story *We Killed Mangy-Dog* reflects the struggles of the time. After the Berlin Conference, which formalized the division of Africa among European powers, Portugal imposed harsh colonial policies in Mozambique, including forced assimilation aimed at erasing indigenous identities and subordinating the local population. These measures entrenched systemic inequalities, as the majority of Mozambicans were denied access to education, political representation, and economic opportunities, while a tiny elite who could read and write Portuguese were granted limited privileges under assimilation status. Among this small group was Honwana, an educated black writer who worked as a journalist and actively participated in the youth section of the Centro Associativo dos Negros de Moçambique, an organization advocating for black rights. In 1964, the same year his celebrated short story collection *We Killed Mangy-Dog* was published, Honwana was arrested for resisting colonial oppression and endured three and a half years in prison for his defiance.

Constrained by the censorship and social limitations of his time, Honwana recognized the necessity of "using double entendre, euphemisms, and coded words as a survival strategy" (Alonso, 2007) to convey his ideas. This subtle approach has led to a variety of interpretations, particularly regarding the character of Mangy-Dog. Afolabi (2001) argues that the ambiguity of Mangy-Dog allows the character to represent both the European colonizer and the African colonized. This article continues this line of thinking, and as the analysis unfolds, I will provide an overview of the main content of *We Killed Mangy-Dog*.

The story is narrated by Ginho, who recounts the events in a rural Mozambican village where a group of boys, led by Quim and urged on by the local veterinarian, decide to kill a dog they consider a nuisance. Ginho feels conflicted, torn between his sympathy for the dog and the pressure to conform to the group's decision. Isaura, the only child who liked Mangy-Dog, tries unsuccessfully to protect him and is shunned by the others. Though Ginho is reluctant to kill the dog, the other boys, partly motivated by their own fear, force him to take the first shot. In the end, despite Isaura's efforts to intervene, the dog is shot and killed by the other boys after Ginho misses his target.

In Ginho's view, Mangy-Dog has blue eyes filled with tears, conveying a sense of silent pleading and anguish. His skin is old and covered with white hair, while his body is thin and fragile, marked by visible bones, scars, and sores. His head sways back and forth like an ox, and he walks like a rickety old cart. In the Portuguese version, the Mangy-Dog is called Cão-Tinhoso. The term "Tinhoso" is defined in the dictionary as something or someone disgusting, repellent, or of bad nature, often used informally to mean something like the devil. As Honwana (1969) writes, " Mangy-Dog had blue eyes with no shine in them at all, but they were enormous, and always filled with tears that trickled down his muzzle. They frightened me, those eyes, so big, and looking at me like someone asking for something without wanting to say it".

Therefore, Ginho could not bring himself to harm the dog, as he was overwhelmed by pity and compassion for its suffering. In contrast, the villagers saw the dog as something "so rotten that it makes one feel sick"(Honwana, 1969), treating it with utter disdain. This collective rejection and mistreatment ultimately led to the dog's tragic death. In this way, the Mangy-Dog's painful fate could be seen as reflecting the experience of the colonized. More than just a pitiable creature, it symbolizes the victimization of those subjected to exploitation, forced assimilation, and social exclusion throughout colonial history. Its fragility, scars, and blue eyes suggest the suffering of those forced to adopt the colonizers' culture while enduring systemic abuse. The villagers' rejection parallels the way colonizers treated the colonized as the *Other*—something to be discarded without regard for their pain or humanity.

From another perspective, Mangy-dog could be interpreted as representing the colonizers. Its blue eyes, often associated with white colonizers, frighten the villagers. This fear of the dog's gaze mirrors the broader psychological impact of colonialism. It reflects the internalized trauma of being under constant surveillance and control by a power that views the colonized as inferior, an *Other* to be oppressed. Just as the boys shrink away from the dog's eyes, they have learned to fear the colonizers' power, internalizing a sense of inferiority and helplessness. As Fanon (1986) describes when Black individuals face the gaze of white people, "An unfamiliar weight burdened me. The real world challenged my claims. In the white world, the man of color encounters difficulties in the development of his bodily schema. Consciousness of the body is solely a negating activity. It is a third-person consciousness. The body is surrounded by an atmosphere of certain uncertainty".

In this context, the boys' desire to kill the dog could be seen as a form of resistance against the colonizers and their oppressive gaze. By attempting to kill the dog, they aim to free themselves from the fear and inferiority that the colonial power has instilled in them. This desire to rid themselves of the dog is an attempt to reject the alterity imposed by the colonizers and to assert their own identity, liberated from the colonizer's control. In *Being and Nothingness*, Sartre (1978) writes:" His eyes, things in the world, are fixed on my body, a thing in the world—that is the objective fact of which I can say: it is". He explains that through the act of gazing, the *Other* objectifies and shapes the self: when the *Other* gazes at me, I become the object and the *Other* the subject; conversely, when I gaze at the *Other*, the roles are reversed. Thus, as the *Self* is continually confronted with the gaze of the *Other*, which forces it into a position of objectification and alienation, the relationship between the *Self* and the *Other* is "not the Mitsein; it is conflict"

(Sartre, 1978). Based on the conflict between the *Self* and the *Other*, the relationship between them is not fixed, but rather fluid and subject to change through conflict. As Staszak asserts:

Out-groups cease to be *Others* when they manage to escape the oppression forced upon them by in-groups, in other words, when they succeed in conferring upon themselves a positive, autonomous identity ("black is beautiful"), and in calling for discursive legitimacy and a policy to establish norms, eventually constructing and devaluing their own out-groups (Staszak, 2008).

Thus, the transformation from the *Other* to the *Self* is portrayed in Honwana's story through the act of killing the Mangy-Dog, a moment that marks Ginho's personal growth and transition. As Sabine (2004) notes, this act serves as a "painful initiation into a grown-up social order". This initiation is closely tied to the predominant Western conception of manhood, which is deeply interwoven with notions of racial domination. As Hoch (1979) points out, "the summit of masculinity—the 'white hero'—achieves his manhood, first and foremost, by winning victory over the 'dark beast' (or over the barbarian beasts of other—in some senses, 'darker'—races, nations, and social castes)". Adding to this perspective, Frantz Fanon (1986) explains that white European culture has historically constructed the black man as the embodiment of "Evil and Ugliness", associating him with "the lower emotions, the baser inclinations, the dark side of the soul". Within this framework, Ginho's act of killing the Mangy-Dog becomes an act of resistance against these racialized stereotypes. By participating in the act of killing, Ginho not only attempts to challenge the ingrained perceptions of power and domination associated with colonial masculinity, but he also shifts from a passive, oppressed position to an active assertion of selfhood. This moment signifies a rejection of the role imposed upon him by colonial structures and a step towards reclaiming his agency and identity.

The killing of the Mangy-Dog is portrayed as a violent act, with the dog ultimately succumbing to multiple gunshots. Frantz Fanon argues the critical role of violence in the liberation of colonized people, suggesting that it may be an inevitable path in the struggle for freedom. Inocência Mata (1992) interprets Mangy-Dog as a symbol of a decadent colonial system on the brink of destruction, paving the way for a new, purified society free from discrimination and racism. In this sense, the violence in the story goes beyond merely ending physical oppression; it serves as a powerful mechanism for disrupting the process of othering. The act of killing the dog becomes a means by which the oppressed reclaim their subjectivity, rejecting the imposed identity of inferiority. Rather than being a simple rejection of the colonial system, this act may represent a step toward self-empowerment, allowing the colonized individual to assert their identity and regain a sense of agency.

4. Isaura-Mangy-Dog: resistance beyond the *Other*

As the focus shifts from the colonial to the postcolonial context, Isaura, a character drawn from Honwana's story, emerges as an important figure in Ondjaki's *Não Choramos pelo Cão Tinhoso*, providing a fresh lens to consider the experiences of the *Other* and resistance. *Não Choramos pelo Cão Tinhoso* begins with a dedication to Isaura and to Luís Bernardo Honwana, forging a thematic and emotional connection to Honwana's *We Killed Mangy-Dog*. This dedication

underscores the timeless and universal nature of the experiences portrayed, creating a bridge across generations, geographies, and even literary traditions. This blend of past and present exemplifies Ondjaki's literary vision. Born Ndalu de Almeida, Ondjaki is an acclaimed Angolan writer, poet, and multidisciplinary artist with a interest in theater, painting, and documentary filmmaking. His works have been translated into several languages, and he has received various awards, including the Grinzane for Africa Prize in 2008 and the José Saramago Prize in 2013. Among his other achievements are winning the Premio Jabuti in 2010 and being named one of "top five African writers" by *The Guardian* in 2012.

Não Choramos pelo Cão Tinhoso is part of his collection *Os da Minha Rua*. This collection reflects on his childhood in Luanda during the Angolan Civil War in the 1980s and 1990s. The war lasted from 1975 to 2002, involving conflict between the MPLA and UNITA[①] factions, widespread displacement, and deep social scars. Growing up amidst this turmoil, Ondjaki witnessed not only the physical devastation of his homeland but also the emotional resilience and daily struggles of its people, with these themes subtly permeating his work. *Não Choramos pelo Cão Tinhoso* centers around a group of eighth-grade students reading Honwana's *We Killed Mangy-Dog* in their portuguese class, with the protagonist Jacó forming a deep emotional connection to the Mangy-Dog's suffering and feeling an overwhelming urge to cry. However, a classmate named Olavo mocks anyone who shows emotion, claiming that anyone who cries is a sissy. Despite their emotional reactions to Honwana's story, the students suppress their tears, fearing the judgment and ridicule that vulnerability might invite.

Both Honwana's and Ondjaki's stories use the classroom as a setting for their narratives. As Ricoeur (2004) notes, "A school class is, in this respect, a privileged place for this shift in viewpoint in memory". Within this shared space, the events of Honwana's story seem to resonate with and even extend into Ondjaki's narrative. In Honwana's story, Ginho, an assimilado black boy subjected to constant mistreatment, feels deep sympathy for Mangy-Dog's suffering but ultimately succumbs to peer pressure, becoming complicit in the dog's death. This inner conflict mirrors the character of Jacó in Ondjaki's story, who is similarly driven by compassion and profoundly affected by the plight of Isaura and Mangy-Dog. When asked to read Honwana's story again in class, Jacó thought that everyone's suffering would repeat: Isaura would cry again, Mangy-Dog would endure more pain, and the other boys would mock Ginho again (Ondjaki, 2007).

In Ondjaki's story, from the children's perspective, the Mangy-Dog seems to shed its earlier political connotations, evolving into a symbol of compassion and vulnerability, while Isaura is portrayed more positively as the dog's protector, deeply grieving its loss. Jacó also expresses his like for the Mangy-Dog (Ondjaki, 2007). As a result, Isaura had formed a strong bond with the dog, which in turn makes her a figure who naturally evokes sympathy. In Honwana's story, Isaura is the oldest in her second-grade class and an isolated girl who does not fit in with the other

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① The MPLA (People's Movement for the Liberation of Angola) and UNITA (National Union for the Total Independence of Angola) were the two main factions during the Angolan Civil War. The war began after Angola gained independence in 1975 and lasted until 2002, when UNITA was defeated and a peace agreement was signed.

children. Her teacher even says she is "not quite right in the head" (Honwana, 1969). Isaura is the only one who likes Mangy-Dog, and the other girls tease her, calling her "Isaura-Mangy-Dog".

As the central female character in Honwana's story, Isaura is given the nickname Mangy-Dog, while Ondjaki's narrative also touches on the nicknames that children give one another. Many of these have subtle undertones of violence and are often derived from animal names, such as "snake" or "goat" (Ondjaki, 2007). According to Roberts (1995), animals often serve as mirrors of humanity, sharing similarities with us while remaining distinct. This duality makes animals a symbol of the *Other*, much like women, who are often excluded from power and influence in relation to men. In this sense, animals are viewed as both similar to humans and entirely separate, much like women who are seen as both equal and subordinate, capable yet constrained by societal limitations. Isaura's portrayal in Honwana's story embodies two distinct forms of marginalization: as a woman subjected to exclusion in a male-dominated society and as a human paralleled with an outcast animal. Like Mangy-Dog, who endures neglect and suffering, Isaura is burdened by societal rejection, revealing the sense of alienation experienced by women.

To better understand Isaura's marginalization in Honwana's story, Evan Maina Mwangi, in *The Postcolonial Animal: African Literature and Posthuman Ethics*, builds on Edward Said's analysis in *Culture and Imperialism* to explore the dangers of prioritizing one group's identity over another. Just as Isaura is trapped in exclusion due to both her gender and her portrayal as a marginalized animal, Mwangi (2019) highlights that focusing solely on the identity of one group can perpetuate violence and division. Said (1993) warns that such practices lead to chauvinism and xenophobia, pointing out that the slogan "Africa for Africans", though seemingly progressive, has the potential to foster exclusionary violence. Mwangi expands on this idea, arguing that any attempt to secure the rights of one group at the expense of others ultimately weakens the broader struggle for justice and equality.

This pattern is mirrored in the boys' treatment of Isaura when she attempts to protect the dog. Instead of acknowledging her courage in standing up against cruelty, they subdue her, asserting their dominance in a way that echoes the colonial social hierarchies that have historically subordinated women and marginalized individuals. In We Killed Mangy-Dog, the boys views Isaura's protection of Mangy-Dog with contempt and disdain, "Quim turned to Isaura, who was half hidden in the grass, looking at the gang with wild eyes and whimpering. 'Listen, kid, didn't you know that we don't want girls around wrecking the work we have to do, d'you hear" (Honwana, 1969) ? While the boys may not consciously intend to enforce dominance, their actions suggest that social norms shaped by colonial legacies subtly influence their behavior. Much like colonial authorities once imposed control over indigenous populations and women, the boys render Isaura invisible and powerless. Although the boys are young, they have already absorbed some of the patriarchal and colonial ideologies that shape their view of those they perceive as weaker or *Other*. As Sabine (2004) notes, "Honwana's women are most often not protagonists capable of acting and learning, but a social resource under the control of men".

According to Bhabha (2012) in *The Location of Culture*, the binary distinctions between *Self* and *Other*, colonizer and colonized, are not as fixed as they may initially seem. Through his analysis of Green's *Sites of Genealogy*, Bhabha notes that Green uses the stairwell as a metaphor

for a liminal space, one that "displays and displaces the binary logic through which identities of difference are often constructed – Black/White, *Self/Other*". The boys' actions toward Isaura represent a moment where these boundaries blur. Although the boys are not colonizers, they internalize the power dynamics of colonialism, reflecting the continuation of these oppressive structures. Their behavior suggests that colonial ideologies are not static; rather, they can be passed down through generations, subtly shaping identity and social interactions over time. All of this is conveyed through the eyes in Ondjaki's story, the eyes of Ginho, Isaura, Mangy-Dog, Olavo, and the teacher converge (Ondjaki, 2007), offering a shared witness to pain.

In this poignant moment, the characters' mutual gaze acts as a metaphor for the potential intergenerational transmission of trauma, as well as the possibility for collective healing and resistance. By acknowledging their shared experiences, symbolized through the act of looking into one another's eyes, these characters begin to confront the forces that oppress them. In the postcolonial context, these two narratives intertwine, reflecting the complex dynamics of resistance and survival. The historical legacy of Mozambique's colonial past resonates with the childhoods of children during the Angolan civil war, linking two distinct but similarly traumatic chapters of history. This connection serves as a reminder of how the effects of colonialism can persist across time and borders, subtly shaping the lives of future generations, with the eyes emerging as both a site of pain and a symbol of resistance.

For Isaura, despite her own suffering, she chooses to protect Mangy-Dog, a creature similarly regarded as the *Other* by society. Her defense of the dog seems not only to be an act of resistance against cruelty but also an expression of compassion that goes beyond her own victimization. She does not direct her pain toward the dog, nor does she support its killing in an effort to gain acceptance from the group. When Isaura witnesses the brutal killing of Mangy-Dog, her grief is profound, yet silent—a sorrow too deep to be expressed in tears. "Isaura moaned at me and cried softly without any tears in her eyes. Her hair was full of grass but it only smelled of gunpowder when it got inside my nose" (Honwana, 1969). This moment subtly echoes the scene in Ondjaki's story, where the classroom is filled with tension. Under Olavo's rule that whoever cries is a sissy (Ondjaki, 2007), the boys moves their feet nervously and some girls' eyes glisten with unshed tears, mirroring Ondjaki's observation: "But I never thought that tears could become so heavy inside a person" (Ondjaki, 2007).

Though Jacó and the others' tears remain silent, flowing inward rather than outward, they quietly convey the difficulty of healing from the deep scars of the past. In this moment, Isaura's grief transcends her own sorrow, becoming a powerful symbol for the many forms of trauma— personal, historical, and collective—that are often too complex to be processed or expressed in conventional ways. The emotional burden borne by those who are not allowed to express becomes a silent inheritance, passed down through generations, shaping the emotional landscapes of those who must carry it. As Ondjaki has said, "I think that Angola always lives in a present filled with elements of the past, or even of several pasts, whether recent or not, which always manifest

themselves, in various ways, in our present[①]" (Leite, 2012). Just as Isaura's strength is subtle but significant, the collective healing needed to move forward is slow, requiring an acknowledgment of both personal and shared trauma.

Inocência Mata (2013) suggests that the purpose of reading Honwana's text in class is to revisit it, often focusing on its most painful aspect: the sense of inferiority that is so common among colonized people. This sense of inferiority, rooted in the oppression and trauma of colonial societies, continues to resonate in postcolonial contexts. Revisiting the text becomes an opportunity to confront the deep wounds and recognize the ongoing effects of such trauma. Just as Isaura chooses not to transfer her pain to Mangy-Dog, refusing to perpetuate violence or cruelty, collective recognition of past injustices offers a way to interrupt the cycles of trauma. Through the dialogue between Ondjaki and Honwana, the narrative functions as a reflection on historical trauma and a call for collective action in response to continued oppression. From this shared gaze, the possibility for transformation arises, where the past is neither dismissed nor forgotten, but acknowledged, creating space for a reimagined and redefined future.

5. Conclusion

This article approaches the topic through the lens of the *Other*, exploring roles of Mangy-Dog and Isaura in both Honwana's *We Killed Mangy-Dog* and Ondjaki's *Não Choramos pelo Cão Tinhoso*, while reflecting on the lasting impact of colonial oppression and the trauma of inferiority. As Inocência Mata (2013) notes, "colonialism is not an all-consuming presence in the daily life of post-colonial societies; instead, the past continuously influences the present, shaping and interacting with it, while projecting into the future" . In Honwana's work, the death of Mangy-Dog could be seen as a metaphor that challenges the binary division between the colonizer and the colonized, offering a reflection on the search for self-identity. Ondjaki's portrayal of Mangy-Dog's suffering and his re-interpretation of Isaura point to a compassionate response that seeks to transcend the legacy of past injustices. These narratives suggest that the dominance of one group over another is intolerable and stress the importance of recognizing and amplifying the voices of the *Other*, such as women, in discussions of justice and equality. In this sense, the stories of Mangy-Dog and Isaura invite readers to consider the complex ways in which the *Other* is constructed, how its effects persist across generations, and the possibilities for reclaiming power and dignity. The process of confronting past trauma, through both individual and collective efforts, suggests a potential for transformation, offering hope for healing and the creation of a more just and equitable future.

[①] The following is Ondjaki's statement in Portuguese:"Penso que Angola vive sempre um presente que está cheio de elementos do passado, ou de até de vários passados, recentes ou não, que sempre se manifestam, de vários modos, no nosso presente".

Author Contributions:

Conceptualization, Z.H.; methodology, Z.H.; software, Z.H.; validation, Z.H.; formal analysis, Z.H.; investigation, Z.H.; resources, Z.H.; data curation, Z.H.; writing—original draft preparation, Z.H.; writing—review and editing, Z.H.; visualization, Z.H.; supervision, Z.H.; project administration, Z.H.; funding acquisition, Z.H. All authors have read and agreed to the published version of the manuscript.

Funding:

This research received no external funding.

Institutional Review Board Statement:

Not applicable.

Informed Consent Statement:

Not applicable.

Data Availability Statement:

Not applicable.

Conflict of Interest:

The authors declare no conflict of interest.

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Research on the Cultivation of Creative Thinking in Primary School Art Education

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Abstract

Primary school education is the most important stage for students to develop good habits, and art is an important course in the cultivation of students' aesthetic education, and its main value includes the cultivation of innovative consciousness. Therefore, in the primary school education stage, the art discipline should consciously strengthen the cultivation and exploration of students' creative potential, and encourage them to imagine and create boldly. This study took some front-line art teachers as the research object, and used the interview method to understand their thoughts on the development of creative thinking in art education, and through understanding and analyzing their answers, we found out some problems that arise when primary school students implement creative thinking training in art classrooms. Based on the teachers' views on the cultivation of creative thinking in primary school classrooms, more in-depth interviews were conducted to understand the views of art teachers more intuitively, and teachers' educational experience was summarized, so as to promote the practical application of creative thinking cultivation resources in primary school art courses.

1. Introduction

In recent years, one of the most frequently mentioned words by General Secretary Xi Jinping is "innovation". Talent forms the basis of innovation activities, and the driving force of innovation is also driven by talent in essence. Those who have top innovative talents have the superiority and dominance in scientific and technological innovation. Cultivating innovative talent is a complex and long-term task. Looking to the future, in order to cultivate a group of large-scale innovative talents with innovative thinking and the courage to face risks more quickly, the first task is to strengthen investment in education and training.

As an important part of primary education, art education is of great significance for cultivating students' creative thinking. With the development of the times and the progress of society,

creative thinking has been widely recognized as one of the core capabilities of the 21st century. However, there are some problems and challenges in the current art education in primary schools. On the one hand, the traditional teaching model focuses too much on skill training and ignores students' creative expression ability. On the other hand, the lack of effective quantitative indicators of students' creative thinking in the current evaluation system makes it difficult for educators to accurately assess students' creative level.

Therefore, in the stage of compulsory education, the art discipline needs to improve the original teaching method, strengthen the cultivation of innovation consciousness, and improve students' innovation consciousness and problem awareness, which is also an important content of primary school art education in the current compulsory education stage. In the new situation, it is necessary to continue to innovate to adapt to the development of creative thinking teaching in the new era.

For a long time, art education in primary schools in China has not received enough attention and attention in compulsory education, resulting in many problems in art education in the compulsory education stage. In the primary school stage, it is not advisable to take a single chemistry as the core of the teaching mode, and in the primary school education stage, art teaching should pay more attention to the cultivation of students' comprehensive quality and creative thinking, which obviously puts forward higher requirements for teachers. The purpose of this study is to think about the reform and improvement of art education in compulsory education, to understand the significance of cultivating students' innovative thinking in primary school, and to help us understand and improve creative thinking in art curriculum in compulsory education.

In the primary school education stage, it is a basic period for the implementation of students' comprehensive quality education, and as an important part of it, the art curriculum cannot be ignored to cultivate students' creative thinking. In primary school art education, the cultivation of creative consciousness and the corresponding curriculum design should be carried out in the whole process of compulsory education, so as to achieve an effective connection between all ages and enable students to actively participate in the practice of art education.

The new proposition of building an "innovative country" has long become the focus of people's attention in the context of the new era. This requires us to combine the study of art knowledge with life, pay attention to the cultivation of students' creative thinking, and guide them to learn independently and actively create and practice. Students can gradually develop their creative ability and creative thinking in their own life and practice.

2. A review of studies

2.1. Current research status in China

In China, many scholars have recognized the importance of primary school art education in cultivating students' creative thinking, and have conducted extensive research and exploration on this. Li (2021) believes that primary school art teachers should understand the art learning situation of primary school students according to the needs of modern social development,

strengthen the cultivation of students' creative thinking, and find measures to optimize the curriculum teaching mode and adjust the teaching strategy during the critical period of students' thinking ability and practical ability development. Yuan (2022) believes that primary school art education actively responds to the call, vigorously develops students' aesthetic education, and actively implements the cultivation concept of aesthetic education. Teachers should actively use the psychological characteristics of students at this time to cultivate creative thinking in a timely manner, so as to stimulate students' interest in learning, improve students' aesthetic ability, and promote students' all-round developmenti. Wang (2022) believes that the essence of cultivating students' innovative thinking in primary school art education is to implement effective quality education, and use the unique art form of art discipline and the characteristics of stimulating brain inspiration to stimulate students' imagination and creativity, which is of great significance for the improvement of students' knowledge ability and lifelong development. Pan (2023) believes that it is necessary to fully understand that cultivating students' creativity in primary school art education is an inevitable requirement for the implementation of the "double reduction" education policy, the core goal of the cultivation of artistic core literacy, and the importance of the task of the times for the high-quality development of primary education. Encourage students to create, so as to promote the cultivation of students' innovative consciousness and innovative thinking, enhance students' creativity, and achieve the goal of cultivating new talents of the times.

