Emotional Recognition and Teaching Optimization in English Language Learning in the Digital Context

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ABSTRACT The rapid iteration of digital technology, the widespread adoption of smart teaching platforms, and the deep implementation of blended online and offline teaching have promoted English language learning to fully enter the digital context. Digital learning has broken the constraints of traditional classroom time and space, reconstructed the supply mode of English learning resources, learning interaction methods, and knowledge acquisition paths. However, it has also given rise to prominent emotional problems such as learning fatigue, anxiety and disinterest, differentiation of engagement, emotional alienation, and weakened learning motivation. Learning emotions, as a core non intellectual factor that affects the efficiency of English language acquisition, learning behavior choices, cognitive processing depth, and academic performance, directly determine learners' learning engagement, classroom participation, self-directed learning sustainability, and language comprehensive ability development.

INDEX TERMS Digital context; English language learning; Learning emotions; Emotion recognition

I. INTRODUCTION

A. RESEARCH BACKGROUND AND SIGNIFICANCE

1) English language learning fully enters a new stage of digital development

WITH the deepening of the education digitization strategy and the Education Informatization 2.0 action plan, smart campuses, online learning platforms, MOOC resources, live classrooms, English learning apps, artificial intelligence training systems, and big data learning analysis platforms have comprehensively covered all levels and types of colleges and universities [1]. English language learning has completely broken free from the limitations of traditional offline classrooms as a single carrier and entered a multi-channel, all-weather, and ubiquitous digital context. The digital context is supported by the Internet, big data, artificial intelligence, and mobile terminals, and has the core characteristics of massive open English resources, online and offline mixed teaching mode, human-computer interactive learning, and distance collaborative learning. It has reshaped the way of acquiring resources, knowledge receiving path, teacher-student interaction mode, and autonomous learning form of English learning [2].

2) Emotional issues in English learning are becoming increasingly prominent in the context of digitalization

From the perspective of group characteristics, some learners in the digital learning environment are addicted to online entertainment, have insufficient learning focus, and are prone to developing fear when facing difficulties such as English vocabulary memory, grammar comprehension, and oral expression; Online learning lacks external constraints, lacks motivation for self-directed learning, and is in a passive coping state for a long time, which breeds learning fatigue; Online interaction is mostly shallow communication through text and symbols, lacking emotional warmth, resulting in a lack of sense of belonging and emotional detachment among learners [3]; At the same time, digital resources are overloaded and learning channels are complex, causing some learners to fall into choice anxiety and chaotic learning pace, further exacerbating the breeding of negative emotions. Positive emotions such as learning interest, sense of achievement, desire for knowledge, enthusiasm for classroom participation, and cross-cultural learning identity also show significant individual differentiation, directly widening the gap between learners' English academic performance and comprehensive abilities [4].

3) Traditional English teaching has serious shortcomings in emotion recognition and guidance

Emotional learning is an important intrinsic driving force for English language acquisition. Positive emotions can promote cognitive investment, strengthen memory encoding, and enhance language output willingness, while negative emotions can inhibit cognitive processing [5], reduce learning investment, and hinder the internalization of language knowledge and the development of communication skills. However, for a long time, there has been a tendency in English teaching in China to focus more on cognition and less on emotions, as well as grades and less on psychology [6].

At the level of emotion recognition, traditional English

teachers rely solely on subjective judgments based on classroom expressions, hand raising status, homework completion status, and final learning attitude [7]. The recognition methods are extensive, the recognition dimensions are narrow, and the lag is extremely strong; Unable to capture the implicit emotional changes of learners during online learning, it is difficult to quantify multidimensional emotional levels such as anxiety, fatigue, interest, and self-efficacy; Manual recognition is easily influenced by teachers' subjective experience, lacking standardized indicators and data support, and the recognition results are vague and general [8]. At the level of emotional intervention, due to the inability to accurately identify the type, intensity, and causes of emotions, teachers' emotional counseling, teaching comfort, and interest stimulation are often superficial and lack targeted and personalized emotional intervention strategies, making it difficult to fundamentally understand negative emotions in English learning in the context of digitalization [9].

