

An Action Research on English Reading Compensatory Teaching Based on the Diagnostic Assessment of "Youzhenxue" (University Edition)

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Abstract: Numerous studies have shown that diagnostic assessment plays a certain backwash role in English teaching, and the results of diagnostic assessment are used as the basis for subsequent compensatory teaching design. "Youzhenxue" (University Edition) is a language assessment platform that provides targeted diagnostic assessment results for English reading assessment. This paper explores the effectiveness of English reading compensatory teaching based on the diagnostic assessment results of "Youzhenxue" using a mixed research method. It is found that compensatory teaching focusing solely on the weaknesses of reading micro-skills identified in the assessment has limited effect on improving reading proficiency.

Keywords: diagnostic assessment; compensatory teaching; English reading; action research

1. Introduction

Since the 1990s, with the continuous infiltration of cognitive psychology in the field of psychological measurement, cognitive diagnostic assessment has emerged. The backwash effect of cognitive diagnostic assessment on English teaching has been recognized by many researchers, and a large number of empirical and research activities based on the assessment results have been carried out (Fan Tingting & Zeng Yongqiang, 2016; He Lianzhen & Zhang Juan, 2018).

Most of the existing research is quantitative in nature, focusing on the development of diagnostic assessment systems or collecting and analyzing data through experimental designs to validate the reliability and validity of cognitive diagnostic assessments in measuring students' true proficiency levels. However, there is a lack of research validation on the design of teaching activities based on the feedback from diagnostic assessment reports. Furthermore, the hybrid approach combining quantitative research design with qualitative action research has not yet been applied to this topic. This study aims to explore the role and effectiveness of compensatory teaching based on cognitive diagnostic assessment reports in influencing English reading instruction through a mixed-methods research approach, which integrates data collection and analysis with questionnaires, interviews, and other methods. The study also investigates the development of students' English reading micro-skills during this process.

Action research was first proposed by American philosopher, psychologist, and educator John Dewey (1929) in the early 20th century and was applied to educational reform in the 1950s. Australian scholars Kemmis and McTaggart (1982) pointed out that action research is a form of self-reflection, through which educators can enhance their rational understanding and correct evaluation of the educational profession they engage in, their work processes, and their work environments. The main characteristics of action research include systematically collecting data, collaboratively exploring, reflecting on teaching effects, and planning subsequent research based on reflections (Burns, 2010; Wang Qiang & Zhang Hong, 2014). Its implementation process, which involves multiple cycles of "plan-action-observe-reflect," is highly integrated with teaching activities and more aligned with actual teaching. Through repeated cycles of observation, reflection, and adjustment during the teaching process, the goal is to achieve the teaching objectives.

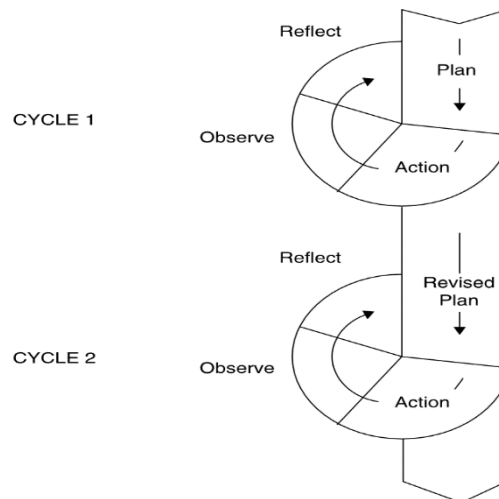


Diagram 1 Cyclical Model of Action Research (Burns, 2010)

Action research based on cognitive diagnostic assessment results combines the characteristics of action research with those of diagnostic assessment. It utilizes the feedback from diagnostic assessment, specifically the identified shortcomings in students' abilities, as the basis and starting point for designing compensatory teaching activities. During the action process, observations are made, and finally, the results of the action are reflected upon and compared with the expected outcomes. Based on this reflection, the original plan is further improved, serving as the starting point for the next round of action research. This cycle continues until the students' original shortcomings in abilities are addressed. This study aims to explore the effectiveness of compensatory teaching in English reading instruction through the method of action research, and to verify whether compensatory teaching can promote the development of reading proficiency and to what extent.

2. Research Contents

2.1 Research Objectives

The participants of this study were 91 male and female students in the fourth-year junior college-to-university program of English majors, with males numbering 6 and females numbering 85, and an average age of 21 years. At the time of conducting tests and collecting data, they had already accumulated at least nine years of English learning experience and were enrolled in a 10-week English reading course titled "Advanced English (III)". All students had the need to participate in TEM-4 (Test for English Majors Band 4) exam during that semester, thus possessing a high demand for improving their English reading proficiency and strong learning motivation.