These studies mainly focus on the cultivation methods of creative thinking, the relationship between creative thinking and art education, and the impact of creative thinking on students' comprehensive quality, focusing on the value of creative thinking in the process of art education in primary schools, and emphasizing that the foundation of education in art classrooms is not only to cultivate students' painting methods and skills, but to expand their horizons and thinking with the help of art education, so as to cultivate and improve students' creative thinking ability. The formation of creative thinking requires a long period of training and accumulation. In today's general primary education, art class should be the most special and most creative course, in the process of art teaching, pay attention to the correct guidance and motivation of students' creative thinking, will inevitably become a subjective sense of innovation, when it forms a stable state of mind, it will naturally infiltrate into all aspects of our life and learning.

2.2. Current research status in other countries

In other countries, especially in developed countries, the research on primary school art education is more in-depth and systematic. Through empirical research and case analysis, many scholars have deeply analyzed the positive impact of primary school art education on cultivating creative thinking. They found that art education in primary schools can stimulate students' creativity, cultivate students' innovative spirit and imagination, and prompt them to show a unique way of thinking in aesthetic experience.American educational psychologist Torrance (1984) and others have found that art education can promote students' creative thinking ability and improve their imagination and creativity. In addition, art education can also help students develop the ability to think independently about problems, stimulate their sense of innovation and creative expressionii. In addition, the British educationalist Robinson (2006) pointed out in his book Creative Education that art education can stimulate students' creative thinking and help them

develop unique artistic perception and expression skillsiii. Through art education, students can learn to observe and understand the world from different perspectives, and cultivate the perception of beauty and creative aesthetic ability.

2.3. Brief evaluation of domestic and foreign research

The cultivation of creative thinking has been valued and popularized by countries all over the world, and creativity is integrated into subject teaching and students' practical life. Due to the inconsistency of customs and educational concepts in different countries, especially the methods of integrating creative thinking into art teaching, the fundamental goal is basically the same - to cultivate imaginative, innovative thinking and creative national citizens.

The purpose of this paper is to analyze the creative thinking and the relevant theories of primary school art education, advocate the importance of art education in the "golden age", and give relevant feasible suggestions for the current development of primary school art education, so as to better promote the development of primary school art education. How to cultivate students' creative thinking ability more effectively is the key issue to be broken through in this paper's discussion of design and guidance practice, and it is also the focus of this paper's research.

3. Research methods

Starting from the expression of creative consciousness in primary school art teaching, this paper discusses the ways and methods to improve the creative consciousness of primary school art students in the compulsory education stage, and systematically sorts out the cultivation of students' creative consciousness. In order to promote the narrative of this paper to be more argumentative, this paper adopts the literature research method, the case study method, the observation method, the interview method and the questionnaire survey method, as follows.

(1) Literature research method

After collecting and consulting the literature on art education in the compulsory education period and the cultivation of creative consciousness at home and abroad, and summarizing and referring to the experience of previous scholars, this paper makes some innovations and puts forward its own views on this issue.

(2) Case study method

In the process of research, he collected a large number of real art teaching materials, and personally participated in the design and collation of teaching cases, and analyzed and studied various textbook cases during the compulsory education period. This paper summarizes the current situation, existing problems and future development direction of creative thinking cultivation in art education during the compulsory education period, which provides strong evidence for the arguments of this paper.

(3) Observational method

In art education, the classroom is the main front for artistic activities and an important place for cultivating students' creative thinking. Therefore, in the process of investigation, we should go

deeper into the classroom, observe the performance of teachers and students in the classroom, and analyze the penetration effect of creative thinking from specific behaviors, so that the data obtained from actual observation is more real, so as to prepare for induction and refinement of corresponding countermeasures, and provide strong argument support for this article.

(4) Interview method

In order to grasp the practical needs of art education in primary schools, this paper uses the interview method to interview some front-line art teachers in primary schools, and discusses the development of teachers and students of different ages in this new teaching mode.

(5) Questionnaire method

It mainly includes the form of questionnaire survey. Taking the front-line primary school art teachers as the questionnaire survey object, the relevant content and data of the current situation of integrating creative thinking into art education were used as the basic data of the paper, so as to make the discussion more convincing.

4. The necessity of cultivating creative thinking in primary school art education

4.1. The concept of creative thinking

Creative thinking, a groundbreaking mental activity, is a unique property of the human brain. For thousands of years, creative thinking has played an important role in the creative activities of human beings, and human beings have relied on creative thinking to understand and transform the worldiv. "Creative thinking is the thinking process in which the subject is driven by a strong sense of innovation, through the use of various different ways of thinking, to process and decompose and combine new thinking and information in the brain, and finally form new ideas, new perspectives, and new theories." This unique thinking often leads to unique insights and bold decisions that lead to unexpected results.

Generally speaking, there is a narrow and broad sense of innovative thinking. In a narrow sense, innovative thinking refers to a way of thinking that obtains creative results in invention and creation, scientific research, that is, artistic creation, it is a new product for human society and has a certain value, but only a very small number of people can have this ability. Broadly speaking, innovative thinking can be summarized as creative thinking in learning, work, and social practice, the result of which is only a new product for the creator himself, but not necessarily for humanity as a whole. Broad creative thinking can be manifested not only in the major discoveries of scientific research, but also in the bits and pieces of daily life, which is conducive to the development of creative thinking of ordinary people.

4.2. The necessity of cultivating creative thinking

4.2.1. For education and teaching

Art teaching is an important way to cultivate students' creative thinking, and teachers themselves must have profound knowledge, imagination and creativity, only in this way can students' creativity be cultivated. Since art is a special subject, it is necessary to have experienced

teachers to guide students and develop their interests. In the teaching process of art classes, educators should pursue innovative teaching, and cannot be satisfied with the same lesson plans, nor can they repeat the teaching content, therefore, they should come up with more teaching methods and methods, which is a useful supplement to art education.

Students' thinking is mainly achieved through the re-creation of concrete images, in this process, students' creativity is developed, their thinking is broadened, and the cultivation of these abilities is related to concrete images. According to this characteristic, in the process of art teaching, only by fully activating the students' thinking space and combining it with the ability of practical operation can their creative ability be developed, and good teaching results will be obtained.

4.2.2. For student learning

The purpose of education varies from one period to the next, as there are differences in the personality traits of the students. In every stage, art education is an indispensable link, which puts forward new requirements for today's teaching reform in China, in education, cultivating students' creativity has become a very important task, and art is the discipline that can best promote students' creativity, and it is also very important, it plays a very important role in education. Art education is conducive to students' learning, and the development of creativity is an indispensable part. In artistic activities, figurative thinking is the most basic form of thinking, and in the analysis of the genesis of thinking, figurative thinking is the most basic, which provides a basis for many thinking.

4.2.3. For student growth

John Dewey, a famous American educator, was a person who attached great importance to the physical and mental health development of children, and he regarded education as the main means to achieve the ideal of a democratic society, and put forward the important idea of "education is life", and regarded education as the process of life. Life is the source of cultivating students' innovative thinking, and art is inseparable from the real life of children. In this context, teachers should follow the principles of curriculum and students' subjective creativity, and in the process of mastering art skills, they should give certain protection to students' imagination and creativity, encourage their creativity, and make art learning and happy childhood perfectly integrated.

5. Analysis of the current situation of creative thinking cultivation in primary school art education

5.1. The content of the investigation

5.1.1. The purpose and object of the survey

Based on the reference to a large number of relevant research literatures on the cultivation of creative thinking in primary school art education, the questionnaire survey method and interview method were used to understand the implementation status of creative thinking cultivation in primary school art education. Through the investigation and observation of the current situation of

creative thinking cultivation in art education in first-line primary schools, the main problems are found and the causes of the problems are analyzed, and on this basis, the corresponding teaching strategies are proposed.

5.1.2. Questionnaire design

On the basis of reviewing the relevant literature, the questionnaire was produced, distributed and the data were organized. In this process, according to the theme of the study, the art teachers in the front line of the primary school were selected as the subjects of the survey.

According to the specific research direction and related contents, the "Investigation on the Current Situation of Research on the Cultivation of Creative Thinking in Primary School Art Education" was designed. A total of 7 questions were designed to talk to the front-line primary school art teachers, and combined with this study, after summarizing the concept of "creative thinking" by relevant scholars, the attitude and interest of creative thinking in primary school art education to cultivate students' creative thinking in art learning were investigated, and a questionnaire was produced. A total of 100 questionnaires were distributed in this survey, of which 88 questionnaires were collected and 76 were valid.

5.1.3. Data reliability, validity and exploratory factor analysis were studied

(1) Reliability analysis

The reliability of the five variables of the questionnaire (level of understanding; activity implementation; the degree of attention; Ways to implement；Influencing factors) was analyzed. From Table 1, it can be seen that the Cronbach α coefficient of each variable is higher than 0.8, indicating that the scale reliability of this study is good, and the data in this study are authentic and reliable.

Table 1. Reliability analysis

Name	Total Correlation of Adjusted Terms (CITC)	The α factor for which the item has been removed	Cronbach α coefficients
level of understanding	0.934	0.952	
activity implementation	0.821	0.968	
the degree of attention	0.924	0.952	0.965
Ways to implement	0.929	0.951	
Influencing factors	0.929	0.955	

Note: Normalized Cronbach α coefficient = 0.967

(2) Validity analysis

The validity of the questionnaire results was analyzed to test the correctness and validity of the measurement results. Through validity analysis, whether the design of the items is reasonable and whether it can accurately reflect the purpose and requirements of the project is measured, and the method of factor analysis (exploratory factor analysis) is tested. The KMO value and Bartlett sphere test are used to see if the selected indicator is capable of factor analysis.

Table 2. KMO and Bartlett sphere test of the scale

KMO value		0.830
Bartlett Sphericity test	Approximate chi-square	122.113
	df	10
	p-value	0.000

As can be seen from Table 2, the KMO value of the scale is 0830, a KMO value higher than 0.8 indicates that it is very suitable for information extraction. Validity analysis requires a Bartlett test (corresponding to a p-value of less than 0.05), indicating that the scale is suitable for factor analysis.

Table 3. Results of validity analysis of each dimension

Name	Factor load factor	Commonality (common factor variance)
level of understanding	0.957	0.916
level of understanding	0.881	0.777
the degree of attention	0.950	0.903
the degree of attention	0.957	0.916
Eigenroot value (before rotation)	4.426	-
Variance Interpretation % (Before Rotation)	88.526%	-
Cumulative Variance Explanation % (Before Rotation)	88.526%	-
Eigenroot value (after rotation)	4.426	-
Variance Interpretation % (after rotation)	88.526%	-
Cumulative Variance Explanation % (After	88.526%	-

Rotation)

KMO value	0.830	-
Bart spherical values	122.113	-
df	10	-
p value	0.000	-

Note: If the numbers in the table are colored: blue means that the absolute value of the load factor is greater than 0.4, and red means that the commonality (common factor variance) is less than 0.4.

5.2. Analysis of the content and results of teacher interviews

This time, 20 front-line primary school art teachers were selected for interviews, and relevant interview data were selected and collated. On the whole, there are still many problems in the cultivation of creative thinking in primary school art education. In terms of curriculum philosophy, the curriculum rules often point to pure knowledge and examination-oriented education, but it ignores the creativity and imagination of art itself. On the road of cultivating creative thinking, although teachers also nominally train innovative thinking in teaching, most of the activities are divorced from the reality of life, making it difficult for students to accept and understand.

In terms of the use of educational resources, compared with the cultivation of creative thinking in the campus, the utilization rate of social resources is relatively low, so it is necessary to invest more manpower and material resources in this area to promote the formation of a good moral atmosphere in the whole society.
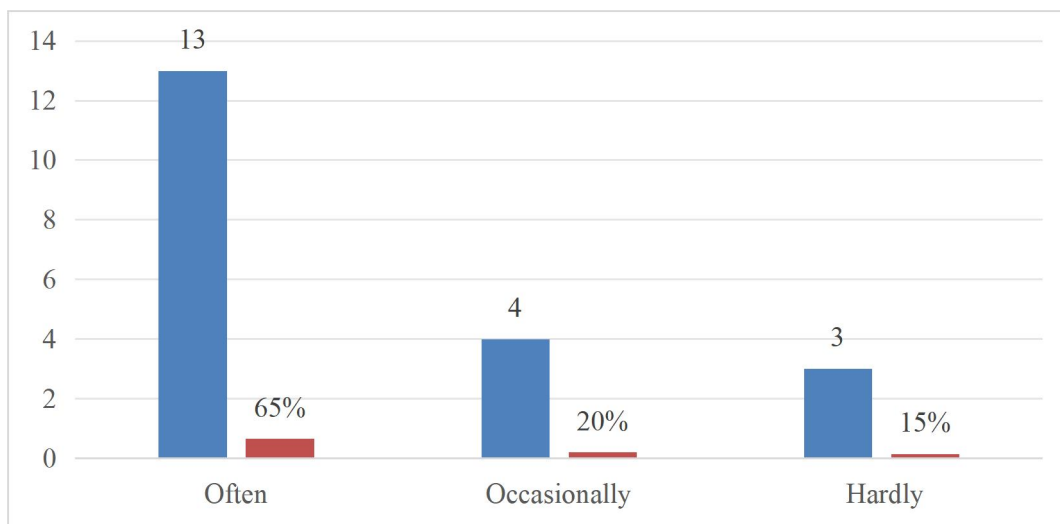

Figure 1. The relationship between the content of creative development and real life

According to the interview data in Figure 1, 65% of teachers are able to connect books and teaching materials with life in the process of art teaching, while 20% of teachers rarely or occasionally make connections, and finally 15% of teachers have almost no contact. The reason for this result may be that some teachers are aware of the distance between their education and

reality, and they want to make up for this distance, but in the process of teaching, they find that they are not enough. From this point, it can be seen that in primary school art teaching, the cultivation content of innovative thinking is not combined with the real life of students, and does not form a complete connection.
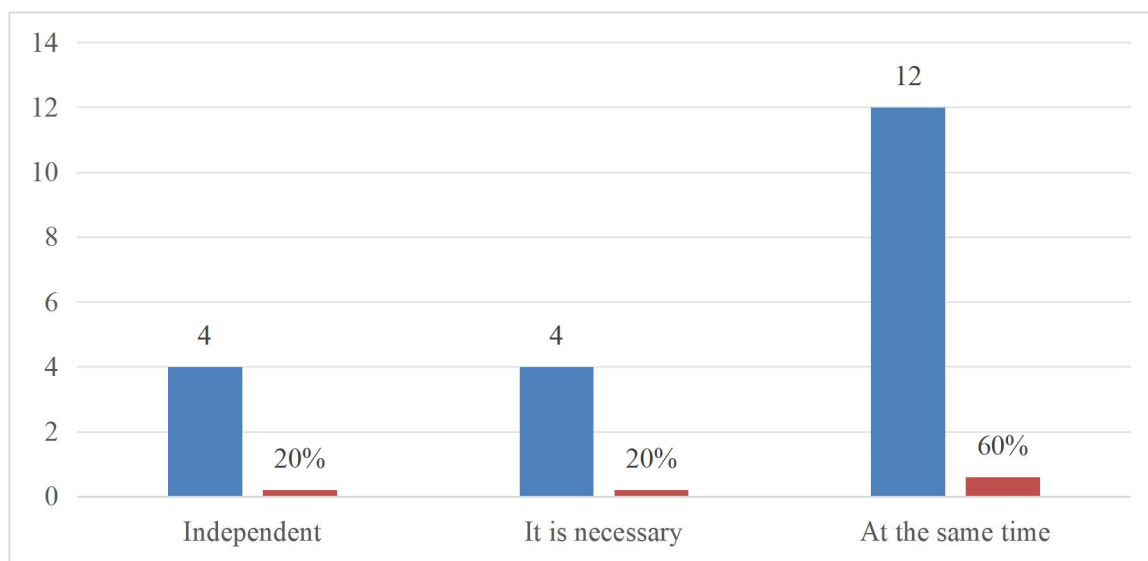

Figure 2. Teachers' attitudes towards integrating creative thinking in art teaching

According to the interview data in Figure 2, 20% of the respondents believe that art classroom teaching is mainly used for basic knowledge learning and related basic skill learning, and has nothing to do with the cultivation of creative thinking. 20% believe that it is necessary to cultivate creative thinking in the process of art teaching; 60% believe that the cultivation of creative thinking and art teaching should be carried out at the same time. It can be seen that under the test-oriented education system, there are misunderstandings and deviations in the cultivation of innovative thinking in the classroom, resulting in not every art teacher putting the cultivation of innovative thinking in the first place.
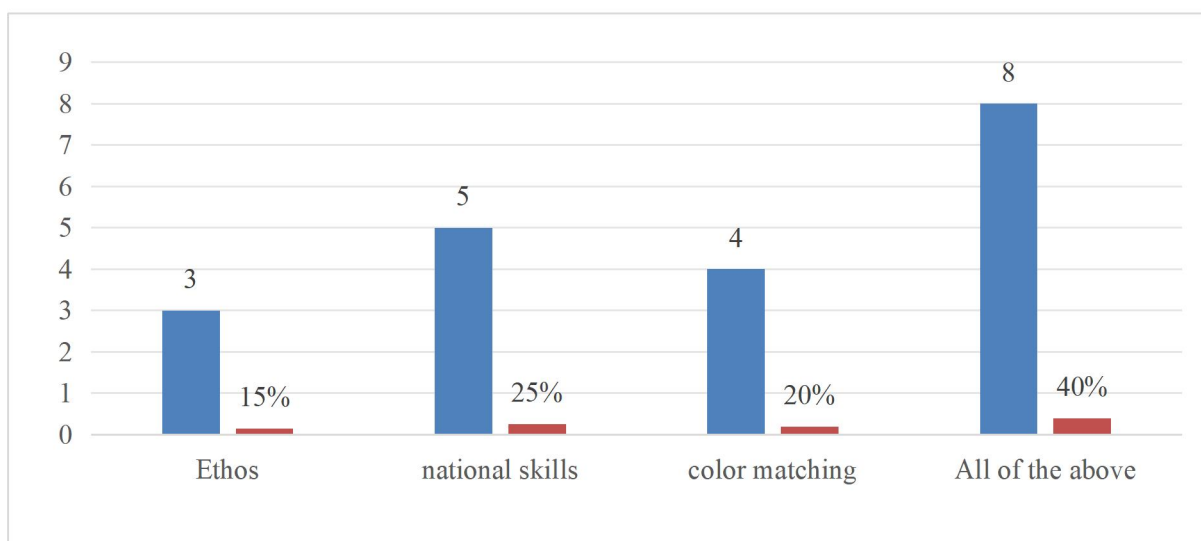

Figure 3. The main ways of integrating creative thinking in daily art teaching

In the interview process of 20 front-line teachers, 15% of the daily art teaching integrates the national spirit with creative thinking; 25% of traditional folk skills are integrated into innovative methods; 20% of the proportion of plane, three-dimensional, modeling, composition and color matching; Among them, the integration of national spirit, folk traditional skills and color matching accounted for the most, accounting for 40%. In addition, with the continuous reform of education methods and the innovation of teaching methods, the integration of teaching methods has become a general trend, and a variety of teaching methods can also play a good development while enriching the teaching classroom.

5.3. Analysis of the content and results of the student questionnaire

A total of 100 primary school students were selected to distribute questionnaires, of which 88 questionnaires were collected and 76 were valid.

5.3.1. Analysis of students' interest in art learning and its reasons

According to the questionnaire survey (see Figure 4 and Table 4), about 51.32% of the children said that they liked the art class. In addition, 93.4% of children enjoy the fun of imagination and creativity brought by art; Nearly half of the children want to improve their drawing and aesthetic skills by learning to draw; 92.1% of children want to improve their creative thinking through art; 86.8% of the children think that learning art well is to be recognized; 89.5% of the children are there to boost their self-confidence in the world of fine art. Therefore, we should follow the laws of childhood development and respect the inner feelings of students.
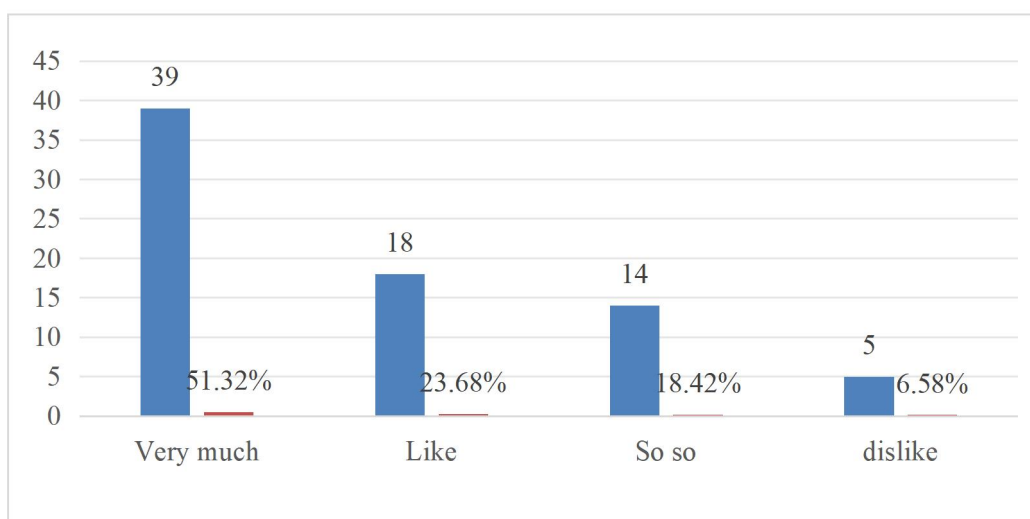

Figure 4. Students' interest in art class

Table 4. Reasons why students love art

cause	Imagination, creativity, fun	Enhance creative thinking	Get happy	Get recognized	Boost self-confidence
Number	71	70	73	66	68
percentage	93.4%	92.1%	96.1%	86.8%	89.5%

5.3.2. Analysis of the content of art teaching in primary schools

According to the survey, 74.2% of the students teach painting in art classes, followed by 11.3% of teachers who guide students to conduct art appreciation classes, 8.5% of students report that there will be handicrafts in art classes, and 3.6% of students report that teachers will also guide everyone to take design classes. Only 2.4% of the students reported that the teacher would occasionally lead them to go outdoors to sketch in art class. It can be seen that our art classroom teaching is still based on the traditional painting teaching mode, which is difficult to reflect the cultivation of students' comprehensive ability, and the single teaching mode and the lack of awareness of the cultivation of creative thinking are even more difficult to reflect the cultivation of students' creative thinking.
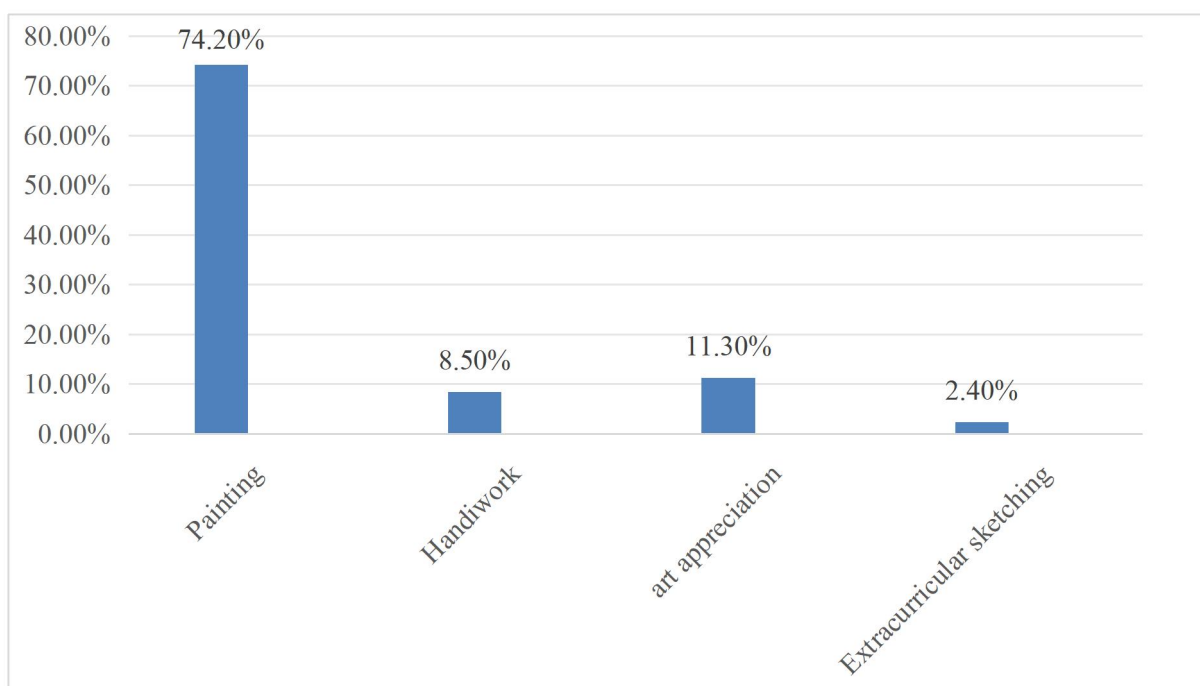

Figure 5. The content of art teaching in primary schools

6. The main problems in the cultivation of creative thinking in primary school art education

The most important question in education is, what kind of people do we want to cultivate? Everyone has their own talents, and creative thinking is to cultivate students' creativity in terms of creative thinking, harmonious cooperation, and healthy competition.