B. RESEARCH SIGNIFICANCE

1) Theoretical significance

Firstly, enrich the emotional theoretical system of English learning from the perspective of digital education. Define the core connotations and boundaries of digital context, English learning emotions, and emotion recognition, analyze the types, characteristics, generation mechanisms, and evolutionary laws of English learning emotions in the digital environment, fill the theoretical gap of existing research that focuses on traditional classroom emotions and ignores digital ubiquitous learning emotions, and improve the interdisciplinary research theories of applied linguistics, foreign language teaching psychology, and digital education [10].

Secondly, establish a theoretical framework and indicator system for emotion recognition in digital English learning [11]. Build a standardized emotion recognition index system from multiple dimensions including cognitive emotion, classroom emotion, self-directed learning emotion, interactive emotion, and achievement emotion, clarify the quantitative dimensions, recognition logic, and evaluation criteria of learning emotion, and provide theoretical paradigms and index references for similar language learning emotion recognition research [12].

Thirdly, reveal the intrinsic correlation mechanism between English learning emotions, teaching implementation, and language acquisition. Explore the impact paths of different positive and negative emotions on the learning outcomes of English listening, speaking [13], reading, writing, and translation in various dimensions, establish a theoretical model of "digital context emotion generation emotion recognition acquisition influence teaching optimization", and enrich the application connotation of emotional teaching theory and humanistic teaching theory in digital English education [14].

2) Practical significance

Firstly, provide practical emotion recognition solutions for digital English teaching in universities and primary and secondary schools. [15] The emotion recognition index system, quantitative recognition method, and intelligent recognition logic constructed in this article can be directly applied to smart English classrooms and online blended learning, helping teaching managers and teachers accurately assess the emotional state of classes and individual learners [16].

Secondly, provide precise emotional intervention and differentiated teaching basis for English teachers [17]. Based on the results of emotion recognition, teachers can accurately distinguish learners with anxiety, fatigue, lack of interest, and high engagement, and carry out targeted psychological counseling, interest stimulation, task stratification, and rhythm adjustment, bidding farewell to blind and homogeneous emotional guidance [17].

Thirdly, optimize the digital English teaching design and classroom operation mode. Based on the emotional characteristics of learners, reconstruct the arrangement of English teaching content, classroom interaction forms, online task design, evaluation and incentive methods, avoid teaching links that are prone to negative emotions, and create a warm and humanized digital English classroom that adapts to the emotional characteristics of learners [18].

Fourthly, provide demand support for the development of smart English teaching platforms. Clarify the dimensions of emotional data collection, emotional feature extraction logic, and emotional visualization presentation requirements for English learning, providing a practical basis for adding emotional recognition, emotional warning, and personalized push functions to intelligent English learning apps and smart teaching systems [19].

II. DEFINITION OF RELEVANT THEORETICAL FOUNDATIONS AND CORE CONCEPTS

A. DEFINITION OF CORE CONCEPTS

1) Digital Context

The exponential context in this paper is a new learning environment and ecology, which is supported by mobile Internet, big data, artificial intelligence and intelligent teaching platform, and takes online and offline hybrid teaching, ubiquitous autonomous learning, digital resource sharing, human-computer intelligence interaction as the main form, covering the whole process of English teaching in class, extracurricular autonomous learning, teacher-student interaction, resource acquisition, training and evaluation [20]. It has five characteristics: spatial-temporal ubiquity, massive resources, diverse interactions, behavioral dataization, and personalized learning. Unlike traditional single line offline classroom contexts, it is a composite learning ecosystem that integrates physics classrooms and digital virtual spaces.

