

Reform of College English Teaching Model: Embracing Mobile-Assisted Collaborative Language Learning

ABSTRACT

Aims: This study aimed to explore the reform of the mobile-assisted collaborative language learning teaching model in college English. Its intention was to address the existing problems in current college English classroom teaching and enhance teaching quality and students' comprehensive English abilities.

Methodology: Operating in the context of college English teaching practice, the study employed a combination of theoretical analysis and practical case studies. It elaborated on the construction and implementation details of the teaching model, covering pre-class preparation, classroom teaching, and after-class extension stages.

Results: The mobile-assisted collaborative language learning teaching model devised a logically rigorous operational framework, integrating mobile and collaborative learning. It provided precise learning resources, reasonable classroom grouping, innovative after-class tasks, and a scientific evaluation system. A mobile-assisted learning mode effectively broke the traditional teaching deadlock, met students' personalized needs, created ample practice opportunities, and significantly improved teaching outcomes.

Conclusion: This is the first case study on embracing mobile-assisted collaborative language learning in China. The reform of this teaching model has achieved remarkable results. It can improve learners' English performance and the learning motivations. However, continuous attention and improvement in aspects such as resource update, teaching process optimization, and evaluation system refinement are still required to better serve college English teaching and students' development.

Keywords: College English; Mobile-assisted collaborative language learning; Teaching model reform; Collaborative Language Learning

1. INTRODUCTION

With the rapid advancement of information technology, society has been continuously escalating its demands for college students' English proficiency. The conventional college English teaching paradigm is increasingly revealing its inadequacies and struggling to align with the requisites of the new era. College English classroom instruction is confronted with numerous practical predicaments that urgently call for resolution, as they substantially impede the enhancement of teaching quality and the cultivation of students' comprehensive English capabilities. Firstly, the traditional college English classroom teaching modality tends to be rather simplistic, predominantly revolving around teacher-centered lectures, relegating students to a passive state of knowledge reception.

28 In class, instructors expound at length on grammar, vocabulary, and other aspects of
29 knowledge from the podium while students mechanically jot down notes, bereft of
30 opportunities for active contemplation and interactive participation. This instruction invariably
31 leads to a dampening of learning enthusiasm and suboptimal learning outcomes. Secondly,
32 there exists a pronounced disparity in students' English proficiency levels, rendering the
33 unified teaching pace and curriculum incapable of catering to the diverse learning needs of all
34 students. Those with a solid foundation may feel underserved, whereas those with weaker
35 skills often find themselves lagging. Thirdly, given that English is a language, its acquisition
36 necessitates a copious language practice environment. However, the actual time allotted for
37 college English classroom teaching is severely constrained, depriving students of sufficient
38 opportunities for oral communication and practical application. Fourthly, traditional teaching
39 evaluation methodologies have habitually placed undue emphasis on final examination
40 scores, neglecting students' performance throughout the learning process. This myopic
41 approach makes it arduous to comprehensively and objectively gauge students' learning
42 achievements. In light of the foregoing, it is patently evident that these extant issues in current
43 college English classroom teaching cry out for innovative teaching models to effect a remedy.

44 In recent years, China has witnessed the maturation of wireless communication technology,
45 the continuous expansion of wireless network coverage, and the widespread proliferation of
46 mobile electronic devices. Concomitantly, the mobile learning model has emerged discreetly,
47 capturing the attention of numerous educators [1-3]. In contrast to the traditional English
48 teaching model characterized by "fixed time, fixed place, fixed teacher, fixed materials", mobile
49 learning confers significant advantages, capable of compensating for the deficiencies of
50 traditional pedagogy and serving as a propitious auxiliary learning approach. Presently, the
51 academic and educational communities have yet to reach a consensus on the definition of the
52 mobile learning model [4-11]. Nevertheless, the overarching consensus holds that mobile
53 learning leverages mobile terminal devices to facilitate learning anytime and anywhere, its
54 essence being in harmony with the openness intrinsic to college English teaching.

55 To sum it up, the exigencies of the current college English classroom teaching landscape
56 demand innovative teaching models. The "mobile-assisted collaborative language learning
57 teaching model" has emerged as a timely solution. It is poised to reverse the teaching
58 conundrum through its unique strengths and propel college English teaching to new heights.

59 **2. POLICIES RELATED TO "RETURNING HOME TO START A BUSINESS"**

60

61 In the realm of college English teaching practice, the mobile-assisted collaborative language
62 learning teaching model has devised a logically rigorous and meticulously crafted operational
63 framework, seamlessly integrating the dual benefits of mobile learning and collaborative
64 learning. It has infused novel vitality into the traditional college English teaching schema and
65 effectively galvanized teaching efficacy to achieve breakthrough progress.

66 **2.1 PRE-CLASS PREPARATION**

67

68 The foremost obligation of educators is to adhere stringently to the precise instructional
69 objectives delineated by the established teaching syllabus. Employing scientific and
70 systematic evaluation methodologies, they must comprehensively and profoundly appraise
71 the core constituents of the English knowledge reservoir, learning potential ceilings, and
72 individualized interest trajectories of the students under their tutelage. Using this as a reliable
73 lodestar, they embark on a painstaking knowledge exploration odyssey, availing themselves
74 of a plethora of cutting-edge and multifunctional mobile terminal devices. Navigating between
75 authoritative educational portals, professional English learning applications, and vast digital
76 teaching material repositories, instructors, with their profound and robust professional acumen

77 and astute teaching insights, meticulously cull and judiciously organize micro-class video
78 materials that are optimally attuned to the instructional foci of the current lesson.