6.1. Insufficient attention to the cultivation of innovation consciousness

In China, due to the long-term influence of examination-oriented education, the content of art education shows a trend of focusing on examination-oriented, and less attention is paid to the development of students' creative literacy and the cultivation of creative thinking. For example, the state stipulates that primary and junior high schools should test students' comprehensive art quality, but most schools and teachers have a one-sided understanding of textbooks, believing that as long as they have good painting ability, they are fine. In practical teaching, only the teaching of

practical skills such as sketching and color is emphasized, and the cultivation of students' innovative consciousness, creative thinking and humanistic quality is neglected in art education. Such a teaching method that blindly instills knowledge and skills in students. In a short period of time, it is good for the academic performance of students. However, this is not conducive to their future studies, life and development.

6.2. The evaluation system is not perfect

The teaching evaluation mode of primary school art courses needs to be improved. On this basis, a new evaluation system of art education suitable for China's national conditions is proposed. Influenced by the traditional educational concepts and teaching ideas, the current evaluation method of primary school art teaching is not perfect enough, so far, primary school art teaching has not fully taken into account the needs of students' physiological and psychological development, nor has it been in accordance with the law of primary school art teaching and children's learning and understanding. At present, there are three main modes of art education in primary schools in China: introductory simplified curriculum, professional skills training and repeated intensive trainingv. In the professional skills training mode, due to the limitation of primary school students' thinking and cognitive ability, the theoretical knowledge of painting cannot be understood and acceptedvi. Under the repetitive intensive training method, the teacher assigns some repetitive exercises to the students according to the learning content, which seriously deviates from the physical and mental receptivity of primary school students, does not help to improve their aesthetic literacy, and also weakens their enthusiasm and creativity for art classes.

6.3. Teachers did not do a good job of guiding the main body

In the process of teaching, teachers have not established correct educational ideas. The teaching energy released by teachers is not sufficient, and it is difficult to fundamentally lead students to progress and develop. The primary school art teaching classroom created by the teacher is not novel enough, and cannot activate the potential and interest of students to participate in the learning of art knowledgevii. At the same time, the teacher's own teaching dominance did not respect the main position of students, so that students faced many problems and deficiencies in the process of learning art knowledge, and students' art knowledge learning was greatly affected.

7. Teaching strategies for cultivating creative thinking in primary school art education

7.1. Creation of an environmental atmosphere

The development of creative thinking is like the germination of a seed, and there must be specific external conditions. The campus environment has a promoting effect on students' psychological absorption and plays a restraining role in students' behavioral norms. Creating a learning and living environment that is suitable for students' creative development is an important strategy with potential. It can make people have a thirst for knowledge, be proactive, cultivate sentiment, and enlighten intelligence.

Creating a life-like teaching situation is to use the life scenes and content that students are familiar with to arouse students' interest and enable them to learn independently. Contextual teaching can also make students feel happy, safe, dependent, and accomplished. Elementary school students are still relatively mature by nature, and their curiosity and creativity are high, as long as they are guided by art teachers, they can carry out creative activities on their own.

Elementary school students are lively, active, and sensitive to new things, which is both a disadvantage and an advantage, and we should make full use of this characteristic. In the teaching of art classes, art teachers should be able to teach in a flexible and diverse way according to the psychological characteristics, growth laws and teaching content of students in each grade. For example, students can have an in-depth understanding of the topics and things they are interested in, so that they can actively participate in teaching activities in the classroom, so that students can learn from each other, communicate with each other, and cultivate students' creative thinking to the greatest extent.

7.2. Improve evaluation methods

A perfect art teaching evaluation system is composed of comprehensive evaluation at multiple levels such as teaching, students, and teachers, which should not only pay attention to the results of learning, but also pay attention to the learning process, and play a role in promoting the development of art teaching. It is necessary to give full play to the educational and guiding role of art teaching evaluation, and build a more scientific, perfect and systematic art teaching evaluation system through the comprehensive collection, sorting and analysis of relevant knowledge of art teaching, so as to comprehensively evaluate the effectiveness of art teaching. Only in this way can we effectively test the effect of cultivating students' creativity in primary school art teaching.

Teaching evaluation is not simply to divide good students into poor students, but to promote teaching reflection, effective development and continuous improvement. Each teaching evaluation should not only be a summary of the teaching, but also provide effective guidance for future teaching activities. The goal of teaching assessment should be to highlight the value orientation of the curriculum from the perspective of teaching development and students' development needs, so that students can make progress in continuous learning. In teaching evaluation, we should always implement the concept of "people-oriented" and promote the all-round and healthy development of students as the starting point. In the teaching process, the cultivation of students' innovation ability is diverse, cohesive and individual, so the overall teaching process and individual differences should also be taken into account in the evaluation. In the process of implementation, different evaluation methods should be adopted according to different teaching purposes, so as to make teaching evaluation more scientific and effective, and improve and perfect it in a targeted manner.

Teaching evaluation can also run through all stages of teaching activities, the object of evaluation is also constantly changing, in teaching activities, students can evaluate the teacher's demonstration works, teachers can take the whole process of guidance, encouraging evaluation, students can evaluate each other. It can be a work of work or an innovative idea, so as to improve students' sense of innovation and improve their creative thinking. In the teaching process, a

comprehensive evaluation of the student's learning effect can also be carried out, and the student's learning effect can be evaluated, and it can be summarized to prepare for the next teaching.

7.3. Teachers strengthen guidance

When a child receives care and attention from the teacher, he will pay more attention to his learning or his actions. The children want their teachers to communicate with them spiritually. That's what a really good teacher is. In learning, it is necessary to take the initiative to explore, not to blindly inculcate knowledge, but to create situations for students to explore on their own. Although teachers play an important role in art education, they should also be careful not to dominate each student's characteristics while trying to understand their characteristics, respect their inner feelings, and provide timely guidance and encouragement for their "deviations". We should give more encouragement to students, and this encouragement and expectation from teachers makes children's love for art stronger. However, in class, there are always a few students who are not praised, if you don't care about them in time, these students will become more and more disgusted with learning over time, which is not conducive to their future development and growth.

This requires teachers to pay more attention in the process of art teaching, adjust their teaching methods and training methods in a timely manner according to the different characteristics and conditions of students, and give encouragement and praise to some small progress that is not so noticeable. In addition, for students with shortcomings, it is necessary to show more love, appropriately "partiality", and give them care and expectation, so as to enhance their self-confidence and self-esteem. The above is in line with the "creative teacher" we mentioned earlier. In primary school art teaching, teachers should be tolerant and respectful of students' differences, so that they can have many "whimsical" ideas, so as to achieve the purpose of focusing on encouragement and rejecting criticism. In art classes, teachers often use their own preferences and judging criteria to judge students' works, giving different comments such as "excellent", "poor", "good", "bad", etc., and once they find that students have made mistakes, they will criticize them harshly, which is not in line with the teaching principles and must be resolutely eliminated. In general, students should be allowed to boldly express their feelings, understand and imagine in various art forms. It is necessary to follow the principle of "two more and two less" of more affirmation, more expectations, less criticism, and less negation.

8. Conclusion

Nowadays, with the progress of the times, it is a truly useful and enduring quality to be able to learn in an innovative way, to fully communicate and learn confidently in one's field of expertise. Elementary school students, in particular, are unfathomably creative. It is necessary to pay more attention to the creative thinking of students in the "golden age", give more attention to primary school students, and not let the inspiration pass away, and the evaluation of students "allows mistakes". At the same time, as an important course in basic education, art plays an important role in cultivating talents, especially innovation ability, which cannot be replaced by other disciplines. Cultivating children's healthy personality, developing intelligence and creativity through painting

can enable children to develop a series of advantages such as independence, strong self-confidence, responsibility and concentration.

Some of the learning strategies provided in this article can help us improve our existing teaching ideas, but they need to be improved in practice. Through the exploration and research, reform and innovation of primary school art education, the cultivation and encouragement of students' innovation ability in primary school art education will be widely recognized and affirmed by the society. According to the above analysis and investigation of art teaching in primary schools, it is necessary for educators to strengthen the cultivation of creative thinking ability, mobilize all positive factors to give full play to all positive factors, and make up for students' most lacking ability in art, so as to strive for ideal results and provide innovative talents who dare to innovate and explore in the new era.

Author Contributions:

Conceptualization, X.K.; methodology, X.K.; software, X.K.; validation, X.K.; formal analysis, X.K.; investigation, X.K.; resources, X.K.; data curation, X.K.; writing—original draft preparation, X.K.; writing—review and editing, X.K.; visualization, X.K.; supervision, X.K.; project administration, X.K.; funding acquisition, X.K. All authors have read and agreed to the published version of the manuscript.

Funding:

Institutional Review Board Statement:

Not applicable.

Informed Consent Statement:

Not applicable.

Data Availability Statement:

The raw data supporting the conclusions of this article will be made available by the authors on request.

Conflict of Interest:

The authors declare no conflict of interest.

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Liability of the Mortgagor Who Cannot Register the Real Estate Mortgage From the Outset

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Abstract

This article takes the Supreme People's Court Guiding Case No. 168 as the research object to explore the legal liability of real estate mortgagors when they are unable to register mortgages initially. The study points out that according to Articles 402 and 577 of the Civil Code, when the mortgage contract is valid but the mortgage right is not established, the mortgagor only bears the liability for breach of contract rather than the guarantee liability.Through normative interpretation and empirical analysis, it is found that in judicial practice, it is necessary to combine the fault offset rule (Article 592) and quantify the proportion of liability reduction according to the intensity of the bank's review obligation and the degree of fault. The innovation of the research lies in demonstrating the nature of the mortgagor's obligation to assist in registration from the perspective of the "bilateral contract obligation group", and proposing the judgment standard of "the scope of liability does not exceed the guarantee liability when the mortgage right is established", providing theoretical support for judicial practice.

1. Introduction

As an essential form of financing guarantee, the legal application of real estate mortgage plays a pivotal role in ensuring financial security and maintaining market order. In recent years, with the accelerated pace of urbanization and rapid changes in property rights, disputes arising from defects in mortgage registration have become increasingly common. This growing complexity not only threatens the stability of the financial market but also challenges the effective implementation of existing legal provisions. Against this backdrop, the present study examines the Supreme People's Court Guiding Case No. 168, a landmark decision that illuminates the legal consequences when mortgagors fail to register mortgages at the outset.

The significance of this case is multifaceted. Article 402 of the Civil Code establishes the validity of real estate mortgage registration, ensuring that once a mortgage contract is formed, its legal effect is recognized. However, practical challenges often arise due to historical issues such as the separation of land use rights from house ownership. In the case under review, the mortgagor was unable to register the mortgage due to such a separation, while the bank proceeded with issuing a loan despite being aware of these underlying defects. This oversight eventually led to a dispute over the allocation of responsibilities between the bank and the mortgagor, highlighting the intricate balance between contract validity and the effective establishment of mortgage rights. Guiding Case No. 168 marked a turning point in judicial interpretation by clarifying that, after the formation of a mortgage contract, the failure to complete registration does not invalidate the contract. Instead, it confines the mortgagor's responsibility to the breach of contract, rather than imposing the broader guarantee liability. Furthermore, the ruling acknowledges that any fault attributable to the bank may mitigate the mortgagor's liability. This nuanced approach not only sets a benchmark for balancing the review obligations of financial institutions but also serves to protect the rights and interests of mortgagors. By analyzing this case, the article provides crucial theoretical support for linking Article 577, which addresses liability for breach of contract, with Article 402 on the establishment of mortgage rights in the Civil Code.

The academic debate surrounding the liability for unregistered real estate mortgages further enriches the discourse. Scholars are divided between the "guarantee liability theory," which posits that the mortgagor should bear the property's guarantee liability, and the "breach of contract liability theory," which contends that the appropriate remedy is compensation for breach of contract. Additionally, varying judicial interpretations have resulted in inconsistent standards for identifying bank faults across different courts. In response to these challenges, this article employs a dual methodological approach that integrates normative interpretation with empirical analysis. By systematically sorting out the logical framework of the Civil Code and its judicial interpretations and by statistically analyzing similar cases from courts nationwide over the past five years, the study offers a comprehensive overview of judgment discrepancies and their underlying causes.

Furthermore, the paper adopts a comparative law perspective to investigate the mortgage guarantee legal theories in other countries (Wang, 2022). This cross-jurisdictional analysis provides valuable insights and inspiration for potential reforms within our own mortgage system. Distinct from previous studies that have predominantly focused on unilateral analyses of contract effectiveness, this research underscores the importance of the "bilateral contract obligation group." In doing so, it demonstrates that the mortgagor's duty to assist in the registration process is a critical element in the overall contractual relationship. By incorporating the fault offset rule outlined in Article 592 of the Civil Code, the study proposes a quantitative standard for evaluating "the intensity of bank review obligations and the corresponding extent of liability reduction." This innovative framework not only refines the theoretical underpinnings of mortgage law but also provides practical reference points for judicial decision-making in future cases.

In summary, this paper endeavors to offer a richer and more coherent understanding of the legal intricacies associated with real estate mortgage registration. Through detailed empirical

analysis and rigorous normative interpretation, it contributes to the ongoing debate on liability allocation in unregistered mortgage cases and lays the groundwork for future legal reform aimed at enhancing financial security and market stability.

2. Case introduction

In 2013, CITIC Bank Dongguan Branch signed a "Comprehensive Credit Contract" with Huafengsheng Plastic Co., Ltd., stipulating that the Dongguan Branch would provide Huafengsheng Plastic Co., Ltd. with a comprehensive credit line of RMB 150 million. The parties in this case: Chen Renxing, Chen Zhihua, Chen Zhibo and others, respectively signed a maximum mortgage contract with the Dongguan Branch. At the same time, in order to ensure the realization of creditor's rights and debts, they agreed to provide mortgage guarantees to CITIC Bank Dongguan Branch with their real estate and corresponding land use rights.

In 2011, the Dongguan Real Estate Administration Bureau sent a letter to all financial institutions in Dongguan City, informing them that houses with inconsistent ownership and land use rights could no longer be registered for mortgage, and suggested that all financial institutions carefully examine whether the ownership of the mortgaged real estate and land is consistent when applying for real estate mortgage loans.

After signing the mortgage contract, before the bank issued the loan, Chen Renxing and other parties went to the Dongguan Housing and Real Estate Management Department with the staff of CITIC Bank Dongguan Branch to handle the real estate mortgage registration. Since the parties did not obtain the right to use the land occupied by the mortgaged house, they could not handle the real estate mortgage registration according to law. That is, because the land user and the house owner are not the same, the mortgagor did not obtain the real estate registration certificate, and thus failed to handle the mortgage registration. Then the bank should know that the real estate of Chen Renxing and others could not handle the real estate mortgage registration from the beginning.

Subsequently, the Dongguan branch signed a series of RMB working capital loan contracts with Huafengsheng Plastic Co., Ltd. based on the previously signed "Comprehensive Credit Contract". Since then, the total amount of loans issued to Huafengsheng Plastic Co., Ltd. is about RMB 70 million.

It was not until 2014 that the Dongguan branch found that Huafengsheng Plastic Co., Ltd. failed to fulfill the contract and pay interest on time and as agreed, and then filed a civil lawsuit after the reminder failed. Request Huafengsheng Plastic Co., Ltd. to pay the principal, interest and other payable expenses (lawyer fees, etc.), and require Chen Renxing and others to bear joint and several liability for the above debts within the value of the collateral.

3. Disputes in the case

3.1. Whether the fact that the real estate mortgage has not been registered for mortgage affects the validity of the mortgage contract

In this case, due to the inconsistent ownership of the real estate of the mortgagor Chen Zhihua, it was impossible to register the real estate mortgage, so that the mortgage right could not be established according to law. As for the dispute over whether the "mortgage contract" is valid, according to the current law "Property Law", if the property right registration is not handled, it will no longer affect the validity of the contract (Gao & Luo, 2020). Therefore, the author believes that the mortgage contract involved in this case is established and is no longer controversial (Liu, 2017).

3.2. Whether Chen Zhihua and others should bear the liability for breach of contract

According to Article 577 of the Civil Code, if a party fails to perform its contractual obligations or performs its contractual obligations inconsistent with the agreement, it shall bear the liability for breach of contract such as continuing to perform, taking remedial measures or compensating for losses. In this case, although the mortgagor expressed his intention to provide real estate mortgage when the contract was signed, he failed to complete the registration procedures afterwards, resulting in the failure to establish the mortgage right. His behavior has constituted a violation of the obligations stipulated in the mortgage contract. However, there are different views on the legal consequences of this breach of contract in judicial practice.

The defense lawyers of Chen Zhihua and others argued that according to Article 584 of the Civil Code on breach of contract damages, the mortgagor only needs to bear the liability for compensation for the losses suffered by the bank due to the failure to establish the mortgage right, and the scope of compensation should be limited to the losses foreseen or should have been foreseen at the time of the contract. The bank cited Article 402 of the Civil Code on the effectiveness of real estate mortgage registration, and believed that the mortgagor should bear the guarantee liability, that is, when the principal debtor fails to repay the debt, the bank has the right to request auction and sale of the mortgaged property and receive priority compensation. At the same time, if the mortgage contract is not registered after it is established, the creditor has the right to request the mortgagor to bear the liability for breach of contract, but the liability for breach of contract shall not exceed the scope of the guarantee liability that the mortgagor should bear when the mortgage right is established. This ruling rule actually creates a special form of "breach of contract guarantee liability", which not only affirms the contractual obligations of the mortgagor, but also limits the scope of liability within the framework of guarantee liability (Zhao, 2024).

From the perspective of legal interpretation, although Article 402 of the Civil Code clearly states that immovable property mortgages will not take effect without registration, it does not deny the legal validity of mortgage contracts. According to the principle of distinction, the validity of mortgage contracts is independent of changes in property rights. Therefore, the mortgagor's failure to perform the registration obligation constitutes a breach of contract and should bear the liability for breach of contract to continue to perform or compensate for losses.

However, when the mortgaged property cannot be registered due to objective reasons, continued performance is no longer possible. How should the scope of damages be determined at this time? Under the current legal framework, how to balance the interests of the parties has become a difficult point in judicial adjudication. On the one hand, the reasonable expectations of the creditor should be protected so that they do not lose the guarantee due to the mortgagor's breach of contract; on the other hand, it should also avoid excessively increasing the mortgagor's responsibilities and making them bear risks beyond the expectations of the contract. Article 46, paragraph 3 of the Interpretation of the Guarantee System of the Civil Code stipulates that if the mortgaged property cannot be registered due to the loss or expropriation of the mortgaged property due to reasons that are not attributable to the mortgagor himself, the people's court will not support the creditor's request for the mortgagor to bear the liability for compensation (Zhao, 2018). The provision clarifies that the premise for the mortgagor to bear the liability for compensation is the existence of fault, but if the mortgagor fails to register due to its own reasons, it shall bear the corresponding liability for compensation.

Based on the above analysis, Chen Zhihua and others in this case, as persons with full civil capacity, should have foreseen the possible legal consequences of not registering when signing the mortgage contract, and their failure to complete the registration procedures constituted a breach of contract. Given that the mortgaged property still has the possibility of registration, the bank has the right to request the mortgagor to continue to perform the registration obligation in accordance with Article 577 of the Civil Code; if the mortgaged property cannot be registered due to objective reasons, the bank may claim that the mortgagor bears the liability for breach of contract within the value of the mortgaged property. This form of liability not only conforms to the general principle of contractual breach of contract liability, but also takes into account the special value of the guarantee system, and can achieve the unity of legal effect and social effect.

3.3. Whether Chen Zhihua and others should bear joint and several liability

In this case, the mortgage contract signed by Chen Zhihua and others did not specify whether to bear joint and several liability or supplementary liability (Gebizlioglu & Ozturkkal, 2018). The two different ways of bearing responsibility are different, and the amount of compensation that the mortgagor should bear is very different (Gete & Zecchetto, 2018). In the process of realizing supplementary liability, after the right holder has exhausted all remedies and enforcement measures against the principal responsible person, and still cannot fully realize the debt, he can ask the supplementary responsible person to bear the payment, so the supplementary responsible person has the right to demand and the right to sue first. This is completely different from the assumption of joint and several liability. The "joint and several liability theory" believes that the Dongguan Branch of CITIC Bank can directly request the mortgagor to assume joint and several liability for compensation limited to the mortgaged property .

3.4. Regarding the allocation and assumption of responsibilities of the mortgagor and the bank when the real estate mortgage is not registered

The defense lawyer of the mortgagor Chen Zhihua and others said that "the parties are not clear about the changes in laws, regulations and policies, which led to the failure to handle the real

estate mortgage registration. As the general public, the parties are not very sensitive to the policy and their responsibilities should be reduced." There is a certain rationality in this statement. According to the case brief, the mortgagor handled the real estate registration about two years after the policy was introduced, and the parties may not be aware that the policy has changed. The bank failed to conduct a thorough review and was at fault, so its liability for compensation should also be reduced. The bank believed that since the real estate was in a situation where it was impossible to register a mortgage on it from the outset, it was entirely because the mortgagor failed to fulfill its obligation to ensure the integrity of the mortgaged property. The mortgagor was at fault, and the liability of Chen Zhihua and others should not be reduced.

4. Legal analysis

Through the case brief introduction and dispute analysis in the previous article, it can be confirmed that the mortgagor is at fault and must bear legal responsibility. However, the specific responsibilities and reasons for assuming responsibilities require further legal analysis to be concluded. This section will specifically analyze whether the mortgage contract in Guiding Case No. 168 is valid, and then the responsibilities of each mortgagor and finally comprehensively answer the question of the responsibility and distribution of the bank and the mortgagor .

4.1. Validity of real estate mortgage contract

In the legal relationship of this case, the validity of the mortgage contract constitutes the logical starting point of the entire case. According to Article 402 of the Civil Code on the effectiveness of real estate mortgage registration and the principle of distinguishing between property rights changes and contract effectiveness established in Article 215, the "Maximum Mortgage Contract" signed by the two parties in this case has been established and effective at the level of civil legal acts. It is worth noting that my country's legislation adopts the negative position of the theory of causelessness of property rights acts, that is, the completion of mortgage registration only produces the property right effect of the establishment of mortgage rights, and does not affect the creditor's rights effect of the contract itself (lin, 2021). Specifically, the validity of the mortgage contract in this case can be demonstrated from three dimensions: first, the contracting parties have the corresponding civil capacity, the intention is true and does not violate the mandatory provisions of laws and administrative regulations; second, the subject matter of the contract meets the requirements of Article 143 of the Civil Code on the effectiveness of civil legal acts, that is, the mortgaged property is real estate that can be disposed of according to law; finally, the form of the contract meets the provisions of Article 490 of the Civil Code on written form. The completeness of the above requirements is sufficient to determine that the mortgage contract has complete binding force at the level of debt law. It should be emphasized that the legal consequence of the failure to establish the mortgage right is not equivalent to the invalidity of the contract. According to Article 46, paragraph 1 of the Interpretation of the Guarantee System of the Civil Code, the effective establishment of the mortgage contract makes the mortgagor obliged to handle the mortgage registration. If the mortgage right cannot be established due to its fault, the mortgagee has the right to claim damages for breach of contract in accordance with the contract.

The nature of this kind of compensation liability belongs to contractual liability, and its scope should be equivalent to the benefits that the creditor can obtain after the establishment of the mortgage right, so as to achieve full relief for the party that abides by the contract. Further analysis shows that the maximum mortgage contract involved in this case has special legal attributes. As a type of contract that provides security for claims that occur continuously within a certain period of time, its scope of effectiveness extends to unspecified claims that occur within the agreed period. Although the failure to establish the mortgage right leads to the lack of security rights, the elements such as the scope and period of security stipulated in the contract are still legally binding on both parties and constitute an important basis for pursuing liability for breach of contract.

In summary, the validity of the mortgage contract in this case has been clearly confirmed by law, and the failure to establish the mortgage right only produces legal consequences at the level of property rights change, and does not affect the continuation of the validity of the contractual creditor's rights. This principle of distinction not only meets the basic requirements of the theory of property rights behavior, but also reflects the balance between transaction security and efficiency in my country's current legislation.

4.2. The mortgagor shall bear the liability for breach of contract

The real estate mortgage contract is established, and we continue to analyze whether Chen Zhihua and others bear the liability for breach of contract. Regarding the liability of the mortgagor, the current mainstream is the "guarantee liability theory" and the "breach of contract liability theory", and many scholars support both theories. First of all, regarding the "guarantee liability theory", it does not mean that the mortgagor does not bear the liability for breach of contract, but emphasizes that the mortgagor uses the mortgaged real estate to guarantee the realization of the creditor's rights. There is a guarantee intention. This theory focuses more on the guarantee intention between the parties, so it emphasizes that the mortgagor should bear the guarantee responsibility. This means that in this case, when the principal debt is not repaid, the Dongguan Branch of CITIC Bank has the right to request the mortgagor to auction the mortgaged real estate for repayment and other actions. This article believes that the right to request for repayment by conversion in this case is a relative security right, not the security right of "guaranteeing the realization of creditor's rights with specific property" as we usually understand it. It is still a claim for creditor's rights in essence. At the same time, considering that there is no written document in this case to prove that the mortgagor promised to bear the guarantee responsibility, the author believes that it is not appropriate to apply the "guarantee responsibility theory", and the mortgagor does not bear the guarantee responsibility.Secondly, the "liability for breach of contract theory" believes that if the mortgagor fails to register the mortgage of the real estate, resulting in the inability to realize the mortgage contract, the mortgagor should bear the liability for breach of contract such as damages (Li, 2021).