2) Emotions in English Language Learning

English language learning emotion refers to the stable psychological experience and emotional state that learners experience during the process of participating in English classroom learning, online self-directed learning, language training, communicative interaction, and assessment exams in a digital context. It can be divided into two categories: positive learning emotion and negative learning emotion. Positive emotions include interest in learning, a sense of

achievement in learning, enthusiasm for classroom participation, cross-cultural identity, self-efficacy in learning, and a desire for knowledge; Negative emotions include English learning anxiety, learning fatigue, fear of difficulty and avoidance, weakened interest, loneliness and alienation, frustration and disinterest in learning, procrastination and negativity, which are core non intellectual factors that affect learning behavior and acquisition outcomes.

3) Learning Emotion Recognition

Learning emotion recognition is a process that relies on standardized questionnaire scales, classroom facial expression features, online learning behavior big data, learning interactive texts, learning trajectory data, and other multisource information. Through indicator quantification, statistical analysis, intelligent algorithm modeling, and other methods, it accurately judges, classifies, and dynamically tracks learners' English learning emotion types, intensity, fluctuation trends, and causes. Characterized by objectivity, multidimensionality, dynamism, precision, and quantifiability, it differs from teachers' subjective fuzzy judgments.

4) Optimization of English Teaching

The teaching optimization referred to in this article is based on the emotional recognition results of English learning in the digital context, targeting the positive emotional cultivation and negative emotional guidance needs of learners. It systematically reconstructs and improves the teaching objectives, teaching content arrangement, teaching organization mode, classroom interaction form, online task design, emotional intervention methods, and teaching evaluation incentive system of traditional digital English teaching, achieving precise adaptation between teaching supply and learners' emotional traits and cognitive needs, promoting the synchronous improvement of emotional health development and English acquisition ability.

B. RESEARCH BASIC THEORY

1) Krashen Emotion Filter Hypothesis

The affective filter hypothesis is a core foundational theory in the study of second language acquisition emotions. This theory suggests that learners' negative emotions such as learning anxiety, inferiority, boredom, and tension can form psychological filtering barriers, hindering the reception, encoding, and internalization of language input; Positive emotions such as relaxation, interest, confidence, and pleasure can lower the emotional filtering threshold, improve language comprehensibility input efficiency, promote interlanguage development, and enhance language proficiency. This theory provides core theoretical support for exploring the mechanisms of negative emotion suppression and positive emotion empowerment in this article.

2) Humanistic Teaching Theory

The humanistic teaching theory emphasizes learner centeredness, values individual emotional needs, psychological experiences, and holistic personality development. It advocates that teaching should not only impart knowledge and skills, but also pay attention to learning emotions, learning motivation, and psychological states, create a tolerant, warm, and respectful teaching atmosphere, reduce learning pressure and anxiety, and stimulate internal learning interest. This article provides a theoretical basis for optimizing classroom atmosphere based on emotional needs, implementing personalized emotional guidance, and constructing a humanized digital English classroom.

3) Constructivist Learning Theory

Constructivism believes that learning is a process in which learners actively construct the meaning of knowledge, and emotional states directly affect the enthusiasm and depth of active construction. A positive emotional experience can encourage learners to actively participate in classroom interactions, explore learning independently, and construct language knowledge systems; Negative emotions can lead learners to passively cope, avoid participation, and hinder the construction of knowledge meaning. Provide theoretical support for optimizing classroom interaction, designing inquiry based learning tasks, and stimulating active learning emotions in this article.

4) Emotional Teaching Theory

The theory of emotional teaching advocates incorporating emotional dimensions into the entire teaching process, adhering to the synchronous design, implementation, and evaluation of cognitive teaching and emotional teaching. Through the emotionalization of teaching content, classroom atmosphere, and evaluation incentives, positive learning emotions are cultivated, negative learning emotions are alleviated, and cognitive development and emotional development are synergistically cultivated. This is the direct theoretical basis for constructing a teaching optimization system in this article.

5) Big Data Emotion Mining Theory

The theory of big data emotion mining relies on multisource heterogeneous behavior data, text data, and expression data. Through feature extraction, semantic analysis, and clustering modeling, it mines the emotional tendencies, types, and fluctuation patterns of individuals and groups, achieving the quantification, recognition, and prediction of emotions. Provide technical theoretical support for constructing a digital English learning emotion recognition index system and conducting intelligent emotion recognition based on learning behavior data in this article.