79 On the one hand, such micro-class videos offer lucid and engaging elucidations of pivotal
80 grammatical rules, facilitating students' profound comprehension of grammar essentials.
81 Moreover, they zero in on the background knowledge of Western culture, conducting
82 exhaustive and incisive analyses to buttress students' efforts in deciphering the profound
83 connotations of textual materials. Simultaneously, a rich tapestry of English reading materials,
84 spanning a wide gamut of topics, boasting authentic language, and exhibiting reasonable
85 difficulty gradients, is incorporated. These encompass contemporaneous news items tracking
86 the vicissitudes of the times, as well as excerpts from classic literary works, efficaciously
87 broadening the breadth and depth of students' reading panoramas. Additionally, a series of
88 interactive practice tasks, deftly blending entertainment and knowledge, has come to the fore,
89 such as engaging word spelling challenges and advanced grammar-filling drills, with the
90 express aim of maximizing students' zeal for active participation in the learning process. Once
91 the aforementioned instructional resources have been meticulously assembled, instructors will
92 follow standardized procedures to upload them in an orderly fashion to the learning platform
93 via exclusive conduits, such as the school's dedicated online learning space and the class-
94 customized segment of a renowned online education platform. This ensures that students can
95 access them instantaneously in the simplest and most efficient manner, laying a solid
96 foundation for the seamless progression of subsequent teaching segments.

97 **2.2 KEY LINKS OF CLASSROOM TEACHING**

98
99 In light of the conspicuous disparities in students' learning aptitudes, personality traits, and
100 other dimensions, educators employ scientific, rational, and precisely calibrated grouping
101 strategies to partition learning groups adroitly. The size of each group is artfully and judiciously
102 calibrated to ensure that every group member can be fully immersed in the discussion process,
103 freely express their viewpoints, and foster a vibrant exchange of ideas. Once the groups have
104 been constituted, the teacher guides the students to adeptly activate their mobile terminal
105 devices, log in to the pre-designated learning platform, and accurately retrieve the assorted
106 learning resources painstakingly uploaded by the teacher prior to class. Taking the English
107 reading teaching scenario as an exemplar, the teacher initially disseminates an English article
108 replete with profound cultural resonances on the platform, concomitantly pushing out the
109 background knowledge micro-class video that is intimately intertwined and mutually
110 supportive, thereby facilitating students' swift construction of a knowledge scaffold for text
111 comprehension. The students then congregate in groups and plunge into the immersive text-
112 reading exercise. Should they encounter lexical impediments, they promptly resort to
113 convenient and efficient mobile dictionary applications to swiftly ascertain the meanings of
114 new words, meticulously grasp the nuances of usage, and deftly integrate the knowledge
115 nuggets imparted in the micro-class to conduct in-depth exploration and analysis of the
116 article's content.

117 Upon the successful completion of the reading task, a fervent discussion erupts within the
118 group. Members engage in uninhibited discourse, sharing their insights on pivotal aspects
119 such as the article's theme, writing techniques, and the emotional undercurrents of the
120 characters. Subsequently, with the aid of the interactive communication zone embedded within
121 the learning platform, the group discussion outcomes are publicly broadcast to the entire class
122 in a multiplicity of formats, including text, pictures, and even voice, inaugurating a virtuous
123 cycle of cross-group interactive communication and cerebral collision. Throughout this
124 process, the teacher vigilantly monitors the discussion dynamics, astutely identifies the critical
125 junctures, and proffers professional and highly targeted guidance and elucidations in a timely
126 manner. Zeroing in on the common quandaries routinely encountered by student cohorts, such

127 as the travails of dissecting complex sentences and the dilemmas of plumbing the depths of
128 cultural metaphors, the teacher conducts concentrated and profound explanations to assist
129 students in surmounting reading hurdles one by one and effecting a steady ascent in their
130 knowledge hierarchy.

131 **2.3 AFTER-CLASS EXTENSION AND DEEPENING STAGE**

132
133 Leveraging the potent and fully fledged task release system of the learning platform, educators
134 painstakingly conceive and orchestrate innovative and challenging extension practice tasks.
135 For example, students are required to collaborate in groups to fabricate an English poster
136 centered on the theme of "Western Festival Culture". In the course of this endeavor, students
137 must marshal the knowledge reserves amassed both in and out of class, from the ingenious
138 conceptualization of the overall design layout of the poster, the painstaking composition of the
139 copy content, to the judicious selection of accompanying pictorial materials, to showcase their
140 capacity for knowledge integration and application fully. Alternatively, students may be
141 enjoined to independently conceive and record an English short play, spanning the entire
142 gamut from the initial script gestation and refinement, rational role allocation, to live
143 performance, shooting, and editing, to comprehensively hone their comprehensive qualities.
144 During the execution of the task, students capitalize on the convenience afforded by mobile
145 devices to shatter the shackles of time and space, initiating online communication, division of
146 labor, and cooperation at will. Whether it be poring over vast troves of data, thrashing out
147 details in repeated discussions, or meticulously editing and producing in the later stage, they
148 vividly exemplify a highly cohesive spirit of teamwork. Once the work is completed, students
149 submit it online in accordance with the stipulated schedule. The teacher then undertakes a
150 comprehensive, systematic, and in-depth evaluation predicated on a meticulously constructed
151 multi-dimensional and detailed evaluation index system. This evaluation spans multiple facets,
152 including the accuracy of content knowledge, the novelty of creative ideas, the standardization
153 of language use, and the cooperation of teamwork. The teacher promptly furnishes feedback
154 on the evaluation results to students, distinctly highlighting the strengths, lacunae, and areas
155 for improvement of the work, thereby facilitating students' attainment of a spiral progression in
156 knowledge accumulation and individual ability enhancement through continuous refinement.