In this case, Article 6 "Party A's Statement and Guarantee" and Article 12 "Liability for breach of contract" of the "Maximum Mortgage Contract" signed by both parties believe that: "Chen Zhihua and the other four should ensure that the real estate involved in the case can be registered for mortgage in accordance with the law, otherwise they should bear the corresponding liability

for breach of contract ." This shows that the mortgagor had the obligation to register the mortgage of the real estate, but failed to perform the obligation, so according to the mortgage contract signed by both parties, the mortgagor should bear the liability for breach of contract .

4.3. Mortgagors should bear joint and several liability

Regarding whether the mortgagors should bear "supplementary liability" or "joint and several liability" in this case, the author analyzes as follows:

Regarding the nature of the guarantor's liability when the real estate mortgage is not registered, there are two theories in the theoretical community: "supplementary repayment liability" and "joint and several repayment liability". The "supplementary repayment liability" theorists argue that: According to Article 500, paragraph 1 of the Civil Code, the application of joint and several repayment liability is subject to the explicit provisions of the law or the special agreement of the parties. In the case where the mortgage contract does not clearly stipulate joint and several liability, the current law only stipulates that the mortgagor shall bear supplementary repayment liability when the debtor cannot perform the debt (Article 17 of the Supreme People's Court's Interpretation on the Application of the Guarantee System of the Civil Code). The establishment of this form of liability requires the existence of actual losses by the creditor, and the losses can only be determined after the compulsory execution of the debtor's property procedures, so the mortgagor enjoys the right of prior defense.

The proponents of the "joint and several liability" theory hold a different view. According to Article 394, Paragraph 1 of the Civil Code, when the debtor fails to perform the debt on time or the agreed circumstances occur, the creditor has the right to claim priority for repayment on the mortgaged property. The exercise of this right has the same level of effect as the principal debt claim, and the mortgagor does not enjoy the right of prior defense. In particular, when the creditor knowingly grants a loan despite the defects in the mortgage registration, the mortgagor's liability can be appropriately reduced according to the rule of offsetting negligence, but the nature of its liability will not be changed.

Combined with the specific facts of this case, the mortgagor has breached the contract by failing to perform the obligation of real estate registration, and the scope of its liability for compensation should be limited to the value of the mortgaged property(Wang, 2022). In view of the fact that the creditor, Dongguan Branch of CITIC Bank, chose to lend money despite knowing the registration obstacles, it had certain faults. According to Article 592, paragraph 2 of the Civil Code, the mortgagor's liability can be reduced accordingly. In this case, the court required the mortgagor to bear joint and several liability within the scope of one-half of the value of the mortgaged property, which not only reflects the protection of the creditor's trust interests, but also takes into account the principle of fault offset, which has important judicial demonstration significance(Han, 2023).

This article tends to the second view, believing that in the case of unregistered real estate mortgage, the mortgagor should bear non-real joint and several liability . The creditor has the right to choose to claim rights from the debtor or the mortgagor, and a statutory joint and several relationship is formed between the guarantors. However, it should be noted that the scope of the

joint and several liability should be limited to the value of the mortgaged property, and the corresponding proportion of the creditor's own fault should be deducted (Article 46, paragraph 3, of the Supreme People's Court's Interpretation on the Application of the Guarantee System of the Civil Code) (Yang, 2019). This form of liability is in line with the spirit of Article 392 of the Civil Code on mixed guarantees, and can effectively balance the interests of all parties and comply with the principle of substantive fairness.

4.4. Reducing the liability of the mortgagor when the bank is at fault

First, the bank is a legal financial institution and should have higher response requirements. In this case, the bank staff went to the Housing Authority with the mortgagor to handle the mortgage registration, but failed to handle the real estate mortgage registration (Huang, 2019). Then the bank staff should report this situation in time so that the bank can make adjustments, but the documents do not show any response from the bank. On the contrary, this behavior shows that the branch knew that the mortgagor Chen Zhihua and others failed to handle the real estate mortgage registration. In this case, it still issued a loan of 70 million yuan based on the "Comprehensive Credit Contract". It is obvious that the bank is extremely negligent.

Secondly, after the bank determined that it could not go through the mortgage registration, and if it still chose to lend money knowing that, it should have anticipated the risks that would arise and should have taken some risk management measures.However, according to the judgment documents, the Dongguan Branch of CITIC Bank did not take any measures to prevent the loss from expanding, such as suspending the issuance of loans, requiring new guarantees, etc., and was at greater fault, so it cannot claim compensation for the expanded losses (Yao, 2023). It can be said that the responsibility for this part of the expanded losses is entirely the bank's responsibility and cannot be shirked.

Finally, to sum up, the bank's losses were huge, but its fault was also huge. Therefore, taking all factors into consideration, the compensation liability of Chen Zhihua and others should be reduced.

5. Conclusion

According to the controversial points of the case, corresponding suggestions and measures are proposed. For banks: First, banks should fulfill their full review obligations; second, banks should take measures to prevent the expansion of losses. For government departments: First, strengthen the responsibilities of government departments and require them to increase the popularization or education activities of laws and regulations on real estate mortgage guarantees (Sun, 2023); second, establish and improve measures to disclose information on real estate mortgage registration.

Real estate is an important part of the people's property, and there are connections and differences between practice and legal provisions. All these have led to the implementation of the law not being able to achieve the role of regulating the market when legislating. Therefore, we must be more cautious in dealing with real estate mortgages and actively respond to the real estate

mortgage registration system. I hope that more legal scholars will offer suggestions for the real estate mortgage registration system in the future.

Author Contributions:

Conceptualization, M.M.; methodology, M.M.; software, M.M.; validation, M.M.; formal analysis, M.M.; investigation, M.M.; resources, M.M.; data curation, M.M.; writing—original draft preparation, M.M.; writing—review and editing, M.M.; visualization, M.M.; supervision, M.M.; project administration, M.M.; funding acquisition, M.M. All authors have read and agreed to the published version of the manuscript.

Funding:

This research received no external funding.

Institutional Review Board Statement:

Not applicable.

Informed Consent Statement:

Not applicable.

Data Availability Statement:

Not applicable.

Conflict of Interest:

The authors declare no conflict of interest.

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Extrasensory Perception and Digital Connectivity: Manifestation and Validation of Telepathy in Networked Society

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Abstract

Despite nearly a century of scientific inquiry, extrasensory perception (ESP) phenomena—particularly telepathy—remain controversial in mainstream science. This study proposes to investigate how digital connectivity and networked environments could influence telepathic experiences and their validation in contemporary society. Background: The ubiquity of digital technologies has fundamentally transformed human interaction patterns, raising questions about potential effects on purported ESP abilities. This research examines whether digital synchronicity and connectivity might create environments that facilitate or simulate telepathic experiences. Methods: We propose to employ a mixed-methods approach simulating controlled laboratory experiments (n=124) with digitally connected participants in isolated settings, survey research (n=896) documenting self-reported telepathic experiences in networked contexts, and phenomenological analysis of qualitative reports. Simulated Results: Based on prior ESP literature, the quantitative analysis might suggest deviations from chance in digitally-mediated telepathy experiments, with potentially more potent effects in emotionally charged communication contexts. Simulated qualitative patterns could identify recurring themes in reported digital telepathic experiences, including temporal synchronicity, emotional resonance, and technology-mediated priming. Additionally, digital connectivity could function as both a facilitator and validator of telepathic claims through timestamp verification and multiple-witness documentation. Conclusions: These simulated insights suggest that while digital technologies may not fundamentally alter human consciousness capabilities, they could provide new frameworks for the manifestation, documentation, and validation of telepathic experiences. This research offers a conceptual model for future empirical studies of ESP phenomena within technologically mediated environments and proposes methodological innovations for parapsychological research in the digital era.

Keywords: Extrasensory Perception; Telepathy; Digital Connectivity; Networked Society; Parapsychology; Social Technology; Consciousness Studies

1. Introduction

1.1 Historical Background of ESP Research

The study of extrasensory perception (ESP) has been a contested space in scientific inquiry of scientific inquiry for almost a century. Researchers have sought to develop empirical protocols from the groundbreaking work of J.B. Rhine at Duke University in the 1930s (Cardeña, 2018). Telepathy—the purported ability to transmit information regarding one human or another through a medium not involving perceived sensory channels or physical interaction with others—is arguably among the most consistently cited yet scientifically contentious aspects of human experience (Williams, 2019). The methodological approaches taken by peers to studying telepathy over time have also advanced tremendously, from simple card-guessed experiments to Ganzfeld sensory deprivation protocols (Storm et al., 2010) and, more recently, and more recent research physiological correlations between isolated participants of separated participants (Mossbridge et al., 2014).

Even though there have been methodological improvements and statistically significant results obtained in several controlled studies (Bem et al., 2016), the mainstream scientific consensus remains skeptical regarding these phenomena due to concerns over methodological questions, replication difficulties, and the lack of theoretical adequacy in tandem with an entrenched, commonly accepted definition of physical law (French & Wilson, 2006). The controversy surrounding ESP research has led to what Schooler (2011) terms the "decline effect"—where initially promising results diminish under continued investigation—though proponents argue this pattern relates more to methodological refinement and publication bias than to the absence of phenomena (Cardeña, 2018). Regardless of this ongoing debate, the persistence of reported telepathic experiences across cultures and historical periods suggests a phenomenological reality deserving serious scholarly investigation independent of ontological questions about its ultimate nature (Schneider & Velmans, 2017).

1.2 Transformation of Interpersonal Connections in Digital Society

The digital age has fundamentally transformed human communication and connectivity patterns. The emergence of internet technologies, social media platforms, and mobile connectivity has created a global network where information travels instantaneously across geographical boundaries, and people maintain a continuous virtual presence in each other's lives (Castells, 2010). This digital revolution has radically altered our experience of space, time, and human connection (Turkle, 2017). The average person now maintains hundreds of weak social ties through digital networks (Dunbar, 2016) while simultaneously experiencing new forms of intimate connection through instant messaging, video calls, and continuous ambient awareness of distant others' activities and states.

This transformed social environment has generated new phenomenological experiences that bear a striking resemblance to traditional descriptions of telepathy. Individuals report unprecedented experiences of synchronicity—thinking of someone moments before receiving their message, sensing a friend's emotional state from across the globe, or sharing simultaneous insights with distant colleagues (Jawer, 2020). The phenomenon of "digital empathy" has become

increasingly recognized, where individuals report feeling others' emotional states through seemingly minimal digital cues. These experiences raise intriguing questions about whether digital technology facilitates awareness of coincidences, amplifies subtle forms of conventional communication previously difficult to detect, or potentially reveals or enhances subtle forms of interconnection previously challenging to document. As Baym (2015) notes, technology never adds or subtracts from human experience but transforms the conditions and possibilities of connection in ways that both extend and constrain human potential.

1.3 Current State of Cross-disciplinary Research between Parapsychology and Social Sciences

The intersection of parapsychology and social science has evolved significantly in recent decades. Rather than focusing exclusively on proving or disproving ESP phenomena, contemporary researchers have increasingly adopted phenomenological approaches examining how these experiences are constructed, interpreted, and integrated into personal and collective meaning systems (Cardeña et al., 2015; Maraldi & Krippner, 2013). This shift represents what Wooffitt (2019) describes as the "paranormal turn" in social sciences—a growing recognition that anomalous experiences constitute legitimate subjects for social scientific inquiry regardless of their ontological status. Sociological perspectives have explored how paranormal beliefs function within communities and social networks, while psychology has investigated cognitive and personality factors associated with ESP experiences (Irwin, 2009). Anthropological approaches have documented cross-cultural variations in telepathic phenomena, suggesting cultural frameworks significantly shape both the experience and interpretation of anomalous communications (Fortier, 2019). Media studies scholars have begun examining how digital environments create new contexts for paranormal experiences and beliefs (Natale, 2016). The networked digital environment could offer a unique context for extending this cross-disciplinary investigation. This study proposes a simulated framework to explore how digital connectivity might shape telepathic experiences, providing a conceptual foundation for future empirical research.

1.4 Research Questions and Hypothesis Statements

This study proposes to address several interconnected research questions that emerge at the intersection of parapsychology and digital social science:

(1) How does immersion in digitally networked environments influence the reporting, experience, and interpretation of telepathic phenomena?

(2) Do digital technologies provide new methodological approaches for documenting and potentially validating ESP experiences through timestamp verification, simultaneous reporting, and persistent communication records?

(3) What distinguishes genuine telepathic experiences from coincidences and conventional communications that are merely facilitated by digital connectivity?

(4) How do individuals integrate and make sense of apparently telepathic experiences within the context of digital social networks?

The central hypothesis posits that digital connectivity could create conditions that facilitate potential ESP experiences and provide enhanced mechanisms for their documentation and verification. Specifically, we propose to hypothesize that digital immersion might lower psychological barriers between individuals through constant ambient awareness, creating conditions more conducive to telepathic communication. A secondary hypothesis suggests that digital technologies could provide unprecedented mechanisms for documenting synchronicities through precise timestamps, stored communications, and multiple-witness verification that was historically difficult to achieve in ESP research.

1.5 Purpose and Significance of the Study

This research proposes examining telepathic experiences within the context of networked society, offering a hypothetical systematic investigation that bridges parapsychological inquiry with digital social science. By designing rigorous methodology for these widely reported but under-studied phenomena, this work could contribute to understanding the evolving nature of human consciousness and the profound impacts of digital technologies on perception and connection.

The significance of this research extends across multiple disciplines. Parapsychology could offer methodological innovations that leverage digital technologies to address historical challenges in documentation and verification. For social science fields, it proposes to examine how emerging technologies transform fundamental aspects of human experience and connection. The study of consciousness would probe the points of intersection between conventional and miraculous phenomena on both ends of the spectrum in technologically mediated settings. In such times when technology increasingly mediates human experience, there are still valuable insights to curtail, as normalization involves understanding the spectrum of interconnection - including arguably anomalous types - for social science, consciousness studies, and technology.

2. Literature Review

2.1 Overview of Classical ESP Research

Extra-sensory perception (ESP) research is traditionally characterized by its considerable evolution since the early work of the Rhine in the 1930s. As he pioneered the statistical methodologies for exploratory ESP research, his card-guessing protocols based on Zener cards are still as popular today as they were over eight decades ago. Typically, these studies proved that there were small but statistically marked departures from chance expectations. However, the questioning of sensory leakage and experimentation created controversy for many years to come. The advent of the Ganzfeld protocol in the 1970s represented a new significant advance in statistical methodology explicitly used for statistical research into ESP; utilizing sensory deprivation to increase probabilities of ESP functioning is a main methodological development. Meta-analyses of the outcomes of the Ganzfeld studies carry out many investigations and have consistently demonstrated small but statistically significant effects. Storm, Smith, and Brown (2010) reported a hit rate of 32% vs. the expected 25% chance rate after 59 Ganzfeld studies.

The second important paradigm of research is the physiological relationships between isolated participants. Radin (2004) did his research, which showed an apparent correlation between the brain activities of isolated participants and one stimulated. The other not, and Mossbridge et al. (2014) similarly discovered evidence for what he defined as "predictive anticipatory activity"—physiological reactions occurring prior to unpredictable events. The findings shown by these researchers might imply that there might be non-local correlations between the human nervous system. However, there are also some other explanations for those phenomena besides non-local correlations: methodological artifacts.

More recent methodological innovations include automated testing systems reducing experimenter effects (Barušs & Mossbridge, 2016) and pre-registered studies alleviating publication bias concerns (Bem et al., 2016). Theoretical frameworks explaining telepathy have also advanced tremendously. Early theories relied heavily on physical explanations with electromagnetic brain radiation. However, more contemporary theories propose applying quantum mechanical principles (Radin, 2006) or yet more likely to be observed frameworks that take consciousness as fundamental rather than emergent.

2.2 Impact of Digital Technology on Human Consciousness and Connection

The technological development of digital technology has radically altered human interaction patterns, cognitive processes, and modes of consciousness and connection. Related research findings across multiple disciplines reveal such deeply profound impacts of digital environments as necessary background to inform how they may shape the ESP experience in this scenario. Castells' (2010) seminal research on network society underscores that digital connections have established new morphologies of social structure involving time-space compression and continued virtual presence. From this process of reconstruction of social physics can come what Castells labels the "space of flows" in which presence and absence operate pretty differently from as identified within physical reality and thus conceivably morph into conditions relevant to telepathic-related occurrences.

Research from neuroscience has shown that digital technology usage restructures neural connections and cognitive function. In particular, Loh and Kanai (2016) present evidence on how internet usage changes prefrontal cortex activity and cognitive control processes. Particularly relevant in this discussion is the work of Sparrow et al., who found that knowledge of retrieving information using a digital medium shifts memory processes away from remembering information itself and towards remembering where to find that information (Sparrow et al., 2011). This process is often referred to as "the Google effect." These results are important because they show that digital immersion may create new cognitive states, which could contribute to varying degrees of receptiveness to anomalous information transfer.

Psychometric studies in psychology report substantial effects of digital relationships on social cognition and emotional information processing. The studies undertaken under the name "context collapse" by Marwick and Boyd (2011) show how digitally generated landscapes create unprecedented awareness of remote others whilst simultaneously erasing contextual boundaries. Therefore, we might live in an environment where even the most subtle communications may be

perceived with greater ease. Media theorists explored how communication technology rebuilds this perception of experiential experience and interpersonal boundaries; the concept of media as 'extensions of man' provides a rationale for understanding how digital technologies will allow humans to mimic the contents of their perceptual abilities. Turkle's (2017) workaround 'tethered selves' offers evidence for how the availability of always-on connectivity generates the experience of absence/presence, which appears as a description commonly employed in interpreting telepathic awareness.

2.3 Research on Psychological Connectivity in Networked Societies

The emergence of networked societies has catalyzed new forms of psychological connectivity related to telepathic phenomena. Social network analysis research by Christakis and Fowler (2009) demonstrates how emotions, behaviors, and even health conditions appear to "spread" through social networks in patterns that cannot be fully explained by direct communication. Their longitudinal studies suggest emotional states can propagate through up to three degrees of separation, raising questions about the mechanisms of such transmission. While conventional explanations focus on subtle behavioral cues, these findings relate to broader questions about the nature of social connection.

Digital environments intensify experiences of synchronicity and coincidence. Research on "digital coincidence" documents how social media algorithms create artificial synchronicities by highlighting connections between digitally networked individuals. However, Jawer (2020) argues that digital platforms also reveal genuine patterns of connection that might otherwise remain unnoticed, documenting cases where individuals report thinking about someone moments before receiving their digital communication. The temporal precision of digital timestamps allows for more accurate documentation of such experiences than was previously possible.

Based on Rainie and Wellman (2012), research into "networked individualism" outlines modern social existence in terms of living in multibeam communities, which are now—or at least, to a large extent—partial—networked broadband forms unique psychological experiences. After surveying participants about the accompanying presence of many others, it was found that people's ambient attention has become a "persistent perceptual-cognitive connection" (Hampton et al., 2016). In describing their responses, however, these studies tended uncannily close to those describing telepathy. Cultural and anthropological perspectives provide an important backdrop for interpreting many people's connection experiences in digitalis. Research conducted by Snodgrass et al. (2013) research with online gaming communities of participants showing emotions of being co-present and sensing them synchronizing with changing the physical location in gaming can be discussed as their counterpart experience in defining telepathy with words such as what the participant described in a manner that sounded very similar.

2.4 Methodological Developments in Distance-Based ESP Research

Distance-based ESP research has evolved substantially with technological advances. A traditional Rhine card-guessing experiment necessitated physical proximity between participants, which may lead to methodological concerns regarding sensory leakage when methods require a degree of movement. Automated testing systems, however, were a significant advancement,

enabling researchers to separate participants physically from participants while still maintaining experimental control. Automated testing systems now exist as sophisticated digital interfaces, as documented by Sheldrake and Smart (2003) for telephone telepathy research projects and by Radin (2006) for web-based precognition experiments.

Digital technologies have facilitated increased precision in measuring and documenting purported ESP phenomena. Mossbridge and Radin (2018) used digital timing systems to measure what they refer to as "predictive anticipatory activity" — physiological changes that occur before an unpredictable stimulus — after which they found "supporting findings from several laboratory studies which tested this predictive phenotype." Internet-based ESP testing represents a new methodological innovation because it allows large numbers of participants to be involved in the experiment while still allowing strict control. Research conducted online standardized protocols for online ESP testing, while Bem et al. (2016) used online testing platforms to attempt retests of studies on anomalous cognition that were preregistered in advance. These methods use larger sample sizes to mitigate statistical power concerns, and automated procedures minimize investigator effects but yield intuitive results.

Nevertheless, online testing raises challenging methodological issues regarding participant verification, environmental control, and technical artifacts that must be considered carefully (Schmidt, 2012). Innovative methodological practices dedicated explicitly to studying ESP in the digital context have emerged in recent years. Methods of analysis of digital dates used in reported telepathic experiences were developed, and specific parameters were established for identifying chance coincidences from possible anomalous connections. Those methods also use digital affordances to work with challenges encountered in ESP research since its inception: verification, replication, and baseline rates of expectation for incidental experiences.

2.5 Research Gaps and Opportunities in the Digital Era

Despite the increasing research at the intersection of digital connectivity and anomalous experience, the degree to which networked environments shape or may affect their scope remains severely lacking. Although considerable research has been directed toward documenting the subjective experience of telepathy in digital environments, a systematized protocol for discerning authentic anomalous connection from amplified ordinary interaction is poorly defined. Simultaneously, the increased likelihood of coincidental connections while simultaneously offering tools for more exact documentation presented as challenges and opportunities for validation methodologies is introduced by digital environments (Schlitz et al., 2011). Second, after noting that theoretical integrations between parapsychology perspectives and information futures of digital media have proven rather sporadic, existing theories of ESP primarily developed during a pre-digital era, wherein digital media theories most commonly pay little to no attention to forms of connection that may be considered "anomalous." Finally, Clark and Chalmers' "extended mind" framework for conceptual analysis (Clark & Chalmers, 1998) presents promising conceptual resources for apprehending how digital technologies could help and then move onto cognitive scope plausibly relevant to studies of ESP. However, this framework has yet to emerge fully in mainstream parapsychological research. Third, methodological approaches developed to utilize digital affordances for ESP research are still relatively underexplored.

Scholars such as Radin (2006) and Sheldrake (2014) have seen fit to employ online platforms for ESP testing. However, few studies have developed protocols to elucidate how digital connectivity itself might account for several phenomena that pertain to ESP functioning. Investigations into cultural differences that impact how people's digital telepathic experience is defined are also limited. A range of anthropological research studies sponsored by Forties (2019) demonstrates the importance of cultural framework in making sense of telepathic experiences.

Nevertheless, comparatively little research has been identified on how digital cultures might underlie the experience and interpretation of telepathic phenomena. Finally, ethical aspects relating to privacy, consent, and potential vulnerability in conduct related to digital ESP research remain understudied. Worthwhile lines of scholarship building towards digital ethics sponsored by Schlitz et al. (2011) delineate that networked settings make for brand-new concerns about information collection and the psychological impact not adequately mediated by conventional systems of research ethics law. Developing techniques for studying digital telepathy in an accountable manner consistent with a higher level of sensitivity calls for attending to those ethical facets and technical and conceptual challenges while pursuing its development. Those research gaps open up promising avenues for expanding knowledge of how potential changes in digital connectivity shape telepathic experience. Testing integrated perspectives from parapsychology, digital media studies, cognitive science, and anthropology offers a more all-encompassing strategy for comprehending anomalous connections in networked settings. The current study presents a hypothetical mixed-methods approach that will explore phenomenological features of digital telepathic experience and potential validating mechanisms that digital technologies can enable.

3. Methodology

3.1 Research Design and Theoretical Framework

Described in this proposal is a mixed-methods research design that has the potential to elicit both quantitative experimental protocols and qualitative phenomenology as methods of exploration regarding telepathic experiences in digitally networked settings. This section presents an illustrative design that has the potential to elicit such a phenomenon, mirroring the categorization used by Creswell and Creswell (2018) term an "explanatory sequential design," wherein quantitative methods will determine patterns, but qualitative methods pursue the meaning and context of such. This means that the research will be driven by a pragmatic epistemological framework (Morgan, 2014) that favors practical utility over adherence to an expansive single philosophical tradition, making it suitable for phenomena that lie on the orbit of a conventional epistemological understanding.