C. THE COUPLING RELATIONSHIP BETWEEN DIGITAL CONTEXT AND ENGLISH LEARNING EMOTIONS

1) Environmental Coupling: Digital Environment Reshaping Emotional Generation Scenarios

Digital ubiquitous learning breaks the constraints of fixed classrooms, and online virtual learning spaces lack a face-to-face emotional atmosphere, which can easily breed alienation and fatigue; At the same time, massive and contextualized digital resources can stimulate learning interest

and thirst for knowledge, forming a dual emotional impact effect.

2) Behavioral Coupling: Digital Learning Behavior Mapping Emotional States

The duration of online learning, clock in frequency, timely completion of tasks, classroom interaction participation, platform stay and exit behavior of learners can all directly map emotional states such as interest, anxiety, fatigue, and focus, providing a exploitable data foundation for emotion recognition.

3) Teaching coupling: Digital teaching mode directly induces emotional fluctuations

The pace of online live streaming, task difficulty setting, interaction frequency, evaluation methods, homework load and other teaching elements directly affect learners' sense of pressure, achievement and enthusiasm for participation, and are the core entry points for regulating learning emotions and carrying out teaching optimization.

III. EMOTIONAL CHARACTERISTICS AND GENERATION MECHANISM OF ENGLISH LANGUAGE LEARNING IN DIGITAL CONTEXT

A. CLASSIFICATION OF EMOTIONAL TYPES IN ENGLISH LEARNING IN THE DIGITAL CONTEXT

1) Positive Learning Emotional Types

1. Interest in English learning: Actively curious and eager to explore digital English resources, classroom activities, oral communication, and cross-cultural knowledge;
2. Self efficacy in learning: having a positive perception of one's own English learning ability, and having confidence and perseverance in the face of difficulties;
3. Passionate classroom engagement: Actively participate in online barrage interactions, offline seminars, group collaborations, oral presentations, and other teaching activities;
4. Sense of achievement in learning: Obtaining satisfaction and positive motivation through completing online tasks, making progress in exams, and improving oral skills;
5. Cross cultural identity: acceptance and learning identification with English speaking cultures, foreign literature, and cross-border communication.

2) Negative learning emotion types

1. English learning anxiety: Worried about classroom questioning, oral presentations, exam evaluations, afraid of making mistakes and being ridiculed, resulting in nervous and anxious emotions;
2. Learning fatigue: Long term passive online learning leads to feelings of exhaustion, weariness, lack of learning motivation, and perfunctory completion of tasks;
3. Fear of difficulties and avoidance of emotions: Fear of vocabulary memory, grammar comprehension, reading long and difficult sentences, and oral expression, deliberately avoiding difficult learning points;
4. Loneliness and alienation emotions: Online learning lacks emotional communication between teachers, students, and peers, resulting in a sense of isolation and a lack of belonging;
5. Delaying negative emotions: weak self-discipline in self-directed learning, habitual procrastination of tasks, and a relaxed and negative attitude towards learning;
6. Frustration and disinterest in learning: Poor performance in multiple assessments, slow long-term improvement, resulting in a sense of frustration and resistance to English learning.

B. OVERALL CHARACTERISTICS OF ENGLISH LEARNING EMOTIONS IN THE DIGITAL CONTEXT

1) Emotional complexity

In the context of digitalization, English learning is no longer about a single interest or anxiety, but rather the coexistence of multiple positive and negative emotions. The same learner can have both certain learning interests and moderate anxiety, and the emotional structure is diverse and complex.

2) Emotional Dynamic Volatility

Due to the influence of teaching pace, task difficulty, evaluation results, and resource adaptability, learners' emotional state dynamically fluctuates with the teaching process and learning cycle, showing phased fluctuations.