157 Viewed holistically, the mobile-assisted collaborative language learning teaching model
158 functions in such a way that mobile learning furnishes copious resource sustenance for
159 collaborative learning, erects a convenient communication conduit, and facilitates the flow of
160 information. Collaborative learning, in turn, effectively impels students to internalize and
161 assimilate the knowledge gleaned through mobile learning, and to apply it with flexibility to
162 effect knowledge transformation. The two components are interlinked and synergistic,
163 endowing college English teaching with multi-faceted empowerment and precipitating
164 significant amelioration in teaching outcomes.

165 **3. IMPLEMENTATION OF POLICIES RELATED TO RETURNING HOME TO** 166 **START A BUSINESS AMONG COLLEGE GRADUATES**

167
168 In the process of promoting the mobile-assisted collaborative language learning teaching
169 model for college English, to ensure its efficacy and efficiency, the following cardinal points
170 warrant meticulous attention.

171 **3.1 RESOURCE SCREENING AND INTEGRATION**

172
173 The first characteristic of resource screening in mobile-assisted collaborative language
174 learning is precise adaptability. When cherry-picking mobile learning resources prior to class,
175 teachers must cling tenaciously to the syllabus and the instructional objectives of the current

176 lesson, ensuring that resources such as micro-class videos, reading materials, and exercises
177 are in lockstep with the teaching emphases. For example, if the current lesson is centered on
178 imparting the structure of argumentative essays in English writing, the selected micro-class
179 videos should expound in detail on the opening, body, and closing layout techniques of
180 argumentative essays, as well as commonly used argumentation methods, to preclude any
181 disjunction between resources and teaching content, which could lead students astray in their
182 learning pursuits.

183 The second characteristic of resource screening in mobile-assisted collaborative language
184 learning is difficulty stratification. Given the variances in students' English proficiency,
185 resources ought to be stratified. For students with shaky foundations, learning resources with
186 a robust base, detailed elucidations, and simplified procedures should be provided, such as
187 uncomplicated English short readings embellished with Chinese annotations, basic grammar
188 explanation animations, etc. For those with surplus learning capacity, high-caliber, in-depth,
189 and expansive resources should be readied, such as chapters from original English academic
190 works, dissections of advanced English writing techniques, etc., to satiate the appetites of
191 students at different levels, ensuring that every student reaps dividends from resource
192 utilization.

193 The third characteristic of resource screening in mobile-assisted collaborative language
194 learning is copyright compliance: While scavenging for resources amid the vast ocean of
195 information on the Internet, teachers must abide by copyright statutes to the letter. They should
196 give precedence to open source, free, and unambiguously authorized materials. In the event
197 of a need to use copyrighted materials, they must procure legal clearance in advance to stave
198 off potential legal wrangles stemming from infringement and safeguard the normal progression
199 of teaching.

200 **3.2 CLASSROOM ORGANIZATION AND GUIDANCE**

201
202 The first characteristic of classroom organization in mobile-assisted collaborative language
203 learning is reasonable grouping. Classroom grouping exerts a direct bearing on the efficacy
204 of collaborative learning. Teachers should factor in students' learning aptitudes, personality
205 traits, and English proficiency when partitioning groups. The size of each group should be
206 circumscribed within 4 - 6 individuals to ensure that group members can communicate freely
207 and circumvent overcrowding and muddled division of labor. For example, pairing students
208 with sterling oral expression skills with those possessing outstanding writing prowess, and
209 combining students with ebullient personalities with those of a more introverted yet meticulous
210 bent, can foster complementary advantages within the group and supercharge cooperation
211 efficiency.

212 The second characteristic of classroom organization in mobile-assisted collaborative language
213 learning is process monitoring. During the group cooperative learning process, teachers
214 cannot afford to be laissez-faire. They must ceaselessly patrol between groups, keeping a
215 hawkish eye on students' discussion progress, participation rates, and any impediments they
216 encounter. If a group discussion veers off course, it must be steered back on track promptly;
217 if students harbor a general misunderstanding of a knowledge point, the discussion should be
218 suspended immediately and a concentrated explanation dispensed to ensure a smooth
219 learning process.

220 The third characteristic of classroom organization in mobile-assisted collaborative language
221 learning is technical assistance. Since this teaching model hinges on mobile devices, teachers
222 must familiarize themselves with the operation of commonly used learning apps and online
223 platforms in advance to ensure that they can expeditiously troubleshoot any technical glitches

224 students encounter in class, such as video playback stutters, inability to download materials,
225 etc., to forestall the wastage of teaching time due to technical snafus and safeguard students'
226 learning experience.

227 **3.3 AFTER-SCHOOL EXTENSION TASK MANAGEMENT**

228
229 The first characteristic of after-school extension task management in mobile-assisted
230 collaborative language learning is task design. After-class extension tasks should not only
231 consolidate classroom learning but also be imbued with innovation and challenge. Tasks can
232 be devised based on current hot topics and students' interests, such as fashioning English film
233 review posters against the backdrop of popular movies, or recording English speeches in
234 simulated international conference settings. Task requirements should be pellucid and
235 specific, encompassing submission time, work format, scoring criteria, etc., so that students
236 can clearly fathom the task goals and expected results.

