

Research on the Effectiveness of the Application of Teaching Aids in Multimodal Pedagogy – Taking the Mr. English App as an Example

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Keywords: multimodal pedagogy, teaching aid, Mr. English app

Abstract: With the continuous development of educational technology, the combination of multimodal teaching pedagogies and teaching aids has become a trend. The significant advantages of multimodal pedagogy applied to teaching aids are the enhancement of students' learning ability, practicality, and a screening mechanism that meets users' mental expectations. However, this pedagogy also suffers from difficulty in engaging students' attention, processing the information conveyed, and dealing with more complex information transformation processes. This paper takes the Tencent Mr. English app as an example to investigate the advantages and disadvantages of combining multimodal pedagogy and teaching aid apps and provides a prediction regarding the prospects of this pedagogy.

1. Introduction

With the continuous advancement of pedagogy, the education industry has entered a new phase of development. In addition, the use of computerized multimodal technology is being improved. The application of multimodal technology in teaching aids is an innovative move that has been implemented recently. The aim of this paper is to analyze the feasibility of incorporating multimodal pedagogies into teaching aid devices and to use the Tencent Mr. English app as an example to investigate the integration of multimodal pedagogy with teaching aids.

2. Theoretical Review of Multimodal Pedagogy

Multimodal is generally considered to be a combination of multiple modalities. However, the definition of modality is more complex and controversial. Charles Forceville argues that a modality is a set of social symbols that can be physically perceived and interpreted, whereas Gunther Kress suggests that modality is a way of communicating with the external environment using different senses. In China, scholars such as Guo Yueguo state that modality is a way of using various forms of text, symbols, images, and other forms to convey information and meaning. This paper will adopt Guo Yueguo's definition of modality.

At the beginning of the 21st century, Steiner Waldorf, an education theorist, first applied the

multimodal theory to education study. Later, Gunther Kress and Van Leeuwen (2001) proposed the use of more than one modal symbol to stimulate students' senses to achieve better learning outcomes. Although predecessors have paved the way for the use of multimodal symbols in education, their use has not yet resulted in a systematic and thematically clear theory. Current research is not focused; it continues to develop in many areas like functional and analytical areas.

Multimodal teaching applies the concept of multimodality to pedagogy. From the teacher's perspective, it expands the possibilities of teaching. In multimodal teaching, the teacher does not only act as a knowledge-transmitter but uses different modes of teaching to build a framework for intersensory interaction and promote the coherence of learning across the senses.

3. The Application of Teaching Aids in Multimodal Teaching

3.1. Implementation

There are many implementations of multimodal teaching applied to teaching aids. Examples include k12 online education apps; English learning websites, which are very popular in the application software market among Chinese students; learning machines; and CD-ROMs aimed at learning English.

3.2. Positive Effects

3.2.1. The Process of Modal Shift Contributes to Learning Skills

Multimodal learning is more conducive to memory enhancement than unimodal learning. On the one hand, the multimodal approach of combining images and speech in language learning involves some degree of modal shift, which deepens the learner's memory and, to a large extent, increases the persistence of what has been learned; on the other hand, the construction of a multimodal framework for learning facilitates the learner's information acquisition and practical skills.

3.2.2. Practicality

According to behaviorism theory, the ultimate goal of teaching is application. Generally, the corpus of teaching aids using multimodal pedagogy can be applied to a large number of topics in real life. Furthermore, timely feedback is emphasized by behaviorism as an essential aspect of effective learning. In fact, multimodal pedagogy has been used in many traditional classrooms, such as English teachers using multimedia devices to enhance students' sense of engagement through audiovisual experience, which is one of the manifestations of multimodal pedagogy.

Most of the multimodal teaching aids available on the market today have a separate AI and human feedback system to ensure that users receive accurate feedback immediately.

3.2.3. Screening Mechanism Meets Users' Psychological Expectations

When designing quizzes, most of the teaching staff will consider the grading of difficulty and suitability. This grading approach is in line with the constructivist idea of indirectly building interactive models. Users are categorized one by one due to the filtering system with different levels targeting different users, which, to some extent, will reduce the symptoms of user anxiety, enable users to have a better experience, and foster users' loyalty. This is in line with the American linguist Stephen Krashen's emotion filtering hypothesis – instructors should try to avoid negative emotions in learning, as it hinders the input of the target language and significantly affects the level of acquisition.

Moreover, multimodal pedagogy makes educational resources more diverse and decentralized, and learning modes more intelligent and differentiated. All these enhancements provide users with richer and more sophisticated choices.

3.3. Problems

3.3.1. Difficult for Multimodal Symbols to Capture Students' Attention

As a distinctive learning tool in multimodal teaching, teaching aids are used to assist teaching staff in stimulating students' senses and behaviors to achieve a better input-output pedagogical process. Although it is true that teaching aids are more effective than traditional teaching methods in engaging senses, even under this premise, teaching aids do not, in some cases, attract students' attention well or are not as effective as traditional pedagogies, as sometimes they cannot convey the discourse's meaning that the pedagogue wishes to convey.