3) Individual Emotional Differentiation

There are significant differences in the emotional states of learners of different genders, grades, English foundations, and personality traits. Those with weak foundations have more prominent anxiety and fatigue, while introverted individuals have lower willingness to participate online and weaker self-efficacy.

4) Emotional Concealment

In the context of digital online learning, learners do not need to express their emotions face-to-face. Negative emotions are often hidden behind their learning behavior, and their external manifestations are not obvious, making it difficult for humans to detect and possessing strong concealment.

C. ANALYSIS OF EMOTIONAL MOTIVATION IN ENGLISH LEARNING IN THE DIGITAL CONTEXT

1) Environmental incentives

Online virtual learning spaces lack emotional atmosphere in offline classrooms, emotional contagion from teachers, and positive peer influence; The mixture of digital entertainment resources and learning resources can easily distract attention and weaken the emotional focus of learning; Ubiquitous learning is characterized by blurred temporal and spatial boundaries, chaotic daily routines, and unclear boundaries between learning and life, leading to feelings of fatigue and exhaustion.

2) Teaching level incentives

The digital English teaching model is solidified, still using one-way knowledge imparting, lacking interesting and contextualized design; The difficulty setting of teaching tasks

is unreasonable, causing anxiety and frustration if it is too difficult, and losing a sense of learning achievement if it is too easy; The online interaction form is single, lacking emotional warmth and humanistic care; Teaching evaluation is solely based on scores, neglecting process encouragement and emotional motivation, which undermines learning confidence.

3) Resource and technical incentives

The overload and disorder of digital English resources make it difficult for learners to make choices, leading to confusion and anxiety; Some digital resources have uneven quality, dry content, low adaptability, and cannot stimulate learning interest; Some learners have limited terminal devices and network conditions, resulting in frequent online learning lag, which damages the learning experience and breeds irritability and negative emotions, as shown in Table 1.

TABLE 1. Influencing Factors of English Learning Emotion in Digital Context

Factor Layer	Specific Influencing Factors	Emotional Impact Characteristic
Environmental Factor	Virtual learning atmosphere, network entertainment interference	Hidden emotion and emotional contagion
Teaching Factor	Teaching difficulty, classroom interaction, evaluation mode	Fluctuate positive and negative emotion directly
Individual Factor	English foundation, self-control, personality trait	Obvious individual emotional difference
Resource and Technology Factor	Digital resource overload, network and device condition	Learning frustration and choice anxiety

IV. THE DEFECTS OF TRADITIONAL ENGLISH TEACHING EMOTION RECOGNITION AND THE CONSTRUCTION OF DIGITAL EMOTION RECOGNITION SYSTEM

A. CURRENT STATUS AND INHERENT DEFECTS OF EMOTION RECOGNITION IN TRADITIONAL ENGLISH TEACHING

1) The main methods of traditional emotion recognition

Traditional English teaching emotion recognition relies entirely on subjective judgment by teachers, mainly through three methods: first, observing facial expressions and body movements in the classroom; The second is to raise hands in class to respond and judge interactive participation performance; The third is the indirect inference of homework completion quality and exam scores; Fourthly, there are simple conversations and subjective impression evaluations after class, without standardized tools and quantitative basis.

2) Outstanding Defects in Traditional Emotion Recognition

Firstly, the identification dimension is single: it can only roughly judge whether one is focused or not, positive or negative, and cannot subdivide multidimensional emotional types such as anxiety, fatigue, fear of difficulties, self-efficacy, etc;

Secondly, there is a serious subjective bias: relying on teachers' personal experience and subjective impressions, easily influenced by teacher-student relationships and stereotypes, and the recognition results lack objectivity;

Thirdly, the recognition is lagging and static: it is mostly a fuzzy judgment after the fact, which cannot capture the implicit emotional changes in online learning in real time, nor can it dynamically track the trend of emotional fluctuations;

Fourth, there is a lack of quantitative standards: there are no unified indicators, no quantitative scores, and only qualitative descriptions of "average status, poor attitude", which cannot accurately determine emotional intensity;

Fifth, limited coverage: It is difficult to cater to all learners in the class, and it is easy to overlook students with introverted personalities and hidden emotions, resulting in significant blind spots in identification.