237 The second characteristic of after-school extension task management in mobile-assisted
238 collaborative language learning is teamwork supervision. For after-school tasks accomplished
239 through group collaboration, teachers should tighten the reins on the teamwork process.
240 Groups should be required to submit regular progress reports, detailing member division of
241 labor, communication modalities, difficulties encountered and their solutions, etc., to preclude
242 any "free riding" by individual members and guarantee that every student truly participates in
243 the task completion process.

244 The third characteristic of after-school extension task management in mobile-assisted
245 collaborative language learning is feedback and improvement. Upon receipt of the after-school
246 extension task works submitted by students, teachers should dispense feedback in a timely
247 manner, not only spotlighting the strengths of the works but also expounding in detail on their
248 shortcomings and improvement directions. At the same time, encourage students to make
249 secondary revisions to their works based on the feedback, elongating the learning process
250 and inculcating students' learning habits of continuous improvement.

251 **3.4 CONSTRUCTION OF TEACHING EVALUATION SYSTEM**

252
253 The first characteristic of constructing teaching evaluation system in mobile-assisted
254 collaborative language learning is multiple dimensions. Jettison the myopic evaluation
255 approach predicated solely on final exam results and erect a multifaceted evaluation system
256 that blankets the entire learning process, from pre-class preparation to class participation and
257 after-class extension. For example, pre-class preparation can be gauged by the frequency of
258 students' consultations of preparation materials and the quality of their questions; class
259 participation can be appraised by the vivacity of group discussions, the quality of speeches,
260 and the degree of contribution to the group; after-class extension evaluation can focus on the
261 creativity of task completion, teamwork cohesion, and the accuracy of knowledge application,
262 etc., to provide a panoramic view of students' learning.

263 The second characteristic of constructing teaching evaluation system in mobile-assisted
264 collaborative language learning is dynamic adjustment. The evaluation system cannot be
265 ossified. It should be tweaked dynamically in a timely manner based on feedback from
266 teaching practice and fluctuations in student learning. If it is found that a certain evaluation
267 indicator fails to exert a palpable guiding effect on student learning, or if new factors influencing
268 teaching effectiveness surface and are not encompassed in the evaluation scope, it should be
269 optimized and improved posthaste to ensure that the evaluation system always mirrors the
270 actual teaching with pinpoint accuracy and spurs students to make continuous progress.

271 The third characteristic of constructing teaching evaluation system in mobile-assisted
272 collaborative language learning is data application. Make full use of the data amassed by the
273 mobile learning platform, such as student learning time, number of resource downloads,
274 frequency of interactive communication, etc., to conduct quantitative analysis, furnishing an
275 objective basis for teaching evaluation, assisting teachers to apprehend students' learning
276 status more accurately, and detecting problems in teaching so as to adjust teaching strategies
277 in a targeted manner.

278 Only by comprehensively considering and deftly handling the above precautions during
279 implementation can the mobile-assisted collaborative language learning teaching model of
280 College English unleash its full potential, tangibly enhance the teaching quality, and foster the
281 development of students' comprehensive English ability.

282 **4 METHODOLOGY**

283

284 **4.1. EXPERIMENTAL SUBJECTS**

285

286 Two parallel college English classes of the same grade in Tangshan College are randomly
287 selected as the research objects. The number of students, the proportion of male and female
288 students, as well as the years of English learning in both classes are consistent, and none of
289 the students have listening or speaking impairments.

290 **4.2. EXPERIMENTAL PROCEDURE**

291

292 The experimental group is fully immersed in the course learning under the Mobile-Assisted
293 Collaborative Language Learning (MACLL) teaching model elaborated previously.

294 Before class, the teaching materials used in class are first classified according to difficulty
295 levels, covering different levels from beginner, intermediate to advance. The materials are
296 aligned with specific learning objectives, such as focusing on grammar for knowledge
297 reinforcement, expanding vocabulary to broaden the lexical repertoire, and introducing cultural
298 backgrounds to enhance cultural awareness. The reading materials are carefully selected to
299 cover a wide variety of topics, including current affairs to keep students informed of the latest
300 happenings, literature to cultivate literary appreciation, and science and technology to
301 introduce cutting-edge knowledge. In addition, these videos highlight key points and are
302 accompanied by summaries at the end, facilitating students' quick access to essential
303 information. The pre-reading questions are deliberately designed to trigger critical thinking,
304 guiding students to make predictions and establish connections prior to delving into the text.
305 The vocabulary guides not only provide definitions but also present example sentences in
306 various contexts, along with synonyms and antonyms to enrich students' vocabulary stock.
307 Interactive practice tasks, devised in a highly engaging gamified format, feature tiered levels
308 of difficulty. For instance, novices commence with straightforward word matching games,
309 whereas advanced learners take on complex sentence transformation challenges. The
310 leaderboards are updated in real-time, and rewards may consist of digital badges, bonus
311 points redeemable for learning resources, or even small tangible prizes like English learning
312 bookmarks. Moreover, the learning platform's tracking system is fine-tuned to record an
313 extensive array of data. It meticulously notes the exact moment students access and exit each
314 resource, computes the average time expended per page or video segment, tallies the number
315 of times specific parts are replayed, traces the sequence in which different practice tasks are
316 attempted, and captures any pauses or hesitations during the learning process, thereby
317 constructing a comprehensive behavioral profile.