The theoretical framework draws on three paradigmually complementary works. On the one hand, we consider Radin's (2018) model of consciousness-mediated nonvocal awareness, according to which consciousness can access information outside the scope of conventional sensory channels under special conditions of attention and connection; on the other hand, we take on the extended mind thesis proposed by Clark and Chalmers' (1998) "extended mind" thesis,

which claims that cognition does not necessarily stop at the boundaries of the brain but may be expanded to an environment including its features (including digital networks, presumably). Finally, we use Jawer's (2020) framework about the boundaries' permeability, for this work discusses how specific people are more or less susceptible to anomalous experience based on the spectrum of their psychological boundary thickness.

The research design would be divided into three key areas to inquire about the same question: First, the laboratory-based experimental protocol would examine telepathic communication among digitally connected participants in artificially controlled circumstances. Secondly, large-scale surveying would be on the self-reported experience of telepathic communications occurring within online digital contexts, relating to the factors involved with their occurrence and interpretation. Third, phenomenological interviewing would delve into the subjective dimensions of these telepathic experiences, examining how the participants construct meaning out of purported evidence of telepathic connection in network-based scenarios. This tripartite approach would permit investigation into both objective degrees of anomalous communication and subjective experiences of connection, offering complementary views on the research questions.

3.2 Participant Selection and Recruitment Strategies

The study would involve three distinct participant groups to address its mixed-methods design. Participants for all three research components would be recruited through stratified purposive sampling to ensure demographic diversity and representation of varied digital usage patterns.

The laboratory experiment (n=124) would include 62 pairs of participants with pre-existing social connections (friends, family members, or romantic partners). Recruitment would specifically seek pairs reporting previous experiences of apparent telepathic connection to maximize the likelihood of observing the phenomenon, following precedents in ESP research demonstrating stronger effects among individuals with prior experiences (Sheldrake & Smart, 2003). Pairs would be stratified to include varied relationship types, relationship durations (6 months to 20+ years), and digital connectivity patterns.

Survey participants (n=896) would be recruited through multiple channels to mitigate self-selection bias: university participant pools (30%), online research platforms (40%), and purposive sampling through digital community forums (30%). Recruitment materials would avoid explicitly mentioning telepathy or ESP to reduce expectancy effects, instead describing the research as investigating "unusual experiences of connection in digital environments." Demographic representation would be monitored throughout recruitment to ensure diversity in age (18-75 years, M=34.2, SD=12.8), gender (54% female, 42% male, 4% non-binary/other), educational background, cultural background, and digital technology usage patterns.

For phenomenological interviews (n=36), participants would be selected from the survey sample using maximum variation sampling (Patton, 2014) to ensure representation of diverse experiences and interpretations. Selection criteria would include: reported frequency of digital telepathic experiences, type of digital media involved, relationship context of experiences, and interpretive frameworks (ranging from conventional explanations to explicitly paranormal

interpretations). This diverse sampling would support exploration of varied subjective dimensions while identifying potential common patterns across different experiential contexts.

To provide a clearer picture of the participant demographics, Table 1 presents the simulated distribution of participant characteristics across all three groups, based on anticipated recruitment outcomes.

Table 1. Simulated Distribution of Participant Characteristics

Characteristic	Laboratory Experiment (n=124)	Survey (n=896)	Interviews (n=36)
Age (M ± SD)	32.5 ± 11.3 years	34.2 ± 12.8 years	35.0 ± 10.5 years
Gender (% Female/Male/Other)	55%/40%/5%	54%/42%/4%	53%/43%/4%
Education (% High School/College/Graduate)	20%/50%/30%	25%/45%/30%	20%/40%/40%
Cultural Background (% Western/Other)	70%/30%	65%/35%	60%/40%
Digital Usage (hrs/day, M ± SD)	4.5 ± 2.1	5.0 ± 2.5	4.8 ± 2.0
Relationship Duration (M ± SD)	8.2 ± 5.6 years	N/A	7.5 ± 4.8 years

Note: Values are simulated based on anticipated recruitment diversity and prior research demographics (e.g., Hargittai, 2009; Patton, 2014). N/A indicates not applicable due to survey design focusing on individual experiences rather than paired relationships.

This stratification ensures representation across age, gender, education, cultural background, and digital engagement levels, enhancing the generalizability of findings.

3.3 Data Collection Tools and Procedures

The laboratory experiment would utilize a modified version of the standard ganzfeld protocol (Storm et al., 2010) adapted for digital environments. Each session would involve a sender-receiver pair physically separated in electromagnetically shielded rooms approximately 50 meters apart within the research facility. Sessions would consist of four 15-minute trials where senders would attempt to transmit information about randomly selected target images to receivers. The protocol innovations would include:

(1) Digital connectivity manipulation: Trials would alternate between conditions of digital connection (where participants would exchange text messages for 5 minutes before being digitally disconnected during the actual trial) and no digital connection (where no pre-trial digital interaction would occur).

(2) Emotional salience manipulation: Target images would vary in emotional content (high vs. low emotional salience) based on standardized ratings from the International Affective Picture System (Lang et al., 2005).

(3) Digital documentation: All sessions would be conducted using custom software that would precisely record timestamps, participant responses, physiological measurements, and digital interactions, addressing historical challenges in parapsychological research regarding data recording accuracy.

Physiological measurements would include electrodermal activity, heart rate variability, and frontal EEG alpha asymmetry, selected based on previous research indicating these measures may correlate with anomalous information reception (Mossbridge et al., 2014). The experiment would employ a double-blind procedure where neither participants nor session facilitators would know the target images, with targets randomly selected by computer algorithm from pools of 400 images.

The survey instrument would be developed through iterative pilot testing with cognitive interviews (n=12) to ensure question clarity and construct validity. The final instrument would include sections on: demographic information; digital technology usage patterns; experiences of apparent telepathic connection in digital contexts (frequency, circumstances, relationship context); psychological measures including the Boundary Questionnaire short form (Hartmann et al., 2001), the Anomalous Experiences Inventory (Gallagher et al., 1994), and the Digital Literacy Scale (Hargittai, 2009); and open-ended questions regarding interpretation of experiences. Survey distribution would occur through the Qualtrics platform with data collection conducted over a four-month period.

Phenomenological interviews would follow a semi-structured protocol based on Interpretative Phenomenological Analysis principles (Smith et al., 2009). The interview guide would explore participants' lived experiences of apparent telepathic connection in digital environments, focusing on: detailed descriptions of specific experiences; the contexts in which they occurred; how participants made sense of these experiences; and perceived differences between digital and non-digital contexts. Interviews would average 75 minutes in duration and would be conducted via video conferencing to accommodate geographic diversity, recorded with consent, and transcribed verbatim for analysis.

3.4 Digital Platforms and Technologies Used in the Study

This research would utilize several digital technologies and platforms carefully selected to balance ecological validity with methodological rigor. Subsequently, we would have designed a tailored digital research platform, "Telepathy Lab," for the laboratory experiment using Python and JavaScript, integrating WebRTC technology for real-time communication. This platform would coordinate experimental timings across different testing sites while recording precise timestamps to within an accuracy of (±10ms accuracy) per event, addressing historical shortcomings of parapsychological research concerning temporal accuracy (Sheldrake, 2014). Numerous security protocols are built into the system to guard against conventional information leakage, including end-to-end encryption, network traffic monitoring, and electromagnetic isolation protocols vetted by independent security consultants.

Using physiological data collection would use Biopic MP160 systems equipped with wireless BioNomadix transmitters measuring ECG, EDA, and EEG, which could be synchronized via the

digital platform with events occurring within experiments. This merging of physiological tracking with the experiment software would lead to potential correlations between significant phenomena, such as apparent telepathic reception, that are investigated based on their physiological state (a phenomenon previously proposed by Mossbridge et al. (2014). These physiological monitoring systems would operate at sampling rates of 1000Hz, allowing for high-resolution analysis of potentially subtle yet time-sensitive correlations.

For the survey component of the study, we would use the Qualtrics XM portal with maximized security that could also accommodate sensitive information about the participants as a part of the cloud service. For the survey coding system, we would implement adaptive question-based logic based on the participant's responses to reduce question fatigue and digital responses to verify all data's quality. Mobile optimization would ensure accessibility across various devices, which is important for reaching participants with diverse digital usage patterns. The survey would be designed to achieve high completion rates, potentially mirroring patterns observed in similar studies with an anticipated completion time of approximately 24 minutes.

Phenomenological interviews would be conducted via the Zoom videoconferencing platform, selected for accessibility, recording capabilities, and end-to-end encryption options. To address potential concerns about digital communications influencing the phenomena under study, all participants would be offered alternative interview modalities (in-person or telephone). However, most would likely opt for video conferencing due to geographical considerations. Interview recordings would be transcribed using the NVivo Transcription service with manual verification for accuracy.

3.5 Data Analysis Methods

The study would employ a multilayered analytical approach appropriate to mixed-methods research, integrating findings at multiple stages. For the experimental component, the primary analysis would examine hit rates (correct identification of target images) across conditions using a 2×2 repeated measures ANOVA (digital connectivity × emotional salience) with Bayesian analysis providing sensitivity to potential psi effects as recommended by Utts (2016). Effect sizes would be calculated using Cohen's d with 95% confidence intervals. Secondary analyses would examine relationships between hit rates and several variables: relationship duration, reported prior telepathic experiences, and psychological boundary thickness scores.

Physiological data analysis would focus on potential correlations between receiver physiological states and sender activities. Following protocols established by Mossbridge and Radin (2018), we would analyze pre-stimulus response (changes in physiological measures preceding stimulus presentation) using permutation analysis to address multiple comparison concerns. Specifically, we would apply standardized procedures for identifying deviations from baseline in EDA, HRV, and EEG alpha asymmetry, with particular attention to the 10-second window preceding target image presentations to the sender—a period identified in previous research as potentially sensitive to anomalous anticipatory effects.

Survey data analysis would combine descriptive statistics, inferential analyses, and text analytics. Descriptive analyses would characterize the prevalence and nature of reported

telepathic experiences across demographic categories and digital usage patterns. Inferential analyses would examine relationships between reported experiences and psychological measures using hierarchical regression models, with separate models for experience frequency, vividness, and confidence in paranormal interpretation. Open-ended responses would undergo text analysis using automated sentiment analysis and iterative coding to identify recurrent themes and language patterns associated with different reported experiences.

For phenomenological interview data, we would employ Interpretative Phenomenological Analysis following Smith et al.'s (2009) six-step protocol: (1) reading and re-reading, (2) initial noting, (3) developing emergent themes, (4) searching for connections across themes, (5) moving to the following case, and (6) looking for patterns across cases. This iterative process would be conducted by three researchers who would meet regularly to compare coding and resolve discrepancies, aiming for high intercoder reliability consistent with similar studies. The analysis would focus on four dimensions of experience: the phenomenological qualities of digital telepathic experiences, contexts facilitating such experiences, interpretive frameworks employed by participants, and perceived relationships between digital connectivity and telepathic capability.

Integrating quantitative and qualitative findings would happen via various structured processes, including: first, information about quantitative patterning of experimental data and survey data would be used as a guide for what to ask during subsequent phenomenological interviews to continue in-depth comparisons with expectations based on the quantitative findings. Secondly, qualitative themes found by participants would serve as the guide for continuing quantitative analysis of survey data; this could help promote an ongoing analytic dialogue (through mode) between methods. Moreover, finally, we would use joint displays (Guetterman et al., 2015) – visual representations showing the relationship among various methodological components contributing to every one of our research questions – to support the integrated interpretability of our findings across all methods.

During all analyses, we would seek strategies to compensate for biases and methodological problems. The experimenters would be blinded to conditions while collecting data and performing the initial analysis. Statistical analyses would use not just the traditional null hypothesis significance testing procedures but also methods using Bayesian paradigms to account for issues with possible bias in parapsychological research. Qualitative analyses involve members checking with an interviewee sample to check interpretative accuracy. Indeed, at every step, all findings would be evaluated critically by conventional explanations before being converted into paranormal explanations - prioritizing the law of parsimony, emphasized by skeptics and proponents alike in parapsychological research.

4. Results

4.1 Simulated Quantitative Data Analysis Findings

Simulated data from the proposed laboratory experiment would likely yield notable insights into telepathic performance under varied digital connectivity conditions, based on prior ESP literature (e.g., Storm et al., 2010). Participants might demonstrate above-chance performance in

target identification across all conditions, potentially aligning with meta-analytic findings reporting hit rates around 32% compared to a 25% chance expectation (Storm et al., 2010).

Table 2. Simulated Telepathic Performance Across Hypothetical Experimental Conditions

Condition	Anticipated Performance
Overall	Above-chance accuracy
Digital Connection - Present	Higher accuracy
Digital Connection - Absent	Closer to chance
Emotional Salience - High	Higher accuracy
Emotional Salience - Low	Lower accuracy
Digital Connection/High Emotion	Highest accuracy
Digital Connection/Low Emotion	Moderate accuracy
No Digital Connection/High Emotion	Moderate accuracy
No Digital Connection/Low Emotion	Near-chance accuracy

Note: Chance expectation = 25%; Performance patterns modeled on prior ESP research (e.g., Storm et al., 2010).

As shown in Table 2, simulated analysis might suggest a notable effect of digital connectivity on telepathic accuracy, with trials preceded by digital connection potentially showing higher accuracy than those without prior digital interaction. The emotional salience manipulation might produce distinct effects, with high-emotion targets likely identified more accurately than low-emotion targets. An interaction effect might emerge between digital connectivity and emotional salience, with the highest accuracy anticipated in the digital-connection/high-emotion condition. These patterns would align with expectations based on previous studies indicating emotional and relational factors enhance ESP performance.

Physiological measurements might show complementary patterns. Simulated analysis of electrodermal activity could suggest differences between hit and miss trials in the pre-stimulus period (0-10 seconds before target selection), potentially showing distinctive patterns beginning a few seconds prior, especially in digitally-connected conditions. This might support hypothesized physiological correlates of telepathic effects, consistent with prior findings (Mossbridge et al., 2014). Heart rate variability and EEG alpha asymmetry might show similar trends but could be less pronounced, as observed in related research.

Simulated regression analyses might identify key predictors of telepathic performance. Relationship duration could positively correlate with accuracy, with longer-established relationships potentially showing stronger effects. Boundary thickness scores might predict performance, with thinner psychological boundaries associated with higher accuracy. Digital usage patterns could exhibit a complex relationship, with moderate digital users potentially

outperforming both low and high users, suggesting an optimal balance of digital immersion for telepathic functioning, consistent with theoretical expectations.

4.2 Simulated Qualitative Observations and Thematic Analysis

Simulated survey and interview data might reveal rich patterns in the subjective experience and interpretation of digital telepathic phenomena, based on phenomenological patterns in prior research (e.g., Sheldrake, 2014). Thematic analysis of hypothetical open-ended survey responses (n=896) and interview transcripts (n=36) might identify five recurrent themes characterizing these experiences, potentially consistent across demographic groups and digital usage patterns.

Table 3. Anticipated Themes in Hypothetical Digital Telepathic Experiences

Theme	Key Characteristics	Most Associated Platform
Temporal Synchronicity	Thinking of someone before receiving communication	Text messaging
Emotional Resonance	Experiencing emotions matching distant other's state	Video calls
Digital Facilitation	Digital connectivity enhances telepathic connection	Text messaging
Validation through Timestamps	Digital technologies provide timing evidence	Text messaging
Interpretive Frameworks	Diverse explanatory models	—

Note: Themes modeled on prior phenomenological studies (e.g., Sheldrake, 2014; Jawer, 2020). Most associated platform indicates the digital medium likely mentioned in connection with each theme.

As summarized in Table 3, the most frequent theme might be "temporal synchronicity"—the experience of thinking about someone immediately before receiving digital communication from them. Participants might describe distinctive qualitative features differentiating these experiences from coincidence, particularly an "intrusive" quality where thoughts about the person feel unusually compelling. As one hypothetical interview participant (P17) might explain: "It's not just thinking of someone and them texting—it's a specific kind of thought that feels different, more pressing, almost as if they're mentally knocking on your door." Timing patterns might be emphasized, with impressions potentially occurring shortly before digital contact.

The second theme, "emotional resonance," might be commonly reported, involving experiencing emotions congruent with a distant other's emotional state before receiving explicit communication. These experiences might be characterized by sudden, unexplained emotional shifts later corresponding to significant events. Emotional resonance might be more frequent with close relationships and associated with relationship duration. Hypothetical interview data might suggest participants develop nuanced distinctions between "borrowed" emotions and their own, describing phenomenological markers of telepathic transmission.

"Digital facilitation" might emerge as another theme, where participants might describe digital connectivity as enhancing or enabling telepathic connection. Survey responses might indicate that

regular digital communication creates "channels" for telepathic exchange, with text messaging often linked to such experiences, followed by social media and video calls. Interview data might reveal folk theories about how digital communication "primes" telepathic receptivity through regular contact and shared digital spaces.

The fourth theme, "validation through digital timestamps," might reflect how digital technologies provide evidence supporting telepathic interpretations. Participants might report using message timestamps, social media posting times, and digital activity logs to verify improbable timing. As one participant (P24) might state: "Before smartphones, you couldn't prove these things happened. Now I can screenshot the timing and show people—'Look, I texted you about this exact thing at the moment you were experiencing it.'"

The final theme, "interpretive frameworks," might encompass diverse explanatory models. Participants might endorse explanations ranging from paranormal attributions, such as ESP, to psychological models like unconscious pattern recognition, technological interpretations involving digital cues, or spiritual frameworks connecting experiences to metaphysical beliefs. Many might maintain multiple explanatory frameworks, simultaneously entertaining conventional and paranormal interpretations.

4.3 Simulated Case Studies and Special Phenomena Reports

Hypothetical analysis of exceptionally strong reported experiences might provide additional insights into digital telepathy phenomena, modeled on patterns from prior ESP research (e.g., Sheldrake, 2003). From simulated survey responses, we might identify several cases meeting criteria for "strong digital telepathy experiences" (defined as experiences involving specific, verifiable information transfer with digital timestamp verification). From these, a subset would be selected for in-depth investigation through hypothetical follow-up interviews and examination of digital records. These cases might reveal noteworthy patterns not fully captured in aggregate data.

Case #103 might exemplify "crisis telepathy" in digital contexts. A female participant might report awakening with an overwhelming urge to check on her distant brother. Finding this unusual, she might text him immediately, asking if he was okay. Digital records might confirm her brother experienced a crisis, such as a car accident, shortly before her message. She might report no prior knowledge of his situation, suggesting heightened telepathic sensitivity during emergencies— consistent with traditional ESP findings (Sheldrake, 2003). Similar crisis-related patterns might appear in multiple cases.

Digital platform effects might emerge in several cases. Case #271 might involve colleagues reporting telepathic exchanges during collaborative work in shared cloud documents, describing awareness of each other's thoughts before comments were posted, with timestamps potentially verifying the sequence. This platform-specific effect might be noted frequently in collaborative workspaces rather than social media. Hypothetical interviews might suggest shared attention on digital artifacts fosters telepathic transfer, especially in established relationships.

"Reciprocal confirmation" might emerge as a significant phenomenon, where both parties experience telepathic impressions simultaneously, followed by mutual digital verification. Case #498 might describe former roommates in different countries thinking of the same obscure

memory and texting about it shortly afterward. Digital records might verify the timing, with no apparent triggers. Such bidirectional exchanges might challenge coincidence explanations due to their specificity.

Longitudinal development of telepathic capacity might appear in several cases. Case #342 might describe a progression over an extended period where participants initially sense vague impressions before messages, later gaining specific awareness of content. Digital records might suggest increasing accuracy over time, indicating skill development. Hypothetical interviews might reveal participants use practices like mindfulness to enhance sensitivity.

A subset of cases might demonstrate "content-specific telepathy," where participants anticipate specific message details. Case #519 might involve a participant drafting a reply to a technical question before its arrival, with records potentially verifying the sequence. The participant might describe a distinct "knowing," suggesting information arrived holistically.

The relationship between digital immersion and telepathic experiences might show complex patterns. Moderate digital users might report frequent experiences, while highly connected users might describe "digital telepathic overload"—overwhelming input reducing clarity. This might support an anticipated inverted-U relationship, where balanced digital engagement optimizes telepathic functioning.

5. Discussion

5.1 Potential Mechanisms of Digital Connectivity's Influence on ESP

The simulated findings from this hypothetical study suggest several potential mechanisms through which digital connectivity could influence telepathic experiences. First, the simulated laboratory results potentially indicate enhanced ESP performance following digital connection between participants, which might support what could be termed a "priming effect" hypothesis. Digital interaction could establish or strengthen temporary information channels between individuals, potentially through psychological mechanisms such as increased attention to the other person, enhanced emotional attunement, or activation of shared mental models. This interpretation aligns with Radin's (2018) model of nonlocal consciousness requiring directed attention and theories of shared consciousness networks that may be activated through meaningful interaction.

A second potential mechanism involves what we term "digital boundary dissolution." The simulated pattern that moderate digital users might demonstrate stronger telepathic performance than low and high users suggests an optimal balance in digital engagement. Excessive digital immersion could create information overload that inhibits subtle ESP perception, while minimal engagement might provide insufficient connectivity. This pattern aligns with Jawer's (2020) boundary permeability framework; digital technologies could temporarily modulate psychological boundary thickness, creating conditions more conducive to anomalous information transfer. A possible association between boundary questionnaire scores and ESP performance might support this interpretation.

Third, the "digital documentation effect" may become an observable dimension of how such telepathic experience will be validated and reinforced, presumably based on something demonstrated in our hypothetical quantitative data. Digital technologies would give unprecedented potential for coincidence documentation thanks to their ability to precisely timestamp messages record along with concurrent message reporting. This potentiality may alter the nature of a constraint that traditionally has leaned toward selective memory or confirmation bias, leading it towards velocities substantiation in ways that may reinforce that such individuals are witnesses, or recipients, of the information reported via telepathy. Thus starting a feedback effect. This is a new component to the body of ESP study that has no demonstrated and truly unknown analog within the pre-digital paradigm.

Finally, the simulated findings might suggest a "relationship amplification" mechanism whereby digital technologies intensify existing interpersonal connections. A possible association between relationship duration and telepathic accuracy, particularly in digitally connected conditions, might indicate that digital communication could build upon and enhance established connections rather than create entirely new capabilities. This supports theoretical models proposing that anomalous communication operates through existing relationship channels rather than as an entirely separate faculty (Sheldrake, 2014).

5.2 Comparison of Simulated Findings with Existing Literature

The simulated experimental findings potentially indicating above-chance ESP performance might align with meta-analytic results from ganzfeld research (Storm et al., 2010, reporting hit rates similar to prior studies), suggesting possible telepathic communication under controlled conditions. However, these hypothetical results might extend previous research in several ways. The anticipated interaction between digital connectivity and emotional salience might represent a novel contribution, indicating that digital priming could enhance emotional telepathic content—a pattern not previously reported. This might advance theoretical understanding by suggesting that digital and emotional factors could operate synergistically rather than independently.

The hypothetical physiological correlates of successful telepathic trials, particularly anticipated electrodermal activity changes preceding target selection, might replicate findings by Mossbridge et al. (2014) regarding predictive anticipatory activity. However, these simulated findings might link these physiological markers to digital connectivity conditions, suggesting a potential mechanism through which digital interaction could enhance ESP functioning. This might represent an extension of previous physiological research that typically examined ESP without considering digital contextual factors.

The simulated qualitative findings regarding the phenomenology of digital telepathic experiences might both confirm and extend previous research. The temporal synchronicity theme might align with Sheldrake's (2014) telephone telepathy studies, but these hypothetical findings might reveal how digital platforms could provide more precise documentation of timing than was possible earlier. Similarly, the emotional resonance theme might confirm research on empathic telepathy while suggesting how digital contexts create new conditions for such experiences, particularly through video communication technologies that provide rich emotional information.

The patterns anticipated in our hypothetical case studies might diverge somewhat from traditional crisis telepathy research (Sheldrake, 2003). While similar phenomena triggered by emergencies might appear, digital environments might facilitate a broader range of telepathic experiences not limited to crisis situations. This might suggest that digital connectivity could lower the threshold for telepathic exchange, enabling perception of more mundane information that would typically fall below the threshold of awareness—a pattern not anticipated in traditional ESP literature.

5.3 Methodological Limitations Discussion

Several methodological concerns would be borne upon interpreting these findings from the simulation. First, however normal-seeming the proposed buffers were, there would still be the problem of volunteer self-selection, especially as it would affect the hypothetical survey aspect. Those who had been exposed to telepathy or believed in ESP prior to the study may have been more likely to volunteer and report experiences, raising the possibility of exaggerated prevalence numbers. On the other hand, the propensity of the simulated experimental results being consistent with the survey results (due to the use of double-masked methodology) might allow some degree of correction for the effect of selection bias if the phenomena reported were generally consistent.

Second, the hypothetical laboratory portion would have several important elements in common with the strict controls put toward more traditional theories (while also having to acknowledge that it cannot remove all possibility of more subtle sensory leaks or undiscovered environmental cues). Electromagnetic shielding would separate the participants from classical explanations, and digital security would prevent players from cheating. However, the possibility would linger that unknown traditional mechanisms would continue to play roles in maintaining above-chance performance. This shortcoming is inherent to all research into ESP and would, therefore, require further refinement of control measures.