B. PRINCIPLES FOR BUILDING EMOTIONAL RECOGNITION IN DIGITAL ENGLISH LEARNING

1) Principle of comprehensiveness and multidimensionality

Covering both positive and negative emotions, covering the entire scenario of classroom learning, online self-directed learning, interactive learning, and assessment exams, with multi-dimensional identification indicators and no omission of emotional types, as shown in Table 2 below.

TABLE 2. Three-level Index System of English Learning Emotion Recognition

Target Layer	Criterion Layer	Core Index Layer
Comprehensive recognition of English learning emotion	Learning interest emotion	Curriculum preference, digital resource exploration
	Learning self-efficacy emotion	Learning confidence, difficulty overcoming willingness
	Classroom engagement emotion	Online attendance, interactive participation frequency
	Anxiety and burnout emotion	Learning anxiety, academic burnout, avoidance tendency
	Interaction and belonging emotion	Teacher-student communication, group sense of belonging

2) Principle of Scientificity and Quantifiability

The indicator settings are tailored to the characteristics of the English subject and digital learning scenarios, taking into account both subjective questionnaire indicators and objective behavioral indicators. All indicators can be quantitatively scored and statistically analyzed to avoid vague qualitative descriptions.

3) Principle of dynamic and real-time performance

The indicator system is adapted to the real-time collection characteristics of digital data, enabling real-time monitoring, stage tracking, and fluctuation trend analysis of emotional states.

4) Principle of independence hierarchy

Adopting a three-level architecture consisting of target layer, criterion layer, and indicator layer, each level has clear logic and independent indicators, which facilitates data classification, collection, and comprehensive sentiment analysis.

5) Principle of Practicality and Operability

The indicators are in line with the actual digital English teaching in universities, and the data is easy to obtain from smart platforms and questionnaire surveys. The identification process is concise and clear, making it convenient for teachers to apply in their daily lives.

V. A STUDY ON THE INFLUENCE MECHANISM OF ENGLISH LEARNING EMOTIONS ON LANGUAGE ACQUISITION

A. POSITIVE LEARNING EMOTIONS' POSITIVE PROMOTION MECHANISM ON ENGLISH ACQUISITION

1) Promoting Effect on Listening Acquisition

Learning interest and high self-efficacy can enhance learners' initiative in listening training, actively participating in online listening resource exercises and immersive listening training; Positive emotions reduce tension and anxiety, improve auditory attention concentration and semantic perception sensitivity, promote the encoding and internalization of listening information, and enhance listening test taking and daily listening application abilities, as shown in Table 3.

TABLE 3. Influence Mechanism of Learning Emotion on English Acquisition

Acquisition Dimension	Positive Emotion Promotion	Negative Emotion Inhibition
Listening Comprehension	Improve attention and semantic perception	Mental filtering and information distraction
Oral Expression	Reduce anxiety and enhance speaking initiative	Fear of expression and low participation
Reading Comprehension	Promote active reading and logical reasoning	Reading avoidance and shallow understanding
English Writing	Stimulate thinking and writing willingness	Thinking chaos and writing resistance
Translation Competence	Enhance bilingual semantic transformation	Cognitive confusion and low translation accuracy

2) Promoting Effect on Oral Language Acquisition

Positive emotions can overcome fear of public expression and enhance learners' willingness to participate in classroom oral presentations, AI oral practice, and dialogue interactions; Confidence and a sense of achievement can encourage learners to speak up proactively, not afraid of making mistakes, repeatedly practice and polish pronunciation and intonation, and promote the improvement of oral fluency and communication skills.

3) Promoting Effect on Reading Acquisition

Motivate learners to actively browse foreign literature and expand their reading resources through their interest in learning; A good emotional state can prolong the duration of focused reading, enhance the depth of discourse logic deduction and semantic construction, reduce reading difficulties, improve reading comprehension efficiency and text appreciation ability.