In addition, the theory of multimodal pedagogy is sometimes disconnected from pragmatic aspects, that is, innovations in educational technology lack appeal to students, and although there are a plethora of symbols, the overall engagement of students is low.

3.3.2. Difficult to Process the Messages Conveyed by Multimodality

According to the educator Mary Moen's theory, the process of education is preceded by meaning. If the teaching process is overloaded with too much useless information that does not fit with the core purpose and is difficult for the students to accept cognitively, it undermines students' cognitive abilities and reduces teaching efficiency. In other words, students' information processing and cognitive abilities are limited in a period of time, and the provision of too much information will overload students' ability to process information and prevent some useful instructional information from being processed in a timely manner. Furthermore, from the parents' perspective, the integration of multimodal pedagogy into teaching aids creates difficulty in usage, thus making the role of the parent as a supervisor more difficult to play. From the teacher's perspective, multimodal teaching does not have the immediacy of a traditional classroom. In addition, the initial trial with the teaching aids and the teaching aids themselves bring operational difficulties that affect the quality of teaching to some extent.

3.3.3. Multimodal Learning Transition Process is More Complex

In the context of English teaching, multimodal pedagogy refers to the simultaneous combination of more than one modality (e.g., a combination of auditory and visual) by an instructor. Although multimodal pedagogy can enhance learners' memory to some extent, the conversion of unimodality in a language is easier than the multimodal conversion process, as the transformation of multimodal learning requires more individual task-driven subjectivity and the multimodal audiovisual chain requires learners to have a stronger ability to absorb learning.

In general, although there are more complex issues in the application of multimodality, such as difficulties in capturing students' attention, processing information, and transferring learning outcomes, theoretically, the application of teaching aids in multimodal pedagogy has the potential to improve students' learning capabilities. Besides, the filtering mechanism is, to some degree, in line with the users' psychological expectations. The idea of multimodal pedagogy is ideal; however, there is still a long way to go on the path of continuous improvement and development of multimodal pedagogy.

4. Case Study on the Application of a Teaching Aid – the Tencent Mr. English App – as an Example

4.1. Introduction to the Tencent Mr. English App

The Tencent Mr. English app is an AI-based English teaching aid app designed for k12 education, targeting primary school teachers, students, and their parents. It focuses on the concept of learning interactions between teachers, students, and parents. Its goal is that educators can enjoy the functions of intelligent review of homework, instant class feedback, and teaching methods tailored to an individual student's needs. Students can self-assess weak points, self-correct mistakes, and experience flexible self-learning mode. Parents, as supervisors, can achieve barrier-free tutoring.

4.2. Features

The main functions of the Tencent Mr. English app are divided into seven categories. Schools that do not have Tencent Mr. English certification have only two options for assigning tasks: Quick Textbook Assignments and Open-ended Tasks. After contacting the person in charge of the product and obtaining the certification, teachers can access a variety of task types: Quick Textbook Assignments, Open-ended Tasks, Vocabulary, Picture Book Reading, Thematic Vocabulary, Oral Language, and Video Dubbing.

4.3. Expected Learning Outcomes

4.3.1. Learning Autonomy

According to the educator Richard E. Mayer's two-pronged hypothesis (2007), pieces of knowledge through both face-to-face instruction and mobile smart learning aids can be digested by the learner. Anne McGill-Franzen develops this theory further, suggesting that freedom of learning is the greatest advantage of mobile learning. Regarding the Tencent Mr. English app's choice of the carrier – mobile phones and tablets are the only two ways for students to use the app – designers take advantage of the portability that comes with mobile technology to serve students' language learning. Multimodal pedagogy is applied to the process of pedagogical devices to achieve autonomy in learning; this includes spanning the temporal and spatial dimensions, achieving the goal of learning autonomy.

4.3.2. Interactivity in Learning

One of the necessary prerequisites for incorporating mobile learning into primary English classrooms is the interactive nature of multiparty participation. Although different from the model of building learning communities, which is popular in China, the product incorporates a certain degree of interaction with teachers, students, and other stakeholders. The peer-to-peer interaction includes teachers' ability to establish a class wall of honor and progress, with virtual stimuli (red flowers) to motivate students. The commendatory list will be sent to each student as a notification. Furthermore, although classmates cannot add friends, they can view and listen to their classmates' excellent assignments, and they can "like" their peers' excellent homework. In fact, such a novel interactive model avoids the drawbacks of learning communities – the transmission of negative information and disruptions to learning.

Moreover, the Tencent Mr. English app establishes an interactive form of national classes, striving to create a virtual learning interactive community. National Class assignments are usually themed around different festivals and cultures, allowing all students who have joined National Class to post their perceptions and opinions in English.