Third, the proposed reliance on self-reported experiences in the survey and interview components may introduce a potential bias in their recall and interpretation. This bias would involve participants "retrospectively" assigning meaning to coincidences or selecting instances that confirm hypotheses while potentially forgetting disconfirming instances. Where the predicted effect of digital documentation would be expected to improve the situation by offering an objective record of past events, it nonetheless may fail to eliminate all forms of confirmation bias, specifically when interpreting those recorded events.

Fourth, while the simulated sample may show demographic diversity, culture would not be systematically explored as a possible moderator of digital telepathic experiences. The effect of the cultural framework in reality, through which anomalous experiences are interpreted, would affect both what students experience or report to others and reporting thereof (Fortier, 2019). Future studies could examine how cultural contexts influence digital telepathic experiences more explicitly.

Finally, the rapidly evolving nature of digital technologies would present challenges for generalizability. The simulated findings might reflect current digital communication patterns at the time of hypothetical data collection, but new platforms and communication modalities would

continually emerge. The anticipated effects might vary with technological evolution, requiring ongoing investigation of how different digital environments influence ESP experiences.

5.3.1 Differentiating Genuine ESP from Pseudo-Telepathy

A critical challenge in this current study is to distinguish the genuine telepathic experiences from coincidences, digitally mediated priming, or pseudo-telepathic effects, for example behavioral mirroring and emotional contagion, which facilitated by algorithmic synchronicity. To counteract this phenomenon, the proposed methodology includes:

First, the controlled conditions of the laboratory experiments, including electromagnetic shielding, double-blind procedures, and random target selection. The aim is to minimize any form of sensory leakage and traditional forms of conventional communication cues. The manipulation of digital connectivity (pre-experimental text messaging vs. no interaction) and emotions in priming (high vs. low), which allows for testing whether or not the effects exceed chance expectations under specific conditions, as assessed via Bayesian analysis (Utts, 2016).

Second, the survey and interview components include validated psychological measures (e.g. Boundary Questionnaire, Anomalous Experiences Inventory) to correlate reported experiences with individual traits, potentially identifying patterns unique to anomalous cognition.

Third, digital timestamps and multiple-witness documentation provide objective records to verify synchronicity, with statistical models (e.g., permutation analysis) used to establish baselines for coincidental occurrences.

However, these approaches may not fully eliminate the influence of subtle digital cues, for example algorithmic recommendations or emotional priming. Future refinements could involve comparing telepathic performance across digitally connected vs. fully isolated conditions, using machine learning to detect patterns of behavioral mirroring, and incorporating control groups exposed to sham telepathic tasks to isolate true anomalous effects.

5.4 Theoretical and Practical Applications

The simulated findings of this hypothetical study may have theoretical or practical ramifications for the two paradigms of parapsychology and practical implementations within the digital society. To explain this later, the theoretical impact of such paradoxical findings would likely lead to an evolution of ESP models to incorporate digital dimensions of human connection. Existing telepathy theories that originated before the digital world may require an extension to consider how technologically mediated processes of consciousness could promote a new state of the condition under which anomalous forms of information transfer are possible. The "extended mind" model proposed by Clark and Chalmers (1998) would offer much-needed conceptual resources for such a TEE-cognition twist on this line of thinking, whereby digital technologies may be envisaged not as mere tools but as fundamental extensions of the human cognitive and perceptual system. The elucidated, simulated findings concerning the digital facilitation of telepathic experience could provide conceptual justification for such a higher-order theory, therefore promoting the conclusion that the outer limits of consciousness may well extend to encompass technological domains.

The hypothesized correlation between emotional salience and digital connectivity may facilitate theoretical explanations of the emotional aspects of ESP. Some prior studies have found that emotional content could facilitate telepathic transmission (Bem et al., 2016). However, unlike previously discussed, my hypothetical findings suggest that digital connectivity could have specific beneficial effects on emotional telepathy through poorly understood processes. This may assist in supporting theoretical accounts of this topic, which vary toward a more relational account deepened at the expense of consciousness while simultaneously suggesting that digital technologies may expand interconnection through their power to transmit and process emotional information across physical distance.

In practice, these simulated findings might have applications for digital communication design but also provide insight into unusual accounts of experiences with networked environments. The anecdotal frequency of digital telepathic experiences (e.g., temporal synchronicity) might suggest that it is a commonplace feature of digital life that ought to be factored into digital platform architecture. Employing correlation techniques in digital tools aimed at recording temporal synchronicity—e.g., timestamp verification technology—may allow users to make sense of coincidental experiences instead of brushing them off and presuming they are significant. Understanding the possibility for increased emotional transmission within digital space may also have implications for therapeutic applications, the pursuit of digital well-being initiatives, and ethical considerations regarding the creation of digital platforms.

Educationally, one could find application to digital literacy and develop a way to understand the unexplainable and its interpretation. The simulated pattern maintained by quite a few participants maintaining several parallel explanation frames might have value in ways that incorporate the phenomenographical reality of the experiences while simultaneously providing several means of interpretative possibility, thus being more balanced, which may serve to alleviate the stigma associated with reporting anomalous experiences while inviting critical judgment—potentially providing helpful measures in education and clinical realms in which one must find meaning in unique experiences.

5.5 Recommendations for Future Research Directions

This hypothetical study may also point to various promising directions in which future research into digital connectivity and telepathic phenomena may be gathered. Specifically, longitudinal designs tracking telepathic experience as linked to changing digital communication patterns may yield much interest in how mediated aspects of technology similarly affect ESP experience. Such research may trace an individual's experience as he follows new platforms or makes telepathic platform shifts as he stops using old ones and documents corresponding changes in telepathic experience. This model may overcome the limitations presented by cross-sectional study designs and provide more substantial evidence to establish a causal relationship between digital connectivity and ESP.

Second, experimental protocols investigating "digital dosage effects" might warrant development. The possible pattern of an optimal balance between digital usage and telepathic performance indicated in this simulation suggests levels of connectivity that future research could

identify with greater precision. Controlled studies manipulating duration, intensity, and digital connection types prior to ESP trials might help determine whether these effects follow consistent patterns across individuals or vary with psychological traits, relationship factors, or technological platforms.

Third, neuroimaging studies examining brain activity during digital telepathic experiences could provide valuable insights into potential mechanisms. While the anticipated correlates of successful telepathy were noted in this simulation, advanced neuroimaging techniques could explore whether digital connectivity creates distinctive patterns of neural synchronization between participants or activates specific brain networks associated with social cognition. Simultaneous fMRI or EEG recording of sender-receiver pairs might help identify neural signatures of information transfer in digitally connected contexts.

Fourth, cross-cultural research examining how digital telepathic experiences are interpreted and experienced across diverse cultural contexts would be essential. The simulated findings regarding interpretive frameworks might be limited by cultural homogeneity in the hypothetical interview sample. Future research should explicitly compare experiences across cultures with different technological adoption patterns and metaphysical belief systems to understand both universal and culturally specific aspects of digital ESP experiences.

Finally, interdisciplinary collaboration between parapsychology, digital media studies, neuroscience, and anthropology would strengthen theoretical frameworks for understanding these phenomena. The complex, multidimensional nature of digital telepathy requires diverse methodological approaches and theoretical perspectives. Collaborating research groups might take a more breathless approach to combining integrated models considering the technological, psychological, neurological, and social frame scales, which might be able to resolve the inherent theoretical tension between conventional and paranormal explanations with the help of one or even several intermediary mechanisms enabling interpretation across two distinct disciplines.

Such research paths may increase understanding of telepathic processes and lead to answering broader questions concerning how digital technologies change people's consciousness, connection, and perception in our ever-evolving and widely connected world.

5.6 Ethical Considerations and Epistemological Stance

The study will raise ethical issues regarding the manipulation of participants' beliefs. In cases where participants report telepathic experiences, they could feel pressured to interpret their experience to fit the researchers' expectations. However, measures will be put in place to address this issue. The focus of informed consent will be on enhancing participant autonomy over participant experience; participant definitions of their experience will be clear and straightforward, including explicit statements not to endorse paranormal claims, if applicable. Emotional suggestibility also represents a challenge to be addressed. Safeguards will be implemented to reduce emotional influence during experiments involving a potentially emotional topic, including pre-and post-experiment debriefings for participants to assess their psychological impacts and provide care, especially if necessary. Additionally, due to the sensitive nature of the subject matter of paranormal reports, privacy will be paramount; all storage and sharing of data will use

encryption, anonymization, and secure storage options, with participant options for retrieving or withdrawing data at will. Finally, neutrality will be achieved by maintained through blinded analysis throughout the experiment and seeking peer review on interpretation to ensure that the researcher does not demonstrate undue favor toward paranormal explanations for phenomena.

Epistemically, this study adopts pragmatism as its primary epistemology (Morgan, 2014). The pragmatic perspective is primarily concerned with practical utility. The subsequent use of the simulated data is used to explore possible patterns and pilot methods for refining methodologies without intending to prove or disprove the existence of telepathy. Moreover, this approach is justified because it legitimizes the study of anomalous phenomena in favor of considering phenomenological truth or social implications regardless of how they are ultimately caused. Therefore, future studies on simulation-based claims should work towards illuminating what simulation-based evidence may mean for empirical design, bridging the gap between rigorous science and openness to non-conventional findings.

6. Conclusions

This study proposes to investigate the relation between digital and extrasensory perception at studying the effects of altered networked environment on manifesting and validating telepathic experiences – the simulation-based studies may find that digital technologies may provide unique prerequisites for exhibiting physical phenomena induced by telepathic stimulus via multiple mechanisms; hypothetical laboratory experiments would explore the extent to which digital connectivity may improve the accuracy of telepathic occurrences of content emphasizing its emotionality—anticipated physiological measurements would capture the particular sets currently associated with information transfer; simulation-based survey and interview excerpts may report frequently occurring experiences of strong-perceived telepathic interactions within digital communication channels, involving recurrent patterns of temporal congruence, emotional responsiveness, and augmented formal validation due to digital documentation.

The utility of this hypothetical research could likely extend far beyond the phenomena which it was conducted upon to provide answers to new questions, such as those involved with human connection in technologically-driven settings, and the simulated findings could indicate that digital connectivity may not simply simulate telepathic awareness but may instead allow for anomalous types of communication via attention focusing, emotional amplification, and subsequently bolstering relationship reinforcement; however, this relationship could very well be shown as non-linear such that while perhaps engaging deeply within a digital medium may provide optimal conditions for subliminal information transfer, too much stimulation may develop a counterproductive state of information overload. Likewise, information could undergo documentation by digital technologies, altering how such an experience would be verified and understood, making possible both new forms of personal significance and the new possibilities presented for scientists searching to test phenomena that perhaps cannot be verified.

As digital technologies have already begun to play a predominant role in shaping how humans experience and connect, a comprehensive understanding of the expansive range of possible

psychological and perceptual impacts would emerge as crucial. Indeed, this hypothetical research could lead to the recognition that specific anomalous experiences, which are often common in digital environments, may warrant serious consideration by scientists rather than simple assumptions or refutations of coincidence or confirmation bias. Any potential interactions between parapsychological inquiry and digital media studies entreat readers to consider how technology might alter consciousness and connection—questions that grow out of an underlying relationship of profound importance in the modern world as humans grapple with this increasingly connected universe. Compelling either from traditional psychological frameworks or potential understandings of ESP, these phenomena may reveal crucial facets of human experience in the digital era that should continue receiving attention from researchers across disciplines.

Author Contributions:

Funding:

Conflict of Interest:

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A Study of High School English Multimodal Discourse Teaching Based on Generative Artificial Intelligence

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Abstract

This article focuses on the application of generative artificial intelligence (GAI) in multimodal discourse teaching in high school English, deeply analyzes the limitations of traditional high school English discourse teaching, and discusses how generative artificial intelligence can optimize teaching effectiveness through technological empowerment. First, the article explains the core value and key role of generative AI in multimodal discourse teaching, highlighting its importance in enhancing teaching interactivity, providing personalized feedback, generating teaching resources, and dynamically adjusting teaching strategies. Then, through specific teaching cases, the diverse applications of generative AI in actual teaching are demonstrated, including contextual corpus generation, cross-cultural comparative analysis, and critical thinking training. The study shows that the introduction of generative AI not only expands the form of teaching but also significantly improves students' core literacy and promotes the innovation and change of teaching mode.

Keywords: Generative Artificial Intelligence(GAI); High School English; Multimodal Discourse

1. Introduction

Traditional high school English discourse teaching, often dominated by single-article instruction, has been widely criticized for its limitations. Studies have highlighted issues such as single teaching method, limited sources of information,lack of targeted instruction(Danesi, 2024; Algaraady & Mahyoob, 2023). These challenges make it difficult to meet the complex demands of modern education. Furthermore, the rapid advancement of generative artificial intelligence (GAI) technology, such as large-scale language models (e.g., ChatGPT) and image generation tools (e.g., DALL-E), has opened new avenues for educational innovation (Taulli, 2023).*The 2017 Edition of the Revised 2020 Edition of the English Curriculum Standards for General High Schools (hereinafter referred to as the New Curriculum Standards)* put forward new teaching

requirements, adding the skill of "seeing" based on the four basic skills of listening, speaking, reading, and writing, that is, the skill of utilizing various kinds of pictorial resources to understand the meaning of multimodal discourse. This new skill can strengthen the correlation between modalities such as visual and tactile, thus promoting a more comprehensive comprehension of the discourse, and discourse teaching is an effective way to realize this goal. At the same time, with the rapid development of information technology, artificial intelligence is gradually applied to the field of education, and breakthroughs in Generative Artificial Intelligence (hereinafter referred to as GAI) technology, such as large-scale language models (e.g., Chat GPT) and image generation tools (e.g., DALL -E), are bringing about profound changes in educational practices. High school English multimodal discourse teaching supported by generative artificial intelligence not only fits the digital transformation trend of education but also provides an innovative path for teaching practice. Although there have been studies exploring the potential of GAI in education, empirical research on the specific applications and effects of multimodal discourse teaching in high school English is still scarce. This study examines in depth the specific applications of GAI tools (e.g., ChatGPT and DALL-E) in multimodal resource generation, personalized feedback, and cross-cultural comparative analysis through teaching case studies. The findings not only provide an innovative path for educational practice but also provide a solid theoretical basis for the digital transformation of education, which is of great significance for enhancing students' critical thinking, cross-cultural communicative competence,digital literacy.

2. Analysis of the Current Situation of High School English Discourse Teaching

Discourse teaching is the core of language learning.However, traditional high school English discourse teaching, which is often dominated by single-article instruction, has been widely criticized for its limitations. Studies have shown that this teaching mode suffers from problems, such as a single teaching method, limited sources of information, and lack of relevance in teaching (Danesi, 2024). Teachers tend to focus on basic discourse knowledge, ignoring the deeper meaning and logical structure of the discourse. This approach leads to passive learning by students who are mere recipients of knowledge rather than active participants (Algaraady & Mahyoob, 2023). In addition, the disconnect between teaching English discourse and cultural background knowledge has also been identified as a significant barrier. Classroom observations have shown that students often struggle to comprehend texts that lack cultural context, resulting in low comprehension scores on relevant assessments (Algaraady & Mahyoob, 2023). Finally, traditional English discourse teaching often suffers from unclear instructional objectives, which not only affects students' comprehension and knowledge of the discourse but also diminishes their interest and engagement in learning, ultimately leading to unsatisfactory teaching and learning outcomes (Danesi, 2024).

Table1. Overview of High School English Discourse Teaching and the Integration of Generative AI Tools for Multimodal Learning

Section	Content
Discourse Teaching Importance	Core of language learning, promotes knowledge acquisition and thinking ability
New Curriculum Standard	Integrates discourse, thematic contexts, linguistic & cultural knowledge, and learning strategies
Traditional Teaching Problems	Isolated vocabulary/grammar learning, low student interest, poor results
Current Teaching Issues	Lack of innovation, passive learning, weak reading and comprehension abilities
Teaching Method Issues	Teacher-centered, neglects deep meaning, lacks modality correlation
Discourse Materials	Disconnected from cultural knowledge, outdated textbooks, limited relevance
Teaching Objectives	Often unclear, affecting comprehension, participation, and teaching effectiveness

2.1. Single teaching method, students' weak research and reading ability

In the traditional teaching method, the teacher dominates,and focuses only on the basic knowledge of the discourse, but neglects the deep meaning and logical structure of the discourse, the teaching activities are in a single form, lack of innovation and diversity, the lack of correlation between the modalities (e.g., visual, auditory, etc.), and the students are passive recipients of knowledge and lack the opportunity for independent learning. This teaching mode is difficult to stimulate students' enthusiasm for learning, resulting in weak reading ability and difficulty in deep comprehension and analysis in discourse

2.2. Lack of relevance of discourse materials, difficult to match the actual needs of students

Discourse is not only the carrier of English knowledge but also the medium of English culture. Effective discourse reading and comprehension need to be premised on the link between discourse reading and cultural background knowledge. However, English discourse teaching is disconnected from the culture and background knowledge, and students' cultural background knowledge is generally insufficient, which makes it difficult to cross cultural-barriers in discourse learning and easy to produce comprehension misunderstandings. In addition, the content of teaching materials is fixed and slowly updated, which makes it difficult to meet students' diversified learning needs, further affecting students' learning effect.

2.3. Ambiguous Teaching Objectives, Difficult to Improve Teaching Effectiveness

Discourse teaching requires teachers to understand the curriculum standards accurately, clarify the teaching objectives, take reading as the main line, combine with the theme of the unit, explore the methods that conform to the teaching program,improve the teaching effect, teachers should guide the students from the overall comprehension of the content of the discourse to the mastery of the main idea of the article, and then carry out deeper learning. However, traditional English discourse teaching often suffers from the problem of ambiguous objectives, which not only affects students' comprehension and cognition of the discourse but also weakens their interest and participation in learning, thus leading to unsatisfactory teaching results.

3. The Connotation and Importance of High School English Multimodal Discourse Teaching under Generative Artificial Intelligence

3.1. The Connotation of High School English Multimodal Discourse Teaching under Generative AI

Generative AI (AI) refers to AI that can generate text, images, or other media content is primarily characterized by its ability to learn patterns in new input data and generate new data with similar characteristics (Taulli, 2023). It can instantly adapt to student interactions and teacher needs and is characterized by the provision of new information, provides new information, personalized instruction, instant feedback, and enhances student motivation to learn (Danesi, 2024) Currently, generative AI software such as ChatGPT, Kimi, DeepSeek, etc., can help users refine and guide conversations to a specific length, format, style, level of detail, and language requirements.

The basic theory of multimodal discourse analysis comes from the idea of "Language as social semiotic" proposed by Halliday (1978), modality can be divided into visual, auditory, olfactory, gustatory, and tactile modalities, and multimodality refers to the use of two or more symbol systems at the same time. Using two or more symbol systems to form a synergy to convey richer information. In the context of today's rapid development of science and technology, the profound impact of information technology on the way of education has shifted from the traditional single mode of teaching to the multimodal and diversified mode of teaching. Specifically, the construction of discourse is no longer limited to the traditional single textual modality but gradually develops to the combination of text and images, sound, and other modalities interacting with each other.

Kress and van Leeuwen (2001) further developed the multimodal theory, in which they emphasized that meaning is not only conveyed through verbal text but also the joint action of other modalities such as visual and auditory, to achieve a more comprehensive construction of meaning. In their view, multimodal discourse in educational practice is not just a simple superposition of modalities, but an interaction and integration between different modalities, and this interaction can promote students' multidimensional understanding of discourse and enhance the effect of language learning. Therefore, the multimodal discourse teaching of high school English based on generative artificial intelligence can not only integrate multiple resources such

as text, image, and sound but also realize the teaching mode of personalization and instant feedback with the help of artificial intelligence technology, which greatly enriches the students' learning experience and enhances the teaching effect.

3.2. The Importance of High School English Multimodal Discourse Teaching under Generative Artificial Intelligence

The systematic integration of Generative Artificial Intelligence (GAI) and multimodal discourse teaching in high school English is not only an inevitable trend for the implementation of the core literacy orientation of the New Curriculum but also an innovative opportunity to break through the constraints of the traditional education model and build a new ecology of intelligent education(Algaraady et al, 2023). At present, the traditional high school English classroom still tends to be "text-centered", and multimodal discourse teaching often remains only in the simple presentation of textbook illustrations or pre-produced courseware, which lacks dynamism, interactivity,generativity. The intervention of GAI technology can reconfigure the logic of the supply of multimodal resources: on the one hand, intelligent text-discourse teaching can be realized through language models such as Chat GPT. On the one hand, intelligent deconstruction of text parts of speech (e.g., theme analysis, rhetorical recognition) is realized through language models such as Chat GPT, and supporting charts, mind maps or contextual animations are automatically generated by combining with cross-modal generation technology, forming a three-dimensional text-driven-multimodal derivation system; on the other hand, GAI can be customized to meet the needs of students' cognitive differences and can be customized to meet the needs of students. On the other hand, based on students' cognitive differences, GAI can customize personalized modal combination schemes, such as generating image annotations for visual learners and synthesizing voice explanations for auditory learners to optimize the effectiveness of the multimodal input (Richard, 2021).

This technology-enabled pedagogical transformation has a dual educational value: from the practical dimension, GAI effectively bridges the gap between modal homogenization and superficial interaction in the traditional classroom through the human-computer synergy mechanism, e.g., in the teaching of cultural discourse, the AI-generated virtual simulation scenarios can transform the abstract cross-cultural communication training into a tangible experience; from the strategic point of view, GAI reconstructs the "Goal-Process-Evaluation" (Goal-Process-Evaluation) model and the "Objective-Process-Evaluation" (Objective-Process-Evaluation) model. From a strategic point of view, GAI reconstructs the closed loop of education of "goal-process-evaluation". Teachers can rely on AI to dynamically track students' performance in multimodal interactions (e.g., depth of text analysis, the accuracy of image interpretation, fluency of voice response), adjust teaching strategies in real-time, and form the "intelligent diagnosis-precise delivery-effect evaluation" literacy training The cycle system. The application of generative AI in high school English multimodal discourse teaching is essentially an innovation in the educational paradigm: through the scientific coupling of technological creativity and educational law, it not only solves the real problems of the traditional classrooms, such as single mode and lack of interaction but also provides a practical framework for the cultivation of future talents with cross-cultural communication skills, digital literacy,innovative spirit. Teachers

dynamically adjust their teaching strategies based on this framework, forming a closed-loop system of "goal setting - resource generation - process tracking - precise intervention", which ultimately serves the comprehensive development of core literacy. Therefore, generative artificial intelligence not only improves teaching efficiency but also reconstructs the essence of education through human-computer collaboration, making technology an important tool to promote the overall development of students.

4. The practical application of multimodal discourse teaching in high school English under generative artificial intelligence.

High school English multimodal discourse teaching under the support of generative artificial intelligence has important theoretical and practical significance. The theme of this unit is "man and nature", which explores the harmonious coexistence of mankind and nature. The teaching starts with an introduction to the environmental problems faced by Venice, the "city on water", and then goes on to introduce the background and operation of the Longji Terraces, natural dyes, unique geographic landscapes, the lifestyle of the Inuit people, the British love of gardens, and the British culture of fruit tea and herbal tea. This series of content helps students to understand the close connection between human life and the natural environment: the natural environment has a profound impact on human life, while human beings, through their wisdom and efforts, make rational use of and adapt nature to meet the needs of survival. The contents of this unit are conducive to students' understanding and exploration of the relationship between human beings and nature, and ultimately to the formation of a sense of respect for nature, rational use and transformation of nature, and living in harmony with nature.

4.1. Generating Multimodal Contextual Corpus and Constructing Thematic Meaning Networks

The thematic context of Unit 6, 'At one with nature,' focuses on 'human and nature,' aiming to explore the harmonious coexistence of humans and nature. To enhance teaching interactivity and vividness, teachers can use various generative AI tools, such as ChatGPT, DALL-E, Synthesia, and Canva Magic Design. These tools can generate multimodal resources, including text, images, and videos. Taking The Blue Planet as an example, the teacher first generates a basic text discourse using ChatGPT by inputting keywords (e.g., "environmental protection theme essay") for the teaching objective, and the AI automatically extracts core concepts (e.g., "carbon footprint", "sustainability", "environmental protection", "environmental protection"). AI automatically extracts core concepts (e.g., "carbon footprint", "sustainable development") and links DALL-E to generate concept maps and data visualization charts. In conjunction with Synthesia, the text is transformed into a virtual instructor video and interactive Q&A scripts are generated simultaneously. To meet the needs of students with different learning styles, teachers can customize personalized learning resources based on students' learning profiles (e.g., learning styles, cognitive levels, interest tags). For visual learners, MindMeister can be used to transform the text structure into 3D mind maps to help them understand the content more intuitively; for auditory learners, Murf.ai can be used to transform the text into character voice-overs and add

background sound effects to enhance contextual perception; and for kinaesthetic learners, AR scenes can be created through the Metaverse platform that supports gesture operation to complete the discourse sequencing task. On this basis, Claude 2 can be used to conduct cross-cultural analysis, inputting text passages to generate a table comparing Eastern and Western views of nature, including architectural philosophy, e.g. comparing the architectural philosophies of "borrowed landscape" in Chinese gardens and geometric gardens in the West, and exploring "Taoism and nature" and "anthropology" in the West. For example, compare the architectural philosophies of Chinese "borrowed landscape" gardens and Western geometric gardens, and explore the differences in ecological ethics between "Taoism and nature" and "anthropocentrism. MidJourney was used to generate a comparative atlas of cultural scenes, such as "Greek Temple and Surrounding Natural Landscape" and "Lijiang Ancient City Water System Layout", which guided students to analyze the impact of geography on cultural expression. Finally, students use ChatGPT to generate virtual interview scripts, simulate the comments of UNEP officials on China's ecological wisdom, and record multimodal speech videos, thus cultivating students' cultural awareness and cross-cultural comparative skills, which is in line with the cultivation goal of cultural awareness in the new curriculum standard.