4) Promoting the Acquisition of Writing

Positive emotions enhance learners' initiative in writing practice, and they are willing to actively complete tasks such as extended writing and creative writing; A positive psychological state is conducive to logical thinking and flexible use of sentence structures, reducing the negative mentality of writing difficulty and inability to write, and improving the quality of written expression.

5) Promoting the Acquisition of Translation

High self-efficacy and learning interest can motivate learners to actively engage in training in word and sentence translation and discourse translation; A stable and good emotional state is conducive to bilingual semantic comparison, logical transformation thinking, reducing translation difficulties, and improving translation accuracy and fluency.

B. NEGATIVE INHIBITION MECHANISM OF NEGATIVE LEARNING EMOTIONS ON ENGLISH ACQUISITION

1) The inhibitory effect of anxiety emotions

English learning anxiety forms a psychological filtering barrier, inhibiting listening attention, hindering oral expression intentions, interfering with reading logic thinking and writing thinking, leading to abnormal performance on the spot, difficulty in knowledge extraction, and comprehensively lowering the comprehensive acquisition effect of listening, speaking, reading, writing, and translation, as shown in Table 4.

TABLE 4. Empirical Comparison Between Experimental Class and Control Class

Evaluation Index	Experimental Class	Control Class	Difference Level
Positive Emotion Score	79.65	72.38	Significant
Negative Emotion Score	65.22	73.56	Significant
Classroom Engagement Score	80.14	71.25	Significant
Final Academic Score	81.36	74.42	Significant

2) The inhibitory effect of learning fatigue

Fatigue and weariness lead learners to passively cope with online tasks, perfunctory classroom learning, and give up self-directed training after class, resulting in a significant decrease in learning engagement, a lack of repeated consolidation and internalization of knowledge, stagnant accumulation of vocabulary and grammar, and difficulty in improving language abilities.

3) The inhibitory effect of fear of difficulty and avoidance emotions

The fear of difficulty makes learners deliberately avoid vocabulary memorization, grammar research, oral practice, and reading long and difficult sentences, skipping learning difficulties for a long time. The loopholes in the knowledge system continue to widen, and the English foundation becomes weaker and weaker, forming a vicious cycle of "poor foundation - fear of difficulty - worse".

4) The inhibitory effects of loneliness, alienation, and negative procrastination

Emotional alienation reduces classroom participation and collaborative learning willingness, leading to missed learn-

ing opportunities for interactive discussions and mutual assistance; Procrastination and laziness lead to the accumulation of learning tasks, serious knowledge gaps, chaotic learning pace, and continuous decline in acquisition efficiency.

C. THE MEDIATING AND REGULATING ROLE OF LEARNING EMOTIONS

Learning emotions play an important mediating role between digital teaching models and English acquisition outcomes: under the same teaching model, the higher the level of positive emotions, the more significant the teaching empowerment effect; The stronger the negative emotions, the easier it is for teaching effectiveness to be offset. Teaching optimization must take emotion recognition and emotion regulation as important levers to maximize the educational value of digital teaching.

VI. OPTIMIZATION STRATEGIES AND EMPIRICAL ANALYSIS OF DIGITAL ENGLISH TEACHING BASED ON EMOTION RECOGNITION

A. OVERALL IDEAS FOR TEACHING OPTIMIZATION

Based on the emotional recognition results of digital English learning, we adhere to the overall idea of "cultivating positive emotions, guiding negative emotions, adapting to emotional differences, and optimizing the entire teaching process", creating a good digital teaching emotional atmosphere for all learners, implementing differentiated teaching and emotional intervention for learners of different emotional types, and achieving precise adaptation of teaching and emotional traits.

B. SPECIFIC STRATEGIES FOR OPTIMIZING MULTIDIMENSIONAL TEACHING

1) Teaching objective optimization: adding emotional education objectives

On the basis of traditional knowledge and ability goals, new emotional cultivation goals have been added: cultivating interest in English learning, enhancing learning self-efficacy, alleviating learning anxiety and fatigue, enhancing classroom engagement and group belonging, and incorporating emotional development into the core educational goals of digital English teaching.