2.2 Research Tool

This study utilized the "Youzhenxue (University Edition)" testing platform as the primary assessment tool. "Youzhenxue (University Edition)" is an online diagnostic learning system tailored for English teachers and students in universities. It aligns with the China's Standards of English Language Ability (CSE) and offers online diagnostic assessments for students at levels 4 to 7 of the CSE, providing feedback reports and instructional suggestions. According to Saif (2006), when the objectives and content of an examination are consistent with teaching, it is likely to elicit positive washback effects. Given that "Youzhenxue (University Edition)" offers tests and corresponding level descriptions focused on students' English reading micro-skills, which are aligned with the instructional goals of developing these skills, it is well-positioned to facilitate washback in reading instruction. By providing detailed insights into students' reading micro-skills, the platform supports teachers in adjusting their teaching strategies and resources to enhance students' reading proficiency.

2.3 Research Material

2.3.1 Diagnostic Assessment of "Youzhenxue"

Students participated in two English reading proficiency tests provided by the Youzhenxue (University Edition) platform at the beginning and end of the semester. The tests were administered in a computer-based format, with a full score of 100 points. The test types included multiple-choice questions, matching questions, and true-or-false questions.

2.3.2 Personalized Feedback Report

The feedback reports from the Youzhenxue assessment have been aligned with the China's Standards of English Language Ability (CSE). The feedback reports describe each student's level from three main aspects: reading micro-skills, reading text genres, and exam question types. The reading micro-skills are reported from Levels 4 to 7, encompassing abilities such as quickly locating specific information, making reasonable inferences, understanding the main idea and key points, comprehending and contrasting different viewpoints and attitudes, acquiring detailed information, and understanding the logical relationships within texts. Notably, the ability to "quickly locate specific information" is exclusively featured in the Level 5 report.^[1]

The feedback reports provided a comprehensive description of both the overall and individual student performance in the aforementioned elements, and offered targeted teaching suggestions based on the weaknesses identified for students at different levels.

2.3.3 Student Interview

Prior to and after implementing remedial teaching measures, interviews were conducted with students to gather their opinions, understand their situations, and evaluate the actual effectiveness of the remedial teaching in enhancing students' proficiency in using reading micro-skills.

3. Process of Action Research

Following the cyclical model of action research (Burns, 2010), this study progressed through foundation for the second round.

3.1 "Plan"

At first, the researcher administered the first English reading test to 91 students using the Youzhenxue platform in the second week of the semester. The assessment report focused on students' performance in reading micro-skills, clearly pointing out the shortcomings in these skills among students at different levels, and providing suggestions for teaching activities. The specific descriptions are outlined in Table 1.

| Level | Present Weakness in Micro-skills | Suggested Teaching Activities |
|-------|----------------------------------|--|
| 4 | Making Reasonable Inference | Strengthen Students' Strategy Learning and Training in Inferencing: [1] Identify the main ideas of the text and infer the author's intention based on those ideas. [2] Study the use of discourse-related vocabulary, mastering discourse knowledge such as turning points, concessions, progressions, connections, and tone moderation. [3] Learn the application of linguistic rhetoric and grasp language skills in the process of information exchange. |
| 5 | Getting Details | Enhance Students' Strategy Learning and Training in Information Extraction: [1] Use scanning to search for keywords related to the information needed. [2] Locate relevant paragraphs based on the main ideas and continue to search for detailed information. [3] Develop the habit of analyzing examples, capturing the main information, and understanding the author's intention behind the examples. |

| | | |
|-------|-----------------------------|---|
| 6 & 7 | Understanding Textual Logic | <p>Strengthen Students' Strategy Learning and Training in Analyzing Text Structure:</p> <p>[1] Utilize topic sentences to determine the main ideas and essential information of the text.</p> <p>[2] Organize the text's structure by identifying various connecting devices, clarifying the internal structure of paragraphs and the logical relationships between sentences.</p> <p>[3] Pay attention to analyzing the relationship between examples and viewpoints.</p> <p>[4] Strengthen the learning and training of cognitive strategies to improve abilities in logical reasoning and other related aspects.</p> |
|-------|-----------------------------|---|

Table 1 The first reading assessment report generated by "Youzhenxue"

