

# Exploring Tiered Reading Practices in Junior High School Chinese Classes Assisted by Digital Psychology Tools

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**Abstract:** With the growing integration of artificial intelligence and educational psychology, digital psychology tools are reshaping reading instruction. In junior high school Chinese education, reading is central to developing comprehension, aesthetic appreciation, and cultural literacy. Yet, students' cognitive and emotional differences often lead to uneven outcomes. This study explores a tiered reading model supported by digital psychology tools to enable differentiated instruction. By combining emotional analytics, attention tracking, and personalized feedback, teaching can better match learners' cognitive and affective needs. Using mixed-method research, findings show that this model improves comprehension, motivation, and emotional regulation while promoting a balance between technological precision and humanistic education.

**Keywords:** digital psychology tools; tiered reading; junior high school Chinese; emotional analytics; personalized learning

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## 1 Introduction

Reading is fundamental in junior high school Chinese learning, nurturing language ability and cultural understanding. However, diverse student abilities and interests make uniform teaching ineffective, often leading to disengagement. Digital psychology tools—such as emotion recognition and attention analysis—enable teachers to observe learning states in real time, offering insights for differentiated instruction. This study investigates how these tools can support tiered reading, providing personalized tasks that match students' abilities and emotions, thereby enhancing comprehension, motivation, and engagement.

## 2 Literature Review

### 2.1 Tiered Instruction in Reading Pedagogy

Tiered instruction, also known as differentiated instruction, emphasizes designing learning tasks at multiple levels of difficulty to meet students' diverse needs. In Chinese reading education, tiered teaching is typically achieved by grouping students according to their comprehension ability and assigning materials that match their proficiency. Such differentiation has been found to enhance engagement, narrow performance gaps, and cultivate independent reading habits. Despite these advantages, teachers often rely on subjective observation to determine students' levels, resulting in inconsistent grouping and limited effectiveness.

### 2.2 Digital Psychology and Learning Behavior

Digital psychology is an interdisciplinary field that merges psychological theory with data technology to analyze learners' cognitive and emotional states through quantifiable signals. Using tools such as facial recognition, physiological sensors, and learning behavior analytics, educators can monitor engagement levels, detect emotional fluctuations, and identify factors that influence attention and motivation. In reading instruction, these tools can illuminate students' internal learning states that were previously invisible to teachers, enabling timely intervention and more precise differentiation.

### 2.3 Integrating Technology and Reading Instruction

The application of technology in reading pedagogy is not new, but digital psychology tools extend its potential by focusing on the learner's emotional and cognitive dimension. Through emotion tracking and feedback visualization, students become more aware of their reading behaviors and are better able to self-regulate. For teachers, data visualization provides actionable insights into learners' engagement patterns and comprehension difficulties. This fusion of digital feedback and psychological insight creates a new teaching paradigm—one that combines technological intelligence with human empathy.

### **3 Methodology**

#### **3.1 Research Design**

This research adopts a mixed-method approach that integrates quantitative measurement with qualitative observation. Two Grade 8 classes from a junior high school in Hunan Province were selected for a semester-long experiment. One class implemented digital psychology-assisted tiered reading instruction (experimental group), while the other continued with traditional reading instruction (control group).

The study was structured into three phases. In the first phase, a diagnostic test and emotional engagement survey were used to establish baseline reading levels. In the second phase, students in the experimental group were divided into three tiers—advanced, intermediate, and support—based on reading performance and psychological data from digital tools. Each tier received reading materials and guidance suited to their level. In the final phase, the results were evaluated through comprehension tests, emotional engagement analysis, and interviews. The same teacher instructed both groups to ensure consistency.

#### **3.2 Instruments and Tools**

The study employed several digital psychology instruments. A facial emotion recognition system analyzed students' expressions during reading to estimate engagement and stress. An eye-tracking module monitored gaze duration and reading focus, identifying moments of distraction or difficulty. A learning analytics dashboard collected and visualized these data for teachers, helping them to adjust pacing and feedback. Complementary data were obtained from reading comprehension tests, student questionnaires, teacher journals, and classroom observations.

#### **3.3 Data Collection and Analysis**

Data collection spanned sixteen weeks. Quantitative data included pre- and post-test reading scores, engagement metrics, and attendance records. Qualitative data included classroom observation notes, student reflections, and interviews with both teachers and learners. Statistical analyses such as t-tests and correlation measures were used to determine improvement and relationship strength. The qualitative data were coded to identify recurring themes such as motivation, confidence, and emotional self-awareness.