318 During class, teachers implement a highly dynamic and adaptable grouping strategy. At the

319 beginning of each week, drawing on students' performance data from the preceding week's
320 pre-class activities (such as completion rates and accuracy of micro-class assignments) and
321 in-class quizzes (covering grammar, vocabulary, and reading comprehension), students are
322 regrouped. This approach ensures that each group possesses a balanced combination of
323 abilities, fostering effective collaboration. Each group is assigned a dedicated observer (a
324 member of the research team trained in educational psychology). The observer uses a
325 detailed checklist for recording. They not only record whether a student participates but also
326 note the frequency and duration of their contributions. Concerning the quantity and quality of
327 ideas, they classify ideas as original, derivative, or repetitive and evaluate their relevance and
328 depth. The degree of consensus reached during discussions is gauged by observing how
329 expeditiously and smoothly the group arrives at a Shared conclusion.

330 To guarantee the proper and efficient utilization of mobile devices, they are integrated with
331 state-of-the-art classroom management software equipped with advanced functionalities.
332 Teachers can remotely lock or unlock particular apps and websites, impose restrictions on
333 screen time for non-educational content, and even project a student's (a student's) mobile
334 screen onto the classroom display for group sharing and discussion, ensuring mobile
335 technology functions as a potent educational aid.

336 After class, the learning progress is monitored through bi-weekly online check-ins, so as to
337 provide a comprehensive and accurate assessment of students' learning achievements.

338 In contrast, the control group receives traditional English instruction devoid of any elements of
339 mobile-assisted and collaborative learning.

340 Students are furnished with printed textbooks and assigned standard preview questions that
341 predominantly focus on rote memorization of vocabulary and basic grammar rules. To
342 maintain strict consistency, the preview time is precisely regulated to 30 minutes per session.
343 Teachers collect the written responses to these questions at the start of each class and provide
344 cursory feedback, primarily checking for completion and basic accuracy.

345 During classroom teaching, teachers firmly adhere to a predominantly lecture-based
346 instructional format, with over 80% of the class time dedicated to teacher exposition. Group
347 work is extremely restricted, with only sporadic pair discussions permitted, and these are
348 confined to a maximum duration of 10 minutes per class. Mobile phones and other electronic
349 devices are strictly prohibited in the classroom, and any violation results in immediate
350 disciplinary action, such as confiscation of the device for the remainder of the week.

351 After class, conventional written assignments are distributed weekly, following a fixed pattern.
352 For example, it could be a grammar exercise worksheet or a short essay. The assignments
353 come with specific guidelines, such as word count and formatting requirements, and due
354 dates. Teachers offer written feedback exclusively, using a red pen to mark errors and provide
355 brief comments, without any form of online interaction or additional support.

356 **4.3 DATA COLLECTION**

357
358 This study encompasses language proficiency tests, questionnaires, teacher observations,
359 and platform analytic.

360 Language Proficiency Tests are administered in a standardized manner at the beginning and
361 the end of the semester to both the experimental class and the control class. In addition to
362 analyzing the overall composite scores, sub-scores for each individual language skill are
363 dissected and analyzed in minute detail. This granular analysis enables the pinpointing of

specific areas of strength and weakness for both groups. The test questions are painstakingly calibrated to ensure that they cover the relevant curriculum taught in both the experimental and control classes, facilitating a direct and meaningful comparison. To enhance the reliability of the results, each test is conducted in a classroom environment with strict time limits and proctoring to prevent cheating.

Questionnaires are distributed to gather students' insights and perceptions monthly. These questionnaires employ a combination of Likert scales and open-ended questions. The Likert scale questions are designed to quantitatively measure students' satisfaction, perceived learning gains, and motivation on a 5-point scale. Moreover, the open-ended questions encourage students to provide rich, detailed feedback on what aspects of the teaching methods they find appealing or unappealing. To boost the response rate, the questionnaires are made available in both online and paper versions, and students are given incentives such as extra credit points or small treats like chocolates for timely and complete responses.

Teachers maintain a structured logbook to record their observations. These records encompass details such as the classroom atmosphere, student attention levels, and the frequency of off-task behaviors. For the experimental group, special attention is paid to documenting any technical glitches or challenges that arise in relation to the use of mobile devices, providing valuable insights into the practical implementation of the Mobile-Assisted Collaborative Language Learning (MACLL) model. Teachers also note any significant changes in students' behavior or attitude during the semester, such as increased confidence in speaking or a newfound enthusiasm for learning.

For the experimental group, data on pre-class resource access, in-class mobile device usage, and after-class task participation and completion times are visualized in real-time within the MACLL software. The data is updated daily, allowing researchers to track trends, identify patterns, and intervene promptly if any issues or anomalies are detected. In addition, the dashboard provides comparative analytics, showing how individual students' usage patterns compare to the group average, and highlighting any outliers. This helps teachers and researchers identify students who may need additional support or those who are excelling and could serve as models.

5. RESULTS

5.1 LANGUAGE PROFICIENCY TESTS AND PLATFORM ANALYTICS

We utilized SPSS software to conduct in-depth statistical analysis on the quantitative data obtained from language proficiency tests and platform analytics.

Table 1 Comparison of Learners' Average Score before and After the Experimentation

	Experimental Group		Control Group	
	Before Experiment	After Experiment	Before Experiment	After Experiment
Listening	72	85	68	75
Speaking	70	80	65	72
Reading	75	85	70	78
Writing	70	80	65	70
Translation	68	78	62	68
Total score	70	82	68	75

400
401 Table 1 provides a visual comparison of the experimental group's and the control group's
402 performances regarding overall language proficiency. To evaluate the impact of the
403 intervention, paired sample t-tests were conducted to contrast the mean scores of both groups
404 pre and post experimentation. The analysis revealed a noteworthy disparity in the
405 improvement of overall language proficiency between the groups.