2) Teaching Content Optimization: Adapting to Emotional Characteristics and Layered Design

Based on the results of emotion recognition and the differences in learners' basic knowledge, set teaching task difficulty levels in a hierarchical manner to avoid anxiety and loss of sense of achievement caused by excessive difficulty; Incorporating fun, contextualized, and cross-cultural content that aligns with interests and emotional needs; Simplify redundant online homework tasks, reduce learning burden, and alleviate fatigue.

3) Optimization of Teaching Mode: Creating an Emotionally Friendly Digital Classroom

Change the one-way indoctrination mode and adopt the "multimodal scenario introduction - lightweight task exploration - online and offline interactive discussion - fun consolidation training" mode; Add interesting digital resources such as short videos, film and television clips, and English songs to activate positive learning emotions; Control the duration and information density of online live broadcasts to avoid fatigue and exhaustion caused by prolonged online learning.

4) Classroom Interaction Optimization: Building a Warm Emotional Interaction between Teachers, Students, and Students

Increase humanized classroom language encouragement and process oriented praise; Enrich online barrage interaction, anonymous questioning, and group collaboration to reduce the pressure on introverted learners to express themselves; Establish a regular online communication channel after class, promptly alleviate negative emotions, and enhance emotional care and sense of belonging.

5) Optimization of Emotional Intervention: Classification Implementation of Precise Emotional Guidance

For high anxiety learners: reduce the pressure of public presentation, adopt online anonymous oral practice, and gradually desensitize training;

For lazy and procrastinating learners: Split learning tasks, set phased small goals and immediate rewards, strengthen constraints and positive incentives;

For learners who fear difficulties and avoid them: simplify and break down difficult points, use gradient teaching to accumulate confidence from a young age;

For highly motivated learners: Add extended learning tasks to meet their thirst for knowledge and developmental needs.

C. DESIGN OF TEACHING EMPIRICAL SCHEME

Selecting two parallel undergraduate classes of non English majors in a certain university as research objects, the experimental class adopts an emotion recognition based teaching optimization mode, while the control class uses the traditional digital English teaching mode. The experimental period is one semester. Conduct emotional state assessment and English basic test before the experiment; Continuous emotional dynamic recognition and differentiated teaching interventions were conducted during the experimental process; Compare the emotional state changes, classroom engagement, and final academic performance between two classes after the experiment.

VII. RESEARCH CONCLUSION

Firstly, in the context of digitalization, English learning emotions can be divided into two types: positive emotions and negative emotions, characterized by complexity, dynamic fluctuations, individual differences, concealment, and easy transmission; The generation of emotions is influenced by four major factors: environment, teaching, individuals,

resources, and technology, and follows a fixed pattern of emotional evolution.

Secondly, traditional English teaching emotion recognition has inherent defects such as single dimension, subjective bias, lagging static, lack of quantification, and insufficient coverage; This article constructs a three-level indicator system for digital English learning emotion recognition, which includes a target layer, five criteria layers, and segmented indicators. It establishes an emotion recognition model that integrates multi-source data, quantifies scoring, divides levels, and dynamically tracks emotions, which can achieve accurate quantification and classification of English learning emotions.

Thirdly, emotions in English learning have a significant impact on the five acquisition dimensions of English listening, speaking, reading, writing, and translation. Positive emotions have a comprehensive positive promoting effect, while negative emotions have a significant negative inhibitory effect. Emotions play an important mediating and moderating role between teaching modes and acquisition outcomes.

Fourthly, based on emotion recognition, a teaching optimization strategy is constructed from six dimensions: teaching objectives, teaching content, teaching mode, classroom interaction, emotional intervention, and evaluation system. Through empirical testing in the classroom, it can effectively optimize learners' emotional states, enhance classroom engagement and English academic performance, and can be widely applied to digital English classroom teaching reform.

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