4.3.3. Dimension Mobilization in Learning

For k12 education, audiovisual sensitivities are mature between the age of six and twelve years, and most of the students at this age are able to perceive changes in the external environment. At this point, educators have been able to teach from three modalities: multimodal, affective, and functional needs. In terms of the affective dimension, pedagogical devices with the application of multimodal pedagogy drive internal emotions in children's learning process through motivational attributes. This attracts attention, lengthens the learning duration, and enhances the sense of achievement. From a multichannel perspective, the interactive way of reading picture books and the introduction of animated voiceover scenarios make the learning process interesting.

4.4. Problems in the Application

4.4.1. Problems on the Teacher's Side

From the teacher's perspective, there is a big difference between using app-assisted instruction and a traditional classroom that enables teachers to teach directly. It will also take some time for the teacher to become familiar with the app. In addition, the teacher will probably do useless things unrelated to teaching. Furthermore, with the introduction of new teaching methods, it takes some time for educators to design new classroom structures and conceptualize new teaching methods. Moreover, most educators will need to spend some time teaching the use of new teaching aids to their students. All the above redundant steps suggest that the complexity of the operation of teaching aid apps may cause a form-over-content problem, namely the complexity of the operation and the self-satisfaction based on unrealistic fantasy.

4.4.2. Problems on the Student Side

For students, the timing of the use of study aids is uncertain and does not help them learn English. In addition, the complex and tedious process of learning how to use the app creates a significant amount of stress for the students.

When students are using the supplementary software to study, the activation of permissions has also become a major problem. Schools that have not cooperated with Tencent are unable to access Picture Books or Dubbing Videos. It takes some time for the entire school to activate the privileges, which is undoubtedly a big problem for students in the early stages of learning.

4.4.3. Problems on the Parents' Side

The Tencent Mr. English app has given parents the right to participate in the process of completing students' assignments. Admittedly, parental involvement does provide a certain degree of supervision, but it also places more responsibility on parents and takes more time.

Moreover, 28% of parents asked the back office questions about account login, bindings, and setup. This means that even though the manual was provided beforehand, a large percentage of parents still encountered problems at the beginning of the process. This has, to some extent, compromised the progress of parental counseling to follow up learning.

4.4.4. Problems of Tripartite Coordination

This app is accessible to teachers, students, and parents, which means that the learning outcome is dependent on the coordination and cooperation between teachers, students, and parents. If any of them has problems in the operation, the benefits of all the supplementary software will be significantly reduced.

4.4.5. Problems of the App

According to the backstage statistics, about 23% of the user feedback was related to inaccurate ratings that may be caused by the AI scoring mechanism. In the feedback on inaccurate scoring, approximately 54% of users had greater difficulty in pronouncing lip and tongue sounds.

Moreover, apps such as Tencent Mr. English app have set up human-AI customer service to solve the problems encountered by users. However, almost all AI customer service is a keyword-matching response mechanism, and if the questioner's question is not included in the inventory of the question bank, or the questions are more detailed than pre-set questions, then AI customer service will find it difficult to pinpoint the problem. Considering the time-consuming and expensive nature of human customer service, software optimization should also consider the intelligent customer service part.

In addition, the app's learning feedback mechanism and customer service feedback mechanism are relatively simple, namely text feedback. This accounts for only one type of feedback mechanism in the seven mechanisms in k12 education proposed by the British educators Lyster and Ranta (1997).

5. Conclusion

With the rapid development of education and network information technology, the level of education informatization is also increasing. We are living in a multimodal society, and the traditional unimodal pedagogy can no longer adapt to the need for multimodal discourse. Furthermore, because of the increasing number of studies related to teaching aids in recent years, people are more aware of the importance of using teaching aids. In fact, the combination of the two meets the requirements of the time. However, the practice of applying multimodal pedagogy in teaching aids is still in its infancy. How to improve users' experience and how to use their strengths for teaching are problems scholars and educators should explore through the process of teaching and practicing.

References

- [1] Bing, W. (2019). *The Application of Multimodal Discourse Analysis Theory in the College English Teaching*. *Sino-US English Teaching*, 16(4). <https://doi.org/10.17265/1539-8072/2019.04.004>.
- [2] Bourne, J., Franks, A., Hardcastle, J., Jewitt, C., Jones, K., & Kress, G. (2014). *English in Urban Classrooms A Multimodal Perspective on Teaching and Learning*. Taylor and Francis.
- [3] *The English classroom as a multimodal sign*. *English in Urban Classrooms*, 37–68. https://doi.org/10.4324/9780203397305_chapter_4.
- [4] GU, Y. (2007). *On Multimedia Learning and Multimodal Learning*. *Computer-Assisted Foreign Language Education*.
- [5] Yi, Y. (2014). *Possibilities and Challenges of Multimodal Literacy Practices in Teaching and Learning English as an Additional Language*. *Language and Linguistics Compass*, 8(4), 158–169. <https://doi.org/10.1111/lnc3.12076>.