406 Initially, the baseline mean scores for the experimental and control groups were closely
407 aligned, at 70 and 68 points, respectively. Following a semester of instruction under divergent
408 pedagogical frameworks, the experimental group's average score escalated markedly to 82
409 points, whereas the control group's average rose to 75 points. This outcome signifies that the
410 experimental group's mean score augmented by 12 points, surpassing the control group's
411 7point increase. The differential improvement of 5 additional points in favor of the experimental
412 group underscores the efficacy of the Mobile-assisted Collaborative Language Learning
413 MACLL model in fostering enhancements in students' overall language proficiency compared
414 to the conventional teaching approach employed with the control group.

415 Table 1 can comprehensively display the changes in various language skills, including
416 listening, speaking, reading, writing, and translation, of the experimental group and the control
417 group, as well. It is obviously that before the experiment, the starting points of the two groups
418 in each skill were similar. However, after the experiment, the experimental group achieved
419 significant improvements in all skill dimensions. For example, in listening, the experimental
420 group's score increased from 72 to 85 points, while the control group only increased from 68
421 to 75 points; in writing, the experimental group improved by 10 points to reach 80 points, while
422 the control group only improved by 5 points to 70 points. This demonstrates that the MACLL
423 teaching model is superior to the traditional teaching model in cultivating various language
424 skills and can provide students with more balanced and significant improvements.

425 Table 2 Relationship between the frequency of using mobile learning resources and language
426 proficiency improvement

Usage Frequency Interval (per week)	Average Language Proficiency Improvement Score
< 3 times	5
3 - 5 times	7
> 5 times	13

427
428 Through regression analysis, a significant positive correlation was found between the
429 frequency of students' use of mobile learning resources and the improvement of their language
430 proficiency. It visualizes this relationship. It can be seen that as the frequency of using mobile
431 learning resources per week increases, the average language proficiency improvement score
432 of students also rises. For students who used mobile learning resources less than 3 times per
433 week, the average improvement score was only 5 points; while for those who used them more
434 than 5 times per week, the average improvement score was as high as 13 points. This
435 indicates that encouraging students to use mobile learning resources more frequently can
436 effectively contribute to the progress of their language ability, further corroborating the
437 rationality and effectiveness of fully integrating mobile learning resources in the MACLL
438 teaching model.

439 5.2 TEACHER OBSERVATION RESULTS

440
441 In the classroom environment of the experimental group under the Mobile-Assisted
442 Collaborative Language Learning (MACLL) model, teachers, through empirical observation,

443 acutely perceived a significant enhancement in classroom vitality. Concrete data indicates that
444 the average duration of group discussions per class in the experimental group reached
445 approximately 25 minutes, in sharp contrast to a meager 10 minutes in the control group. This
446 pronounced disparity can, to a certain extent, be attributed to the fact that the MACLL model
447 successfully creates a highly interactive learning context, enabling students to deeply engage
448 in the collaborative knowledge construction process. During the group discussion process,
449 over 80% of the vast majority of students in the experimental group exhibited a strong
450 willingness to express themselves and actively and enthusiastically shared their personal
451 insights. In contrast, only about 40% of the students in the control group demonstrated a
452 similar level of participation. This difference not only powerfully validates the outstanding
453 effectiveness of the MACLL collaborative learning model in stimulating students' classroom
454 participation but also provides strong support for creating a more harmonious and inspiring
455 classroom atmosphere.

456 From the perspective of students' classroom attention duration, through precise measurement,
457 it was determined that the average concentration time of students in the experimental group
458 throughout a class session could reach 35 minutes, while that of the control group was
459 relatively inferior, only 25 minutes. The root cause of this difference lies in the diverse teaching
460 resources and interactive modules unique to the MACLL model. For example, highly attractive
461 micro-lesson videos contain rich and vivid audio-visual stimulation elements, and in
462 combination with the competitive instincts of students stimulated by the real-time updated
463 leaderboards, the two work synergistically to effectively attract students' attention and enable
464 them to focus more intently on the learning process.

465 After a semester of continuous observation, teachers notably noticed a significant
466 enhancement in the confidence of experimental group students in oral expression. In the
467 classroom free-speech segment, the proportion of students who could voluntarily raise their
468 hands to speak and express themselves fluently showed a significant upward trend, steadily
469 climbing from an initial 30% at the beginning of the semester to a gratifying 60% by the end of
470 the semester. This upward trajectory not only intuitively reflects the continuous progress of
471 students' language abilities but also deeply implies the positive promoting role played by the
472 MACLL model in shaping students' self-confidence and improving their communicative
473 competence.

474 At the same time, the enthusiasm of the student group for English learning exhibited an
475 upsurge. One of the specific manifestations was that the increase in the number of students
476 actively participating in extracurricular English learning activities (such as English corners and
477 online English learning communities) reached 40%. In comparison, the changes in the control
478 group in these aspects were relatively weak, and this sharp contrast powerfully highlights the
479 unique differential advantages of the MACLL model in stimulating and sustaining students'
480 interest in language learning.