### **4 Results**

#### **4.1 Improvement in Reading Performance**

By the end of the semester, students in the experimental group demonstrated significantly greater progress in reading comprehension than those in the control group. Their average comprehension scores rose substantially, indicating that differentiated reading materials and digital feedback effectively improved comprehension accuracy and analytical reasoning. Students in the lower tiers particularly benefited from targeted support tasks and motivational prompts provided by the system, showing greater confidence in tackling complex texts.

#### **4.2 Enhanced Emotional Engagement**

The analysis of emotional and behavioral data revealed that students in the experimental group maintained higher levels of positive engagement and focus. Instances of boredom and frustration decreased, while curiosity and enjoyment increased. Many students reported that being able to see visual representations of their emotional patterns during reading helped them understand how emotions influenced comprehension. Over time, they developed better control over their emotional responses, leading to more consistent reading performance.

### 4.3 Teacher Observations

Teachers reported that digital tools offered new insights into classroom dynamics. They could quickly identify students who appeared disengaged or anxious and provide timely support. The data also allowed teachers to differentiate feedback with greater precision. The integration of psychological analytics transformed the teacher's role from a transmitter of knowledge to a facilitator of individualized learning. Both teachers and students expressed strong approval of the tiered reading approach, noting increased interaction, mutual understanding, and classroom vitality.

## 5 Discussion

### 5.1 The Effectiveness of Digital Psychology in Tiered Reading

The findings confirm that digital psychology tools enhance the accuracy and responsiveness of tiered reading instruction. The combination of emotional analytics and cognitive assessment enables teachers to align tasks with each learner's zone of proximal development. This dynamic adjustment process turns reading into an interactive experience where instruction evolves with students' cognitive and emotional progress. The experiment suggests that when psychological data are interpreted thoughtfully, technology becomes an instrument of empathy rather than surveillance.

### 5.2 Emotional Factors in Reading Comprehension

Reading comprehension is not purely cognitive; it is closely tied to emotion. Positive emotions promote curiosity and persistence, while negative emotions such as anxiety can hinder concentration and recall. The use of emotional feedback helped students recognize these patterns, promoting self-awareness and self-regulation. This finding supports the idea that emotional intelligence should be integrated into literacy education. Students who learn to manage their emotions can maintain focus and interpret texts more effectively.

### 5.3 Implications for Teaching Practice

Implementing digital psychology-assisted tiered reading reshapes classroom culture. Teachers gain access to data that inform immediate decisions, such as adjusting task complexity or grouping. Students, in turn, experience greater autonomy as they observe their learning progress and emotional responses. This partnership between technology and pedagogy enhances both teaching efficiency and learning satisfaction. Importantly, the approach does not diminish the teacher's role; it elevates it by providing richer, more personalized insights into each student's learning process.

### 5.4 Challenges and Ethical Considerations

While the results are promising, certain challenges remain. The use of digital psychology tools raises concerns about privacy, data storage, and informed consent. Schools must ensure that data collection is transparent and ethically managed. Additionally, teachers require adequate training to interpret data correctly and avoid overreliance on automated analytics. Another challenge lies in ensuring that all students have equitable access to digital devices and reliable internet connections so that technological advantages do not widen educational gaps.

### 5.5 Limitations and Future Directions

This study was limited to one school and a relatively small sample size, which may restrict generalization. Future research could extend the model to diverse regions and grade levels, integrating longitudinal data to examine sustained effects on reading motivation and literacy development. Further exploration could also combine digital psychology with AI-based adaptive reading platforms, allowing real-time adjustment of reading materials and feedback loops.

## 6 Conclusion

This study shows that tiered reading instruction assisted by digital psychology tools provides an effective way to meet diverse learning needs in junior high school Chinese classes. Through emotional analytics, attention tracking, and differentiated reading materials, teachers can create a more personalized and emotionally supportive learning environment. Students gain better comprehension, stronger motivation, and greater emotional awareness, while teachers can offer more

targeted guidance based on data insights.

Digital psychology reshapes reading instruction into a dynamic, reflective process that connects cognition with emotion. Rather than replacing human teaching, technology enhances it, making education more intelligent, personalized, and humane.

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