Based on the collected data, the first round of action plan is designed to conduct reading micro-skills training through in-class text learning. The plan focuses on improving three key reading micro-skills over a period of 4 weeks of compensatory instruction. This instruction will integrate the explanation and training of reading micro-skills with the study of textbook texts. Additionally, the "Youzhenxue" WeChat mini-program will be utilized to provide supplementary reading micro-skills exercises for reinforcement.^[2]

| Time Period | Execution Content | Execution Steps |
|-------------|---|----------------------|
| Week 1-2 | Collect interview and first assessment data results to formulate an action plan | Plan |
| Week 3-7 | Strategy Training: Reading Micro-skill 1: Retrieving Detailed Information Reading Micro-skill 2: Making Reasonable Inferences Reading Micro-skill 3: Understanding Logical Relationships within the Text | Action & Observation |
| Week 8-9 | Second Assessment: Collect feedback results and analyze the data | Reflection |
| Week 10 | Adjust the existing action plan to prepare for the next round of action | Re-plan |

Table 2 Action Plan

3.2 "Action"

The compensatory teaching in this round of action research is centered around the learning activities derived from the text "Love Is a Fallacy." This short story, through its portrayal of three distinct characters, showcases the demeanor of young people in American campuses. The novel's neatly structured narrative and clear hierarchy facilitate students in analyzing the text's structure. Additionally, the various logical fallacies presented in the text aid students in understanding the elements and processes of rational argumentation, thereby enhancing their logical judgment and reasoning abilities.

During the compensatory teaching process, a "teacher-led explanation/demonstration + student practice" approach is adopted to develop students' micro-skills. The specific compensatory teaching activities targeting the three reading micro-skills are as follows:

Compensatory Activity 1: Identifying the main idea of the article through topic sentences (making reasonable inferences)

Compensatory Activity 2: Locating relevant keywords through the theme (extracting detailed information)

Compensatory Activity 3: Learning the use of connecting words in the text (making reasonable inferences)

Compensatory Activity 4: Analyzing the relationship between examples and viewpoints to strengthen logical reasoning (understanding the logical relationships within the discourse)

Firstly, the three essential elements of rational argumentation are clarified: a clear thesis, the relevance and sufficiency of evidence. Through exercises, students are guided to identify the thesis and corresponding evidence. Specific activities include: (1) Identifying the thesis and evidence, (2)

Assessing the relevance of evidence: locating evidence related to the thesis within sentences, (3)
 Evaluating the sufficiency of evidence: ensuring all evidence supports the thesis.^[3]

Over a four-week period of compensatory teaching and reinforcement, students are supervised and encouraged to utilize a WeChat mini-program to synchronously engage in micro-skill consolidation exercises, totaling 6,196 questions. In the 8th week, a second proficiency test is administered through the assessment platform, followed by an analysis report on the overall level and comparisons across different student levels based on the feedback received.

3.3 “Reflection”

3.3.1 Paired-samples t-test

A paired-samples t-test was conducted on the results of the two reading assessments taken by students (with 89 students participating in both assessments). The paired-samples t-test results indicated that there was a significant difference ($t=-1.109$, $df=88$, $p<0.05$) in the reading proficiency scores between the first and second assessments for all students: the reading scores in the first assessment were slightly lower than those in the second assessment ($MD=-2.00$), suggesting an improvement in students' performance.

| | 1 st test | | 2 nd test | | MD | t (88) |
|---------------|----------------------|-------|----------------------|-------|-------|--------|
| | M | SD | M | SD | | |
| Reading Score | 48.45 | 18.73 | 50.45 | 15.35 | -2.00 | -0.389 |

Figure 3 Difference in scores between the first and second assessments(n=89)

It is evident that compensatory instruction based on assessment results has played a positive backwash role in enhancing English reading proficiency, contributing to the improvement of students' reading skills.

However, a paired-samples t-test conducted on the overall scores of two tests for students across four levels revealed no significant changes in their overall performance between the two tests ($p>0.05$). This may be attributed to the relatively short duration of strategic training, resulting in insufficient development of students' strategic awareness.

Further analysis using paired-samples t-tests on the micro-skills scores within each level showed that among the three micro-skills that students across different levels commonly prioritized – "Understanding Logical Relationships (LR)" in the discourse, "Making Reasonable Inferences (RI)", and "Quick Location of Specific Information (QL)" – significant changes were not observed in any of these skills for students at Level 7, which aligns with the platform's assessment that further skill training is not necessary for this level. For students at other levels, significant improvements were noted in LR for Level 6 students. In terms of RI, significant improvements were observed for Levels 4 and 5, while no significant change was seen for Level 6. Regarding QL, this skill was not assessed for Level 4 students, and among the remaining levels, only Level 6 students experienced a significant change, albeit a decline in their performance.