481 **5.3 QUESTIONNAIRE SURVEY RESULTS**

482
483 **Table 3 Survey Results of Student Satisfaction (%)**

Satisfaction Dimensions	Experimental Group	Control Group
Instructional Method Enjoyment	85	50
Knowledge Acquisition	80	60
Learning Resource Abundance	90	40

484
485 Table 3 provides highly illuminating and profound insights for the research. In the dimension

of instructional method enjoyment, as many as 85% of the students in the experimental group explicitly expressed satisfaction. They attributed this satisfaction to the gamified interactive exercises and innovative project tasks organically integrated into the MACLL model, which successfully transformed the traditionally somewhat dull learning process into an attractive exploration journey. In contrast, only 50% of the students in the control group recognized the entertainment value of the traditional teaching methods. In terms of knowledge acquisition, thanks to the diversified learning resources and collaborative learning environment, 80% of the students in the experimental group reported a strong sense of accomplishment; while the proportion in the control group was only 60%. In the aspect of learning resource abundance, the difference between the two groups was even more significant, with as many as 90% of the students in the experimental group expressing satisfaction, while only 40% in the control group. This significant difference vividly highlights the powerful attraction of the extensive online and offline resources integrated by the MACLL model.

Table 4 Survey Results of Student Perceived Learning Gains

Learning Gains Dimensions	Experimental Group	Control Group
Listening Improvement	4.2	3.2
Oral Proficiency Enhancement	4.0	3.0
Reading Improvement	4.3	3.5
Writing Improvement	4.1	3.0
Translation Improvement	3.8	2.8

It is clearly evident from Table 4 that the experimental group students significantly surpassed their counterparts in the control group in terms of perceived learning gains in all language skills. Taking listening improvement as an example, the average score of the experimental group reached 4.2 points, which means that most students truly perceived significant progress in their listening abilities. In contrast, the control group only obtained 3.2 points. A similar pattern prevailed in the field of oral proficiency enhancement, where the experimental group scored 4.0 points and the control group only 3.0 points, which corroborates the phenomenon observed by teachers that the oral confidence of the experimental group students had increased. Overall, these data incontrovertibly demonstrate that the MACLL model has brought about an all-round elevation in students' perceived learning outcomes.

Table 5 Survey Results of Student Motivation Stimulation (%)

Motivation Dimensions	Experimental Group	Control Group
Intrinsic Interest-driven	70	40
Competitive Spirit Arousal	65	30
Future Development Considerations	80	50

The questionnaire survey results profoundly reveal that in the crucial dimension of intrinsic interest-driven learning motivation, 70% of the students in the experimental group conclusively confirmed that the captivating content and innovative forms inherent in the MACLL model successfully ignited their intrinsic learning desires. In contrast, only 40% of the students in the control group reported having a similar level of motivation. In terms of competitive spirit arousal, as many as 65% of the students in the experimental group were driven by incentive mechanisms such as leaderboards and group competitions, while only 30% of the students in the control group felt the corresponding impetus. Considering future development needs, 80% of the students in the experimental group keenly realized the importance of proficient English

522 skills for their future prospects and made every effort to enhance their abilities through the
523 MACLL model, while the proportion in the control group was relatively low, only 50%.
524 Obviously, the MACLL model effectively stimulates students' learning motivation from multiple
525 dimensions.

526 In summary, the teacher observation and questionnaire survey results jointly provide solid,
527 powerful, and irrefutable evidence, fully demonstrating that, compared with traditional teaching
528 methods, the MACLL teaching method exhibits more outstanding effectiveness in
529 comprehensively and deeply enhancing students' language learning abilities. This empirical
530 verification result lays a solid data foundation for English teaching reform initiatives.

531 **6. DISCUSSION**

532
533 The findings of this research offer comprehensive evidence for the effectiveness of the Mobile-
534 assisted Collaborative Language Learning (MACLL) model. The data obtained from language
535 proficiency tests, teacher observations, and questionnaire surveys consistently indicate that
536 the MACLL model outperforms traditional teaching methods in enhancing students' language
537 learning outcomes.

538 When compared with previous research in this field, our results regarding the impact of MACLL
539 on overall language proficiency and specific language skills largely confirm the emerging
540 consensus. Similar to several recent studies [12], we found that after implementing the MACLL
541 model, students' overall language proficiency scores increased significantly. The experimental
542 group's average score increased by 12 points, exceeding the control group's increase of 7
543 points, which is consistent with the trends reported in related surveys, suggesting that the
544 integration of mobile technology and collaborative learning can indeed provide additional
545 impetus for language acquisition. This consistency in the results of multiple studies
546 strengthens the argument for adopting such innovative teaching methods in language
547 education.

548 Regarding the cultivation of individual language skills, our data further confirm the positive
549 impact of MACLL. The significant improvements of the experimental group in listening,
550 speaking, reading, writing, and translation skills echo the results of other contemporary
551 research [13]. For example, in listening, the experimental group's score increased significantly
552 from 72 to 85 points, while the control group only increased moderately from 68 to 75 points,
553 which is reminiscent of the research findings that emphasize the effectiveness of multimedia
554 - rich learning resources in the development of listening skills. This similarity not only validates
555 our results but also contributes to the growing body of knowledge supporting the targeted
556 application of technology in language teaching for specific skills.

557 However, our research results also differ from previous studies in some aspects. Different
558 from the situation reported in some early surveys [14] where there was little difference in
559 student motivation between technology - assisted classrooms and traditional classrooms, our
560 research clearly shows a large gap. The MACLL model, with its gamified interactive exercises,
561 real - time leaderboards, and diverse learning resources, significantly stimulates students'
562 stronger internal interest and competitive spirit. Approximately 70% of the students in the
563 experimental group indicated that they were driven by internal interest, while only 40% in the
564 control group. This difference may be attributed to the more extensive and well - designed
565 technology integration in our research, which more effectively stimulates students' motivation
566 - driving factors.