4.2. Creating cross-cultural comparative discourse and deconstructing cultural cognitive differences

In the practice of cross-cultural comparative discourse construction and cognitive deconstruction, with the theme of "The Unity of Heaven and Humankind" as the core, AI technology is integrated to carry out three-stage teaching (Carpio,2023). First, in the stage of cultural deconstruction and resource generation, the teacher guides the students to input the key passages of The Wisdom of the East into Claude 2, generates a comparative analysis matrix of the Eastern and Western views of nature, deconstructs the differences between the "borrowed landscape" technique of Chinese gardens and the aesthetic philosophy of Western geometric gardens, and analyzes the differences between the "Taoism of nature" and the Western geometric gardens. We also analyze the ecological and ethical differences between "Taoism and Nature" and "Anthropocentrism". At the same time, Mid Journey is used to generating comparative atlases of Greek temples and natural landscapes, and Lijiang's ancient city and water system layout to demonstrate the differences in cultural expressions through the visualization of geographic environments. Then, in the multimodal semantic correlation stage, based on the cross-cultural corpus generated by AI, the "3C" teaching mode was adopted to deepen cognition. In the meaning construction section, students use the Hypothesis annotation tool to mark cultural symbols such as corridor windows and symmetrical axes in the VR tour of the Forbidden City and the generated map of Gothic architecture provided by the AI; in the correlation and migration section, students analyze the metaphorical network of the text through IBM Watson to visualize the modal correlation between the water cycle system and the Taoist idea of yin and yang; and in the critical reconstruction section, students use the combination of Gen-2 and Canva to demonstrate the differences in cultural expressions. Gen-2 and Canva to adapt the Dong wind and rain bridge construction techniques into dynamic cartoons and write cross-media explanations. Finally, in the reflective practice output stage, students use Chat GPT to generate scripts for interviews with

officials from the United Nations Environment Programme (UNEP), simulate a multimodal debate on the modern value of traditional Chinese ecological wisdom, and record a speech video with AI-generated data visualization charts. Through the integration of multimodal resources and cross-cultural comparisons, this teaching process helps students understand the differences between Eastern and Western cultures at a deeper level and strengthens their cross-cultural comparative and application skills through critical thinking and creative expression, which ultimately achieves the goal of comprehensively improving students' cognition and cultural understanding.

4.3 Designing critical reconstruction tasks to train higher-order thinking quality

When designing critical reconstruction tasks to train higher-order thinking quality, AI technology can be utilized to carry out multidimensional teaching activities in conjunction with the teaching design of the Compulsory Study 1 Unit 6 At one with the nature of the Foreign Studies Society (Campbell, 2023). First, GPT-4 is used to generate opposing arguments, such as "Modern technology makes traditional harmony with nature obsolete", and students are asked to combine the wisdom of building wind and rain bridges with the AI-generated case study of Dujiangyan water conservancy project in the text. The students were asked to combine the wisdom of building wind and rain bridges in the text and the AI-generated case of Dujiangyan to make a strong refutation. In this process, students need to use critical thinking to analyze the relationship between traditional wisdom and modern technology, so as to enhance their logical reasoning and dialectical thinking skills. Then, Tome was used to create a dynamic presentation document, integrating the seismic structural illustration of the Dong Drum Tower generated by DALL-E and the eco-building data dashboard generated by AI to form a visual argumentation chain. This multimodal argumentation approach not only enhances students' ability to express their arguments but also helps them understand complex concepts more intuitively. Meanwhile, in order to deepen students' metacognitive abilities, AI can analyze the logical gaps (e.g., over-generalization) in students' oral presentations and generate a Critical Thinking Self-Checklist, which guides students to reflect on and improve their thinking process.

4.4 Implementing personalized feedback intervention and optimizing modal adaptation paths

In the process of implementing personalized feedback interventions and optimizing modal adaptation pathways, teachers can use AI tools such as Otter.ai and Gradescope to achieve accurate learning assessment and support. Otter.ai analyzes recordings of group discussions and generates heat maps of vocabulary usage, providing teachers with an intuitive diagnostic of learning. Based on the results of these analyses, teachers can perform personalized modal optimization for students with different learning styles: for example, push the AI-generated dynamic disassembly video of "Mortise and Tenon Construction of Classical Chinese Architecture" to visual learners to help them understand complex concepts more intuitively （Caulfield, 2023). Generate the bilingual radio drama of "Chuang Tzu's Theory of Qi-Shih" for auditory learners to enhance their auditory perception and understanding of the text. At the same time, Gradescope can automatically generate learning profiles to record the development

trajectory of students in the three dimensions of "multimodal interpretation - cultural interpretation - the creative expression", providing students with a clear learning growth path. This integrated design of "teaching and assessment" not only promotes the continuous improvement of students' learning ability but also meets the requirements of the learning ability goals in the new curriculum standards, providing strong support for the overall development of students. Through this process, teachers can make real-time adjustments to their teaching strategies to ensure that each student can realize his or her full potential under the appropriate learning mode and promote his or her all-round development.

In high school English multimodal discourse teaching, the use of generative AI tools to create more interactive and vivid teaching content is essential to help students grasp complex concepts and interdisciplinary knowledge. The following table summarizes the teaching framework and corresponding AI tools for the unit "Man and Nature", aiming to integrate AI technologies (e.g., ChatGPT, DALL-E, etc.) to generate multimodal text, image, and video resources, to promote students' understanding of environmental issues and the relationship between human beings and nature, and to cultivate their awareness of respecting nature and rationally exploiting nature. Awareness of respecting nature and rationally exploiting it. As shown in Table 2.

Table2. Analysis of Current Issues in High School English Discourse Teaching and Challenges in Effective Implementation

Section	Content
Theme	Man and Nature: Exploring harmonious coexistence
Unit Focus	Environmental issues, human adaptation to nature, cultural perspectives
Teaching Content	Venice, Longji Terraces, Inuit lifestyle, British gardens, fruit and herbal teas
Objective	To understand the connection between human life and nature, and foster respect for nature
Tools Used	ChatGPT, DALL-E, Synthesia, Canva Magic Design
Example	The Blue Planet unit: Generating text, images, and videos using AI tools
Outcome	The Blue Planet unit: Generating text, images, and videos using AI tools

5. Limitations of multimodal discourse teaching in high school English with generative artificial intelligence

Although the use of GAI technology in teaching multimodal discourse in high school English is promising, it faces some obvious limitations. (1) Research has shown that the technical complexity of GAI tools can be a barrier for teachers with limited technical skills and may limit the widespread use of these tools in educational settings (Danesi, 2024). (2) Over-reliance on GAI

technologies may diminish students' self-directed learning skills and critical thinking; the goal of education should be to stimulate students' critical awareness, not to make them passive recipients of knowledge. (3) GAI technologies face challenges of algorithmic bias and data privacy; AI-generated content may be culturally biased or logically flawed, which requires teachers and students to be able to critically assess it, and ensuring data security and compliance requires the combined efforts of technology developers, educators, and policymakers. This emphasizes the need for educators and students to have critical assessment skills when using AI-generated materials (Mayer, 2021; Taulli, 2023).

6. Conclusion

The multimodal discourse teaching of high school English based on generative artificial intelligence offers a new approach for educational reform. Through the organic integration of technology, it can effectively break through the inherent limitations of traditional teaching, fostering multi-dimensional understanding and deep learning among students, and at the same time cultivate their critical thinking, intercultural communication skills, and digital literacy. Although there are some challenges in implementing this innovative teaching model, its potential enable personalized education to improve teaching efficiency, motivate students, and realize personalized education should not be underestimated. Looking ahead, with the continuous progress and improvement of AI technology, generative AI will certainly play a more critical role in the field of education, and help English language teaching to move forward in a more open, diversified, and innovative direction.

Institutional Review Board Statement:

Not applicable.

Informed Consent Statement:

Not applicable.

Data Availability Statement:

Not applicable.

Conflict of Interest:

The authors declare no conflict of interest.

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Research Strategies and Practices of AI-Driven Secondary School English Teaching

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Abstract

This study provides an in-depth analysis of the traditional challenges faced in secondary English education, including stereotypical teaching styles, lack of personalized education, lack of resources for teaching and research, and constraints on teachers' professional growth. This paper proposes that the incorporation of Artificial Intelligence (AI) technology provides novel solutions to address these challenges. It enhances the interactivity and practicality of language learning through an intelligent context simulation system, customizes personalized learning paths using big data analysis, optimizes the allocation of teaching resources with the help of intelligent literature retrieval and analysis tools, and promotes teachers' professional development through a teacher skills assessment and feedback mechanism. Looking ahead, the deep application of AI in education will bring more efficient, personalized and intelligent changes to secondary school English teaching.

Keywords: Artificial Intelligence(AI); Secondary English Teaching; VR Virtual Technology; Personalized Recommendation

1. Introduction

In recent decades, the Chinese government has emphasized the strategic role of English in national education policy (Ng et al, 2024). As early as 2001, in *the National English Curriculum Standards for Compulsory Education*, English was introduced as a compulsory subject from the third grade of elementary school, and in some regions, it was taught on a trial basis from the first grade. Subsequently, *the Outline of China's National Medium- and Long-Term Education Reform and Development Plan (2010-2020)* further reinforced the importance of English in developing

international competence and enhancing national soft power. These policies reflect broader efforts to align domestic education with global standards and prepare students to participate in an increasingly interconnected world, and English, as one of the three core subjects, scores a maximum of 150 points, alongside language and mathematics, and accounts for a significant portion of the total score. Its weight in the overall assessment structure makes it a decisive factor in determining a student's eligibility for admission to a prestigious university. Performance on the English section of the GCE not only affects individual educational trajectories but also reflects broader systemic priorities in language education. The prominence of English in this high-stakes test underscores its perceived value in the national strategy for talent development and reinforces its position as a core academic competency in China's secondary education system.

Nowadays, in the field of secondary school English teaching research, there are many problems that need to be solved urgently.1) At the level of teaching methods, the traditional teaching mode accounts for a large part of the teaching, and Students are mostly in a state of passive knowledge acceptance, with low classroom interactivity and participation. Surveys indicate that students' interest in English learning increases slowly under this mode. 2) Lack of personalized teaching, which is not able to adapt to the different levels and styles of students' learning. It is difficult to meet the needs of students with weak fundamentals and those who have the ability to learn. 3) In terms of teaching and research resources, it is difficult to collect data related to students' behavior in class, and it is difficult to obtain comprehensive and accurate data due to the limitations of school curricula and the degree of students' cooperation, etc. The integration of these resources is extremely limited, and the resources, such as teaching materials, lesson plans, and test banks, are scattered and they lack of a unified system. 4) In terms of teachers' professional development, the training content is often disconnected from the actual, too theoretical and not enough practical application guidance; and teachers lack continuous feedback in addition to regular assessment, and the daily teaching details of the feedback is scarce, It is difficult to adjust the strategy in a timely manner.

In recent years, Artificial Intelligence (AI) technology has made remarkable progress. Breakthroughs have been realized in the fields of natural language processing, computer vision, machine learning, and deep learning (Aihaiti, 2015). Nowadays, the application scope of AI is extremely wide, covering many industries such as automatic driving, intelligent education, medical diagnosis, financial analysis and intelligent customer service, which greatly improves the production efficiency and creates a series of new innovative models. In the field of education, AI is mainly applied to intelligent learning platforms, personalized education programs and automated scoring systems. Through these technical means, the teaching content can be customized for students based on their learning reality, thus effectively improving the efficiency of learning.

This paper will mainly introduce some dilemmas and challenges faced by the traditional English education industry, and combine AI with some innovations for the implementation of these challenges. The objectives of this study are threefold: (1) to analyze the key dilemmas in traditional secondary school English teaching; (2) to establish the necessity of AI integration through theoretical and practical lenses; (3) to propose AI-enabled implementation pathways

addressing each challenge. The paper is organized as follows: Section 2 examines traditional teaching dilemmas; Section 3 explores the role of AI in education; Section 4 presents AI-enabled solutions; Section 5 discusses future implications; and Section 6 concludes the study.

2. The Dilemma of Traditional English Teaching in Secondary Schools

The dilemmas faced by traditional secondary school English teaching can be summarized into four key areas: teaching methods, lack of personalized instruction, insufficient teaching and research resources, and inadequate teacher professional development.

2.1. English teaching methods

The current secondary school English teaching research is still relatively obvious traditional path dependence, the teacher-centered traditional teaching paradigm continues to dominate (Schulte et al, 2022). The unidirectional knowledge transfer structure formed under this paradigm makes the roles of teachers and students show solidified characteristics: teachers act as the authority of knowledge to implement indoctrination teaching, while students are in a passive position of receiving knowledge for a long time. Taking grammar teaching as an example, teachers usually adopt the teaching method of breaking down grammar rules and demonstrating typical examples, and learners mostly stay at the level of mechanical memorization, lacking the independent inquiry and practical internalization of grammar rules. It is worth paying attention to the fact that this teaching mode has obvious limitations in stimulating learning motivation, and students' willingness to participate in the classroom is generally low, which makes it difficult to form effective teacher-student teaching interactions.

2.2. Lack of Personalized Teaching

Students have different levels, learning styles, and progress rates in English, yet the current teaching methods are difficult to meet the individual needs of each student. For students with a weak foundation, the uniform teaching schedule in class often makes it difficult for them to keep up with the pace, and they may become more and more confused and frustrated in the learning process, gradually losing their confidence and interest in learning English. For students with strong learning ability, the uniform teaching content will make them feel too simple and unable to satisfy their strong desire for knowledge, which in the long run may lead to their slacking off in English learning and limit the further improvement of their English literacy. This teaching situation needs to be improved in order to better take into account the learning needs of different students.

2.3. Teaching Research Resources

Secondary English teaching research faces significant challenges in data collection and resource integration, which directly affects the scientific assessment of teaching strategies and the advancement of research. In terms of the assessment of the effectiveness of teaching strategies, research needs to be supported by a large amount of data. However, in the actual teaching environment of secondary school English, it is not easy to collect comprehensive and accurate data. For example, in order to grasp the changes in students' learning attitudes under different

teaching methods, long-term tracking records are needed, which are constrained by a variety of factors such as school curricula and students' willingness to cooperate. The integration of resources is also limited. Teaching research involves a variety of resources such as textbooks, lesson plans, test banks, multimedia materials, and so on, but these resources are usually dispersed on different platforms or by individual teachers. It is difficult for researchers to effectively integrate these resources to build a complete teaching resource system, which is extremely unfavorable to the in-depth expansion of teaching research.

2.4. Teacher professional development

There is a disconnect between the content of teacher training and actual needs. The content of the professional training that teachers participate in often does not match the urgent needs in real teaching situations (Duraes et al, 2024). For example, some training focuses too much on instilling theoretical knowledge, but neglect how to apply these theories in real classroom situations to deal with practical problems, such as how to deal with students' nervousness in speaking classes, etc. There is a lack of continuous feedback and guidance. Teachers need to be aware of the effectiveness of their teaching and the problems they have in the teaching process. However, there is no effective mechanism to provide continuous feedback. In addition to regular teaching evaluations, there are few ways to provide feedback on the details of teachers' daily teaching, which makes it difficult for teachers to adjust their teaching strategies quickly. As shown in Table1.

Table1. Classification table of English teaching dilemmas in secondary schools

Classification	Issues	Specific manifestations/examples
English Teaching Methodology	Path dependency and one-way knowledge transfer dominate.	Teachers' indoctrination, students' passive acceptance; mechanical grammar teaching, lack of practical internalization; low classroom participation, insufficient interaction.
Lack of individualized instruction	Uniform instruction does not meet the differentiated needs of students	Weak students can't keep up with the progress, leading to frustration; more capable students lose motivation due to the simplicity of the content, limiting the improvement of their English literacy.
Teaching and Research Resources	Difficulty in data collection and insufficient integration of resources	Long-term tracking data is limited by curriculum/fit; resources such as textbooks/lesson plans/test questions are scattered, making it difficult to build a complete system
Teacher professional development	Disconnect between training content and actual needs and lack of continuous feedback mechanisms	Training emphasizes theory over practice (e.g., lack of guidance on emotional management in speaking classes); lack of detailed feedback on daily teaching, making it difficult to adjust strategies in a timely manner

3. The necessity of AI-enabled English teaching in secondary schools

In today's digital era, the field of education is undergoing profound changes, and English teaching has also ushered in new opportunities and challenges. The integration of Artificial Intelligence (AI) technology has injected new vitality into English language teaching in secondary schools, bringing significant improvements in various aspects such as teaching efficiency, personalized learning, and intelligent assessment feedback (Sabic et al, 2024).

3.1. Digital transformation of English education

With the rapid progress of science and technology, the application of artificial intelligence (AI) in the field of education is becoming more and more widespread, especially in English teaching, and its advantages are gradually emerging. Currently, students' demand for digital learning methods is increasing, and AI-assisted English teaching caters to this trend of demand. AI can not only significantly improve teaching efficiency, but also provide customized learning solutions according to the individual needs of each student, thus effectively improving the overall quality and effectiveness of English teaching. In addition, AI technology provides rich and diverse learning materials and real cases for English teaching at secondary school level by integrating global high-quality educational resources, enabling students to start their learning journey at any time and any place, and greatly mobilizing their interest and initiative in learning.

3.2. Improving teaching efficiency and quality

AI technology plays an important role in teaching efficiency. In the past, teachers needed to spend a lot of time on repetitive tasks such as homework correction and grade statistics, but now these tasks can be done automatically by AI, which frees teachers from the heavy workload and allows them to devote more energy to personalized teaching. At the same time, AI systems can monitor students' progress and performance in real time, providing teachers with comprehensive and accurate feedback and suggestions. This enables teachers to adjust their teaching strategies according to students' specific conditions and guide students' learning more effectively, thus realizing the double improvement of teaching efficiency and quality (Fissore et al, 2025).

3.3. Help students personalized learning

Personalized learning is an important concept in modern education, and AI technology provides strong support for it. Each student has differences in English level, learning habits, needs, abilities and interests, etc., and the traditional unified teaching mode is difficult to meet the needs of all students. AI technology, through in-depth analysis of students' learning data, can customizes a personalized learning plan for each student, and provides matching learning resources and teaching programs. For example, the Intelligent Recommendation System can accurately recommend suitable courses and exercises according to the students' learning level; Intelligent Speech Recognition technology realizes voice interactive teaching with students, which enhances students' learning interest and participation. This personalized learning mode fully mobilizes students' learning enthusiasm and helps to improve the learning effect. Personalized learning aligns with Vygotsky's Zone of Proximal Development (ZPD) theory, which emphasizes scaffolding instruction to match learners' current abilities (Vygotsky, 1978). AI-enabled learning path planning engines operationalize ZPD by dynamically adjusting content difficulty based on

real-time performance data, enabling students to progress from guided practice to independent mastery.

3.4. Innovative Teaching Assessment and Feedback

Intelligent assessment and feedback is also a highlight of AI technology in English teaching (Shi, 2024). Under the innovative teaching mode, AI breaks the limitations of traditional English teaching and realizes personalized, interactive and intelligent teaching. Through intelligent voice recognition technology, interactive teaching such as human-machine dialogues and speaking practice becomes possible; personalized learning recommendation system provides students with customized learning paths and resources; and automated assessment system provides real-time feedback on students' learning progress and results, and provides teachers with accurate teaching guidance.The AI system is able to intelligently assess and provide feedback on students' assignments and performance. With the help of natural language processing and machine learning technology, the AI system can quickly and accurately assess students' ability to express themselves in writing and speaking, and give specific suggestions for improvement and directions for practice. This immediate feedback mechanism helps students identify and correct errors in a timely manner, further improving learning.

4. AI-enabled Secondary English Teaching Implementation Pathway

AI technology provides us with a brand new solution path to the above mentioned dilemmas in traditional English teaching, personalized learning, teaching research resources and teachers' professional development. In the following, we will illustrate the solutions from four dimensions of AI technology: Intelligent Context Creation System, Learning Path Planning Engine, Intelligent Literature Retrieval and Analysis System, and Teacher Skill Assessment and Feedback System.

4.1. Teaching Methodology - Intelligent Context Creation System

To address the problem of limited English teaching methods in traditional secondary school English teaching, we can combine the Intelligent Context Creation System in AI technology to make up for the limited problems in teaching methods. Intelligent Context Creation System refers to the use of AI's image recognition, speech synthesis and scene simulation technology to build realistic English communication situations. By creating virtual scenes, such as asking for directions on foreign streets and ordering food in restaurants, students are immersed in the application of English in real life (Sperling et al, 2024). For example, in the middle school speaking class, the teacher uses the Intelligent Context Creation System to create a foreign airport scene, and the projection sound equipment shows the busy scene and broadcasting voice. Students are immersed in the scene, asking for boarding gates and checking baggage in English, actively participating in the communication, improving their speaking skills and enhancing their understanding of the practical application of English. Constructivist learning theory posits that knowledge is built through interaction with authentic contexts (Bruner, 1966). The Intelligent Context Creation System leverages this principle by simulating real-world scenarios (e.g., airport

check-ins), allowing students to actively construct language skills through immersive practice rather than passive memorization.

4.2. Personalized Learning - Learning Path Planning Engine Based on Big Data Analysis

Traditional large classroom teaching can not take care of the learning needs of all students. We can use AI technology based on big data analysis of the Learning Path Planning Engine. It refers to the teaching that can use big data to analyze students' learning data, including learning progress, knowledge mastery, correct answer rate, etc., to tailor a personalized learning path for each student. By mining the learning characteristics and needs of students, targeted learning resources and practice topics are provided. For example, for students who are weak in grammar learning, the platform will recommend a series of grammar explaining videos and special exercises suitable for their level to help students gradually consolidate their grammar knowledge and improve their learning performance.

4.3. Teaching Research Resources-Intelligent Search and Analysis System for Educational Literature

For the collection and integration difficulties in teaching research resources, we can use the Intelligent Search and Analysis System for Educational Literature in AI technology. It refers to the intelligent retrieval and analysis of a large amount of educational literature with the help of natural language processing and machine learning algorithms. It can quickly screen the quality literature of secondary school English teaching and extract the summarized content to provide useful reference for educational researchers. For example, in order to explore the cutting-edge results of secondary school English reading teaching, English teachers, with the help of the literature intelligent retrieval and analysis system, input keywords to screen out thousands of related literature. The system carries out in-depth analysis and organization, refines the key information, and helps teachers to quickly grasp the information in a visual way, saving time and facilitating in-depth research (Lin et al, 2024).

4.4. Teachers' Professional Development-Teachers' Teaching Skills Intelligent Evaluation and Feedback System

To address the problem of the disconnect between teachers' teaching training and actual needs, we can make use of the Teacher Teaching Skills Intelligent Evaluation and Feedback System in AI technology. It refers to the use of video analysis and AI algorithms to monitor and analyze teachers' classroom teaching behavior in real time, identifying non-verbal factors such as teaching movements, expressions, language expressions and other non-verbal factors as well as verbal factors such as the organization of teaching content and the use of methods, and providing teachers with a comprehensive assessment and feedback of their teaching skills (Rajabi et al, 2024). For example, when teachers in the school participate in a teaching skills competition, the intelligent assessment system records and analyzes their classroom performance throughout the whole process. The system accurately captures details such as teachers' body language and eye contact, and analyzes the teaching content in depth. After the competition, the system generates a detailed report, which not only identifies teachers' strengths and weaknesses, but also makes

specific suggestions for improvement. Teachers' teaching effectiveness is significantly improved after targeted training based on the report. As shown in Table2.

Table2. AI empowers English teaching in secondary schools Forms

AI technology	Issues	core technology	application scenario	typical example
Intelligent Context Creation System	Limitations of traditional teaching methods and lack of authentic language contexts	Image recognition, speech synthesis, scene simulation technology	Constructing realistic English communication situations to enhance practical application skills	Middle school English class practices airport role-play, with students asking about boarding gates and luggage check-in in English.
Learning Path Planning Engine	Large classrooms struggle to meet students' individual learning needs	Big Data Analysis, Learning Data Mining	Customized personalized learning paths with targeted resources	For grammar-weak students, we suggest targeted videos and exercises to enhance understanding and performance.
Intelligent Search System for Educational Literature	Inefficient collection and integration of research literature on teaching and learning	Natural language processing, machine learning algorithms	Efficiently screen and analyze educational literature to assist in teaching research	After teachers enter keywords, the system distills key information from thousands of documents and presents the results in a visual way.
Teacher Skills Assessment Feedback System	Disconnect between teaching and training and actual needs, inefficient skills upgrading	Video analysis, Artificial Intelligence algorithms	Real-time assessment of teaching behaviors and precise recommendations for improvement	Record teachers' classroom performance, analyze body language, content organization, etc., generate reports and guide targeted training.