3.3.2 Student Interview

In the two interviews conducted with 91 students, the first one took place prior to the implementation of compensatory instruction. During this interview, it was revealed that while most students possessed some knowledge of specific English reading strategies, their understanding was not sufficiently systematic. Over half of the students acknowledged issues in their application of these reading strategies. Many students were able to articulate their problems using phrases related to reading micro-skills, such as "inability to summarize the main idea of the article comprehensively," "failure to thoroughly reason through the implications of the text," "difficulty in answering questions based on context," "wasting time between rereading the question and scanning the text," "misplaced focusing during information location," "struggle to find specific details," and "inability to accurately gauge the author's intention." These self-reported difficulties highlighted areas where targeted compensatory instruction could potentially offer significant benefits. Over half of the students identified themselves as having deficiencies in the skill of "making inferences based on context," followed by "locating details" and "inferring the author's true intention/tono."^[4]

The second interview took place after the implementation of compensatory instruction. Ten representative students, including 4 from Level 4, 4 from Level 5, 1 from Level 6, and 1 from Level 7, who had achieved score increases of 20 points or more in both tests, were selected for this interview

based on the assessment feedback report. The results indicated that the students' use of reading strategies had become clearer. They reported being able to quickly and accurately locate the answers required by the question stem based on keywords (corresponding to the micro-skill of "retrieving detailed information"). They also mentioned being able to infer the author's true intention based on contextual content rather than subjective assumptions (corresponding to the micro-skill of "making reasonable inferences"). However, difficulties persisted in "understanding the logical relationships within the text," particularly in literary genres.

3.3.3 Observation Results

Through this round of action research, it has been found that compensatory instruction based on assessment reports and targeted at reading micro-skills has achieved certain results. The diagnostic assessment reports can help teachers quickly identify the shortcomings in students' reading abilities and design targeted compensatory teaching activities, which has played a significant role in facilitating teaching. After receiving compensatory instruction, students have shown some improvement in the corresponding reading micro-skills. However, compensatory instruction did not significantly enhance certain micro-skills, such as "quickly locating specific information."^[5]

Discussion

This round of action research employed a targeted training approach for reading strategies to implement compensatory instruction. The diagnostic assessment results helped teachers identify students' weaknesses in reading micro-skills, providing a solid foundation for instructional design and guiding students' autonomous learning. Targeted compensatory teaching activities allowed teachers to clarify teaching objectives, and reading micro-skills facilitated the design of more effective reading instruction. The compensatory teaching activities helped students focus on familiarizing themselves with reading micro-skills and strengthening their corresponding reading abilities. The improvement in pre- and post-assessment scores also boosted students' confidence in reading learning.

While compensatory instruction solely focused on micro-skills can, to a certain extent, promote the development of certain micro-skills, it fails to identify the underlying reasons for students' weaknesses in those skills. As the survey results indicated, before the action research, senior students generally possessed a certain degree of strategic awareness and could actively and consciously apply some reading micro-skills. The limited or ineffective improvement in a specific micro-skill may be attributed to other factors (such as the short duration of compensatory instruction, students' understanding of the strategies, text difficulty, students' vocabulary coverage, emotions, attitudes, etc.), which remain unanswered in this round of action research and serve as the basis and reference for the design of the next round.

Furthermore, the effect of compensatory instruction solely focused on micro-skills weaknesses on comprehensively enhancing students' overall reading ability, whether compensatory teaching activities need to be differentiated for students at different levels (Levels 4-7) and how to do so, and how to facilitate the development of students' reading abilities from strategies to skills, are all issues to be considered in future action plans.

References

- [1]Burns, A. *Doing Action Research in English Language Teaching: A Guide for Practitioners*[M]. London and New York: Routledge, 2010.
- [2]Fan Tingting, Zeng Yongqiang. *A Review of Cognitive Diagnostic Assessment and Its Application in Reading Comprehension Ability* [J]. *Foreign Languages in China*, 2016(2): 82-89.
- [3]He Lianzhen. *From Introduction to Innovation: Forty Years of Applied Linguistics Research in China* [J]. *Foreign Language Teaching and Research (Bimonthly)*, 2008(50): 823-829.
- [4]He Lianzhen, Zhang Juan. *The Application of the China's Standards of English Language Ability in Remedial Teaching and Learning* [J]. *Foreign Language Testing and Teaching*, 2021(3): 1-11.
- [5]Wang Qiang, Zhang Hong. *English Teacher Action Research (Revised Edition)* [M]. *Foreign Language Teaching and Research Press*, 2014.