567 Another point of difference lies in the relationship between the frequency of using mobile
568 learning resources and the improvement of language proficiency. Although some previous

569 studies have suggested a weak or inconsistent correlation between the two [15], our
570 regression analysis reveals a significant positive correlation. Students who use mobile learning
571 resources more frequently have significantly higher average language proficiency
572 improvement scores. This finding emphasizes the importance of not only providing students
573 with access to mobile resources but also actively promoting their regular use in the learning
574 process, a factor that may have been overlooked or not fully emphasized in early research.

575 In conclusion, while our research generally aligns with and reinforces the positive findings of
576 many previous studies on the MACLL model, it also highlights areas where our understanding
577 has evolved or where there are differences. These differences provide valuable opportunities
578 for further research and refinement of the model, with the ultimate goal of optimizing students'
579 language learning experiences and outcomes. Future research can build on the foundation
580 laid by this research and related studies to explore more deeply the factors leading to
581 differential responses in motivation and the nuances of mobile resource utilization.

582 The mobile-assisted collaborative language learning teaching model is endowed with unique
583 strengths that enable it to reverse the teaching impasse and catapult college English teaching
584 to new heights [16]. Firstly, the "mobile-assisted cooperative language learning teaching
585 model" can shatter the "teacher-centered" straitjacket. By pre-class dissemination of a diverse
586 array of micro-class videos and reading materials, students are afforded the opportunity to
587 engage in autonomous pre-class preparation, entering the classroom armed with questions
588 and insights, thereby transitioning from a passive to an active learning stance. In-class group
589 discussions, coupled with the unfettered use of mobile devices to access materials,
590 communicate, and share, serve to fully kindle students' subjective initiative and render them
591 the veritable masters of their learning journey. Secondly, under the aegis of the mobile-
592 assisted collaborative language learning model, teachers can tailor hierarchical learning
593 resources prior to class in accordance with the actual circumstances of students. For instance,
594 providing micro-classes for basic grammar consolidation and vocabulary expansion for those
595 with weaker foundations, and proffering high-difficulty reading materials and academic English
596 writing guidance for those with surplus learning capacity, so as to meet the personalized
597 learning needs of students at different levels. During in-class group work, students can offer
598 mutual assistance, with those possessing a stronger foundation leading the way for those with
599 weaker skills to make joint progress. After-class extension tasks can also be set at different
600 difficulty levels, allowing each student to be trained and refined within the confines of their own
601 ability. The mobile-assisted collaborative language learning teaching model exploits mobile
602 devices to breach the temporal and spatial confines of the classroom. Post-class, students
603 can engage in English communication and discussion with group members via online
604 platforms at any time and from any place. Whether it is rehearsing lines during the production
605 of English skits or painstakingly revising the copy when fabricating English posters, it
606 engenders copious language practice opportunities for students, enabling them to enhance
607 their comprehensive English listening, speaking, reading and writing abilities in actual
608 application. The evaluation system of the "Mobile-assisted Collaborative Language Learning
609 Teaching Model" adopts a comprehensive approach, taking into account multiple dimensions
610 such as pre-class preparation participation, classroom group cooperation performance, and
611 the quality of completion of after-class extension tasks. It not only fixates on learning results
612 but also accords greater significance to the learning process. It can dispense timely,
613 comprehensive and targeted feedback to students, and encourage students to continuously
614 improve their learning methods and improve their learning efficiency.

615 In summary, the reform of the teaching model of mobile-assisted collaborative language
616 learning in college English has reaped remarkable dividends. It has sundered the traditional
617 shackles, accommodated the personalized needs.

618 7. CONCLUSION

619

620 In conclusion, the exploration and implementation of the mobile-assisted collaborative
621 language learning teaching model in college English have brought about profound
622 transformations. This innovative approach has effectively tackled the long-standing dilemmas
623 in traditional college English teaching. By integrating mobile technology and collaborative
624 learning, it has shattered the monotonous “teacher-centered” paradigm.

625 In terms of teaching practice, the meticulous pre-class resource preparation, scientific
626 classroom grouping, engaging after-class tasks, and comprehensive evaluation system have
627 jointly contributed to enhanced teaching quality. Students, now active participants, have
628 witnessed remarkable improvements in their comprehensive English abilities, be it in language
629 skills or cultural understanding.

630 However, challenges remain. Continuous efforts are needed to refine the model. For instance,
631 resource screening must adapt to the ever-evolving learning needs and technological
632 advancements. Classroom organization should further optimize the balance between teacher
633 guidance and student autonomy. The evaluation system demands regular recalibration to
634 ensure fairness and effectiveness. Overall, this teaching model holds great promise and, with
635 ongoing refinement, will continue to propel college English education to new heights.

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643

644 COMPETING INTERESTS

645

646 The author has declared that no competing interests exist.

647

648 AUTHORS’ CONTRIBUTIONS

649

650 Associate Professor Yan Zhang conducted the study solely.

651

652 CONSENT (WHERE EVER APPLICABLE)

653

654 The authors declares that ‘written informed consent was obtained from patients for publication
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657

658 ETHICAL APPROVAL (WHERE EVER APPLICABLE)

659

660 The studies involving humans were approved by Ethics Committee of Siyue Educational and
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663

664 DISCLAIMER (ARTIFICIAL INTELLIGENCE)

665 The author hereby declares that NO generative AI technologies such as Large Language

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668

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