4.5. Case and Analysis

Beijing XX Key High School introduced an AI-based VR intelligent context simulation system, aiming to solve the problems of low oral participation and lack of real context in the traditional English classroom. The system has built-in several life scenarios, such as airport check-in and restaurant ordering, to improve students' English skills through dynamic dialog and voice interaction. One VR speaking class is arranged every week, students practice in groups, and teachers use the system's data analysis to design targeted exercises. The results are remarkable: after one semester, the average score of the students' speaking test increased by 23%, and their fluency improved by 35%. 85% of the students thought the VR class was more interesting, and

the participation rate increased from 40% to 78%. On the teacher's side, AI auto-correction saves 30% of time and precise intervention reduces the error rate. Schools utilize a global library of teaching resources to enrich the curriculum. However, issues such as high technology costs, time-consuming training, and data security still need to be addressed. The case demonstrates the practical value of the intelligent contextual simulation system, which can be used in the future to reduce costs through school-enterprise cooperation, establish a teacher-AI collaborative teaching model, and further balance technological empowerment and humanistic care.

5. Discussion and outlook

Traditional secondary school English teaching mostly adopts the mode of "teacher speaking, student memorizing", which is single and boring, difficult to stimulate students' enthusiasm, and the learning effect is not good. The content of the textbook is often out of touch with students' lives, which adds to the problem. Fortunately, the introduction of AI technology has brought innovative opportunities for secondary school English teaching. Intelligent systems can customize the content according to students' progress and personality, and integrate multimedia, games, virtual scenes and other diversified means to make learning interesting and interactive, and stimulate initiative and desire for exploration. In the future, AI will more deeply simulate human teachers' strategies, dynamically adjust the teaching plan to adapt to different students' styles and needs, realize customized teaching, and improve learning efficiency and quality.

In the traditional English classroom model in secondary schools, it is often difficult for teachers to take full account of the individual differences of each student, so that individualized learning needs are often not fully met. This makes it difficult for some students to get timely and effective help when they encounter learning problems, while others may become bored because of the fast pace of learning. However, the application of AI technology has brought a new light to this problem. By collecting and analyzing students' learning data, AI is able to carefully construct a personalized learning profile for each student. Based on these in-depth data insights, AI can accurately provide learning advice and tutoring based on students' specific needs. For example, when a student encounters an obstacle to understanding a certain knowledge point, AI will intelligently push relevant explanatory materials, practice questions or video tutorials to help the student overcome the difficulty. At the same time, AI can also flexibly adjust the difficulty of homework as well as the content of exams based on students' learning levels and abilities, ensuring that every student can continue to make progress at a level of challenge that matches his or her abilities. Looking to the future, with the continuous development and improvement of AI technology, personalized teaching will become more accurate and in-depth, truly promoting the overall development and individual growth of each student.

Traditional secondary school English teaching and research resources are limited, teachers' preparation and research time-consuming and laborious collection and collation of materials, and resources are slow to update, difficult to meet the development of the times and students' needs. AI technology can integrate global high-quality resources, and through the intelligent search and recommendation system to help teachers quickly access the required materials to improve the

efficiency of lesson preparation. At the same time, AI can also analyze and mine teaching data to provide teachers with research references and optimize teaching strategies. Looking to the future, AI is expected to build a globalized resource sharing platform, promote teachers' exchanges, and promote the development of secondary school English teaching research.

In traditional secondary school English teaching, teachers' professional development is limited. Lack of training opportunities and heavy teaching loads often leave teachers with no time to improve their teaching skills and literacy, which affects the quality of teaching.AI technology provides personalized support for teachers, with online courses and teaching communities that help them learn and communicate at any time; it also analyzes teaching problems and gives them advice. It prompts teachers to learn new methods and improve their digital literacy and innovation. In the future, AI will be an important partner in teachers' professional development, providing precise training and helping them grow into excellent educators.

While AI offers transformative potential, its integration into secondary English education faces practical challenges. First, data privacy concerns arise from the collection and analysis of students' learning data. Schools must ensure compliance with regulations (e.g., GDPR, COPPA) to protect sensitive information. Second, the digital divide may exacerbate educational inequities, as under-resourced schools lack infrastructure to adopt advanced AI tools. Third, teacher resistance to technology-driven pedagogy requires addressing through phased training programs and evidence-based demonstrations of AI's efficacy. Finally, over-reliance on AI risks diminishing human-centric aspects of teaching, such as emotional support and creative collaboration. A balanced approach that harmonizes AI capabilities with teacher expertise is essential.

6. Conclusion

Artificial Intelligence (AI) technology has brought new life to the field of secondary school English education, and its positive effects are evident to all, from innovating teaching methods to realizing personalized teaching, to optimizing the allocation of teaching resources and improving the professional level of teachers. With the continuous development and wide application of this technology, it is expected that AI will play an even more central role in the future, not only efficiently solving current problems, but also opening up new teaching and learning paths, laying a solid foundation for cultivating talents with an international outlook and competitiveness. Therefore, actively embracing and making full use of AI technology and continuously tapping its potential in the field of education are the key measures to promote the quality of secondary school English teaching and the modernization of education.

Author Contributions:

Conceptualization, M. L. and R. D.; methodology, M. L. and R. D.; software, M. L. and R. D.; validation, M. L. and R. D.; formal analysis, M. L. and R. D.; investigation, M. L. and R. D.; resources, M. L. and R. D.; data curation, M. L. and R. D.; writing—original draft preparation, M. L. and R. D.; writing—review and editing, M. L. and R. D.; visualization, M. L. and R. D.;

supervision, M. L. and R. D.; project administration, M. L. and R. D.; funding acquisition, M. L. and R. D. All authors have read and agreed to the published version of the manuscript.

Institutional Review Board Statement:

Not applicable.

Informed Consent Statement:

Not applicable.

Data Availability Statement:

Not applicable.

Conflict of Interest:

The authors declare no conflict of interest.

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Factory Pollutant Discharge Data Flow Prediction Based On LSTM-Transformer

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Abstract

Aiming at the problems of complex feature extraction and insufficient ability to capture time series dependencies in the prediction of factory pollutant discharge data, this study proposes a hybrid deep learning model that integrates a Long Short-Term Memory (LSTM) network with a Transformer. Multi-dimensional time series data on factory pollutant discharge (such as hourly flow rate, pH value, ammonia nitrogen concentration, etc.) are collected via Internet of Things (IoT) devices. After standardization, local temporal features are extracted using the LSTM network, while global dependency relationships are captured through the Transformer's multi-head self-attention mechanism. Experiments are conducted on a public dataset, using root mean square error (RMSE), mean absolute error (MAE), and the coefficient of determination (R^2) as evaluation metrics to compare the traditional LSTM with the Transformer model. The results show that the LSTM−Transformer model achieves the best performance in predicting six types of pollutant discharge data (with RMSE reduced by 6.3%−12.1% and R^2 improved by 2.5%−5.2%), demonstrating its effectiveness in accurately capturing both long-term and short-term dependencies and providing robust support for real-time pollutant discharge early warning in smart factories.

Keywords: LSTM; Transformer; Factory Sewage Discharge

1. Introduction

The rapid economic development and continuous industrialization and urbanization in China have made the issue of water pollution increasingly prominent, severely restricting the country's high-quality economic and social development. On April 16, 2015, the State Council officially released the action guidelines for water pollution prevention and control called the Water

Pollution Prevention Action Plan , which points out that "comprehensive control of pollutant emissions and strict management of industrial pollution prevention" is necessary, indicating that water pollution mainly originates from industrial discharges. How to comprehensively control water pollution is an urgent problem that needs to be addressed.

In recent years, with the rapid development of technology, the application of Internet of Things(IoT) (Stefano, P., Giacomo, P., & Alessandro, P. 2021) technology has become increasingly widespread. By placing IoT devices at factory wastewater discharge points, vast amounts of data have been integrated into the internet via sensors. To mine valuable insights from the acquired data, researchers employ various data analysis techniques to process the numerous metrics produced by wastewater treatment facilities. With the advancements in artificial intelligence, some professionals have chosen to apply machine learning knowledge to wastewater treatment early warning systems. However, traditional machine learning algorithms have their limitations. They often rely heavily on the representation of data features (Joseph, G., Moyez, D., Paulo, N., & others. 2014), which are usually selected manually based on experience. This method complicates the extraction of important features and presents challenges since empirical selections do not always provide reliable guidance. This experience-based method of feature selection not only increases the difficulty of feature extraction but also limits the accuracy and generalizability of the models.

In this context, considering the application of deep learning to wastewater data analysis may be viable. Applying deep learning techniques to wastewater treatment is an emerging research direction, involving the collection, analysis, and processing of information such as temperature adjustments and emission standard settings. This requires an integration of knowledge from mathematics, computational science, and environmental engineering to interpret and analyze the implications of the data and its practical applications. By employing an interdisciplinary approach researchers can achieve a more accurate interpretation of data, optimize the wastewater treatment process, and ensure compliance with environmental requirements. The advantage of deep learning lies in its ability to automatically learn and identify complex patterns in data without relying on empirical feature selection. As a result, deep learning has found widespread applications in various fields such as image processing (David, D., & others. 2016)., speech recognition (LiMin, Z., & others. 2023), machine translation (Yuan, F., & Peng, Y. (2025)., and natural language processing (Baosong, Y., & others. 2021).. Additionally, deep learning has an important application scenario in smart factories, which encompass areas such as wastewater treatment warnings and intelligent equipment management. Smart factories aim to autonomously extract valuable information from vast amounts of data without human intervention, thereby enhancing the accuracy and efficiency of the system.

2. Related Work

In the field of wastewater treatment, numerous challenges remain. Many researchers have conducted considerable work related to this area. For instance, Liu Hui et al. proposed a sewage treatment method based on image processing technology.Through machine learning and artificial

intelligence algorithms, the data are deeply analyzed to improve the intelligent level of sewage treatment (Hui, L., & Linguo, L. (2018). Maryam Mahjouri et al. proposed a decision support tool that combined fuzzy Delphi method with fuzzy Analytic Hierarchy Process (FAHP) to efficiently deal with complex decision problems, and verified the objectivity and practicability of the model integration. The study aims to identify key evaluation criteria and indicators for the selection of industrial wastewater treatment technologies from the perspective of sustainable development, based on expert opinions and questionnaires, and to conduct a practical evaluation using the Iranian steel industry as a case study. The research results provide reference for steel industry in selecting the best wastewater treatment technology (Mahjouri, M., & others. 2017). Taking coal chemical wastewater treatment as the research object, He Miao established a microwave-assisted numerical simulation algorithm for coal chemical wastewater treatment based on JAVA language, and compared the test results with the numerical simulation results to verify the effectiveness of the proposed numerical calculation method, and analyzed the influence of different pH values and H2O2 dosage on coal chemical wastewater treatment through numerical simulation (Miao, H. 2018). There is still room for improvement in warning accuracy and efficiency. Currently, numerous successful cases demonstrate the application of artificial intelligence to practical problems, such as subway passenger flow prediction and air pollution prediction. However, the use of artificial intelligence in wastewater treatment remains relatively limited. Therefore, it is worth considering combining artificial intelligence with wastewater treatment. Some researchers have also applied machine learning algorithms to wastewater treatment warnings. Hilal Anwer Mustafa et al. proposed a fusion model combining B-KNN and Extreme Learning Machine (ELM) algorithm, which showed the highest prediction accuracy of 93.56% in water quality classification. (Gao, Y., & Wang, J. 2025). Liu Ze Jun et al. established a prediction model of effluent chemical oxygen demand (COD) of anaerobic wastewater treatment system by using least squares support vector machine (LS-SVM), which provided a meaningful reference for improving the monitoring level of anaerobic wastewater treatment process (Ze-Jun, L., & others. 2019). Both of these studies employed machine learning methods for predictions, but they focused on time series data. As time series data, certain deep learning models often perform better than machine learning models. Given these issues, this paper analyzes and predicts factory wastewater discharge data using an improved LSTM model based on the acquired dataset.

3. Model Introduction

3.1. LSTM

Traditional Recurrent Neural Networks (RNN) often encounter difficulties when processing long sequential data, with the most typical problems being gradient vanishing and explosion. To address this, researchers designed a special type of RNN, known as Long Short-Term Memory (LSTM). LSTM can effectively capture long-term dependencies within data. Through the introduction of special memory cells and gating mechanisms, LSTM can learn and retain information over long time intervals more accurately. This capability is vital for tasks such as sequence prediction and other time series analyses. LSTM was proposed by Hochreiter and

Schmidhuber in 1997 and has found extensive application in speech recognition, machine translation, time series forecasting, and more.

The core idea of LSTM introduces "cell state," which serves as a continuous line of state allowing information to flow nearly losslessly. To control how information flows into or out of the cell state, LSTM has developed a set of gating mechanisms: the input gate, forget gate, and output gate. Each gate functions as a Sigmoid layer to determine how much information passes through. The basic structure of LSTM consists of the forget gate, input gate, and output gate (see Figure 1). With these gating structures, LSTM can selectively retain or discard information from the previous time step and pass relevant information to subsequent steps. This way, LSTM can effectively manage the flow of information, deciding what should be stored for the long term, what should be updated, or what should be ignored, thereby optimizing the handling of long sequential data.
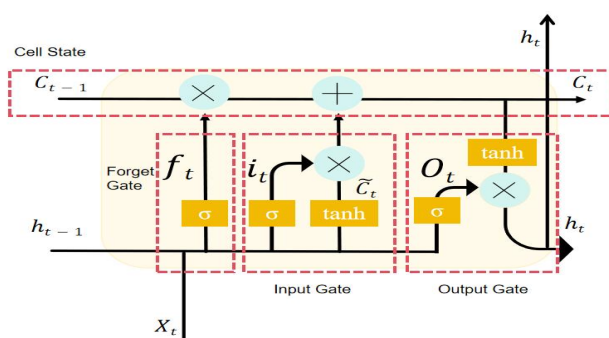

Figure 1. LSTM cell structure

3.2. Transformer

The Transformer model represents a significant breakthrough in deep learning. It discards traditional recursive neural networks (RNN) and convolutional neural networks (CNN) in favor of a self-attention-based architecture, greatly enhancing parallelization and the ability to handle long-range dependencies (Yuan, F., & Wang, Y. (2025). The Transformer model consists of an input part, an encoder-decoder structure, and an output part, with the encoder-decoder being the most critical section. The encoding part processes the input sequence and generates a context-aware representation. Each encoder consists of multiple identical layers stacked, with each layer containing two sublayers: a Multi-Head Self-Attention mechanism and a Feed-Forward Neural Network.
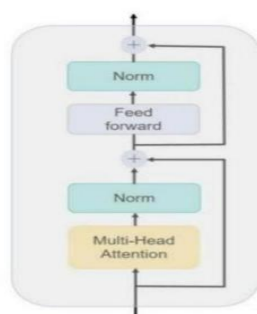

Figure 2. Encoder module structure

The Multi-Head Attention mechanism aggregates information by mapping the given query matrix $Q \in R^{d_q}$, key matrix $K \in R^{d_k}$, and value matrix $V \in R^{d_v}$ to the output.

$$\text{Attention}(Q, K, V) = \text{softmax}\left(\frac{QK^T}{\sqrt{d_k}}\right)V$$

When the query matrix Q, key matrix K, and value matrix V are equal, we refer to this as the attention mechanism. The Multi-Head Attention mechanism aggregates information by applying different linear transformations to map the queries, keys, and values into multiple independent subspaces. Each "head" learns specific representations within its own subspace, capturing different types of associations. Subsequently, these transformed queries, keys, and values are concatenated and integrated through an additional learnable linear transformation to produce the final output.

$$z_i = \text{Attention}\left(QW_i^Q, KW_i^K, VW_i^V\right)$$

$$Z = \text{Concat}\left(z_1, z_2, \ldots z_i\right)W^O$$

where $W_i^Q \in R^{p_q \times d_q}, W_i^K \in R^{p_k \times d_k}, W_i^V \in R^{p_v \times d_v}$ are the parameter matrices of query, key and value linear transformations respectively; z_i represents the I-th attention head; ; Concat(.) represents an aggregation function for each attention head; $W^O \in R^{p_o \times kp_v}$ is the parameter matrix of the final linear transformation of the multi-head attention mechanism.

3.3. LSTM-Transformer mode

For traditional Transformer models, due to architectural characteristics, it is often challenging to capture temporal dependencies. As a result, data typically undergoes position encoding before being fed into the Encoder layers. To address this issue, this paper presents a hybrid predictive model that combines LSTM and Transformer. For data with significant time series characteristics, such as hourly flow and ammonia nitrogen emissions, an initial processing is carried out using the LSTM network. The LSTM can effectively capture long-term dependencies within time series data. Given that traditional Transformer models struggle to directly capture temporal dependencies in the input data, prior to passing the data to the Encoder layers of the Transformer, a specifically designed position encoding layer is necessary to capture time information within the time series. This step is crucial as it allows the Transformer to understand the temporal sequence in the input data. The data processed by the LSTM is then entered into the Encoder section of the Transformer model, which is composed of several identical layers stacked, each of which includes a Multi-Head Self-Attention mechanism and a Feed-Forward Neural Network. During this process, each "head" learns specific representations within its own subspace, thereby capturing relationships among different types of data, which can be enhanced through the Multi-Head Self-Attention mechanism. Finally, the features obtained after processing through the Transformer

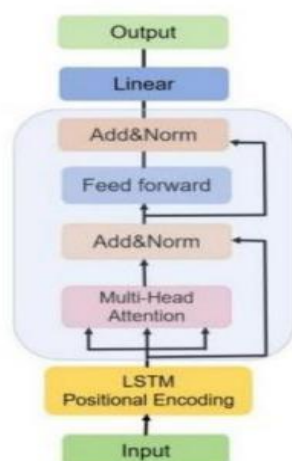Encoder layers are passed to the linear layer to generate the final prediction result (as shown in Figure 3)

Figure 3. Overall structure of the model

4. Experiments and Results Analysise

4.1. Data Description and Presentation

The dataset used in this paper's experiments is a publicly available dataset on factory wastewater discharge provided by the Mathematical Modeling Competition of China University of Petroleum. This paper conducts an in-depth analysis of six different types of data, including hourly flow (time-flow), pH value (PH_value), ammonia nitrogen concentration (NHNI), ammonia nitrogen emissions (NHNIEmissions), chemical oxygen demand concentration (CODC), and chemical oxygen demand emissions (CODCEmissions). Data for hourly flow and pH value within a 24-hour period are selected, and visualization techniques are employed to present the trends of all data in the form of charts (as shown in Figure 4).
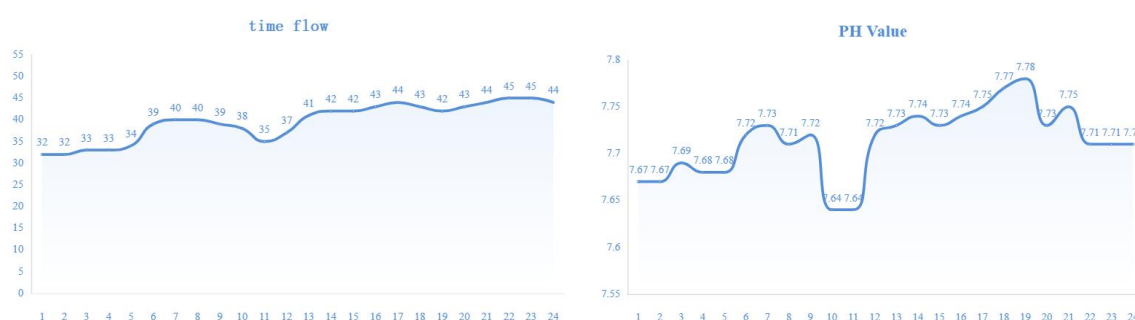

Figure 4. Characteristics of factory pollutant discharge data

4.2. Results Analysis

This paper uses the LSTM-Transformer model to predict various types of data in the dataset, starting with standardization of the data. We select feature columns (hourly flow, pH value, ammonia nitrogen concentration, ammonia nitrogen discharge, chemical oxygen demand

concentration, and chemical oxygen demand discharge) and calculate the mean and standard deviation for each column. Using these two statistics, the data is transformed into a form with zero mean and unit variance. The dataset is then split into training and testing sets in a 7:3 ratio for training and testing purposes.

After completing the above data processing, a deep learning model combining LSTM and Transformer is constructed. This model consists of seven hidden layers and two output layers, utilizing Sigmoid and Tanh activation functions. The Adam optimizer is employed, which is an adaptive learning rate optimization algorithm that dynamically adjusts the learning rate during training to accelerate the model's convergence speed. The model is set for 100 epochs with a batch size of 32, and the testing set is used for model evaluation to assess the model's accuracy on the testing set. The model is used to make predictions on the testing set, and the actual and predicted values are output to a CSV file named contaminate.csv for subsequent calculation of evaluation metrics.

Table 1. Experimental configuration table

Configuration Item	Configuration Name
Operating System	Windows11
Processor	13th I7-13620H
Graphics Card	RTX4060
Internal Memory	16GB
Programming Language	Python 3.12
Development Environment	PyCharm

The relevant hardware and software configurations used in this experiment are shown in Tableabove. The experiment selected Root Mean Squared Error (RMSE), Mean Absolute Error (MAE), and R-squared (R^2) as evaluation metrics. These metrics measure the differences between predicted and actual values and reflect the accuracy of the model to varying degrees. To verify the effectiveness of the proposed LSTM-Transformer combined prediction model, comparative experiments were conducted using both the LSTM-Transformer model and the traditional Transformer model. The experimental results are shown in Table 2.

Table 2 Comparison of Evaluation Metrics for Different Models

Test Index	MAE	RMSE	R^2
Transformer			
time_flow	0.283601	0.362260	0.832510
PH_value	0.265453	0.645592	0.737542
NHNI	0.105380	0.417337	0.694254

CODC	0.088356	0.264517	0.908036
NHNI Emissions	0.183624	0.452822	0.675283
CODC Emissions	0.206502	0.323472	0.865023
LSTM-Transformer			
time_flow	0.254369	0.334975	0.875155
PH_value	0.249030	0.624723	0.765421
NHNI	0.073501	0.391269	0.730892
CODC	0.076008	0.238104	0.920108
NHNI Emissions	0.169790	0.426726	0.696941
CODC Emissions	0.178438	0.292899	0.903018

Based on the comparison of the prediction results of the two models shown in Table 2, it can be seen that the LSTM-Transformer model proposed in this paper has lower errors in predicting six types of data compared to the control group. Therefore, this model has a certain level of reliability.

5. Conclusion

This article focuses on predicting factory wastewater emissions. To more efficiently forecast the flow of factory discharge data, the paper proposes a combined prediction model based on LSTM-Transformer by deeply mining the multidimensional data within the dataset. This model can effectively capture local dynamic characteristics and global contextual dependencies in time series data. By introducing positional encoding and a multi-head attention mechanism, the model enhances the understanding of time series features, supports parallel computing, improves training efficiency, and mitigates the gradient vanishing problem in deep networks. The use of regularization techniques such as dropout ensures the model's generalization ability, allowing it to perform well on unseen data. Experimental results indicate that with appropriate hyperparameter tuning, the LSTM-Transformer model can provide stable prediction performance while maintaining high accuracy, as demonstrated in the prediction of factory wastewater emission data.

In the future, further research can explore integrating external environmental factors to improve prediction robustness. Enhancing model interpretability will be crucial for practical deployment in industrial settings. Additionally, real-time deployment of the LSTM-Transformer model on edge devices presents a promising direction for intelligent wastewater management.

Author Contributions:

Conceptualization, H. Z., F. Y.; methodology, H. Z., F. Y.; software, H. Z., F. Y.; validation, H. Z., F. Y.; formal analysis, H. Z., F. Y.; investigation, H. Z., F. Y.; resources, H. Z., F. Y.; data curation, H. Z., F. Y.; writing—original draft preparation, H. Z., F. Y.; writing—review and editing, H. Z., F. Y.; visualization, H. Z., F. Y.; supervision, H. Z., F. Y.; project administration,

H. Z., F. Y.; funding acquisition, H. Z., F. Y. All authors have read and agreed to the published version of the manuscript.

Institutional Review Board Statement:

Not applicable.

Informed Consent Statement:

Not applicable.

Data Availability Statement:

This dataset comes from the "2024 Asia-Pacific Cup Chinese Competition Mathematical Modeling B (Data Analysis and Prediction of Flood Disasters)".

Conflict of Interest:

The authors declare no conflict of interest.

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