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Supporting Teacher-Student Book Talk and Book Wish Lists with AI-Driven Technology

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Abstract: This study explores the integration of artificial intelligence (AI) assistant in educational settings, focusing on two key teacher-student interaction activities: Teacher-Student Book Talk and Book Wish Lists. Conducted at an elementary school in northern Taiwan, semi-structured interviews to identify the main challenges and difficulties faced by teachers. The literature review highlighted the significant potential of AI as an educational assistant. Using a design-based research approach, several interviews with teachers led to the development and optimization of a digital system designed to address these challenges. The identified challenges included tracking classroom book availability, managing students' reading histories with paper-based wish lists, and recording book talk activities. The implemented system enabled teachers to efficiently track students' reading histories, manage book recommendations, and facilitate AI-assisted book talk. Results showed that the system not only streamlined the management of reading activities, significantly reducing teacher workload, but also enhanced the quality of teacher-student interactions by providing personalized guidance. While some teachers noted an increased workload in managing new content, overall feedback was positive, with a strong willingness to continue using the system. This study addresses previous challenges in managing reading activities and demonstrates that AI-assisted book talk can improve both the efficiency and effectiveness of educational activities. Future research will explore the integration of AI with learning companions to further support reading among parents, teachers, and students.

Keywords: AI in education, AI assistant, reading, book talk, teacher-student interaction

1. Introduction

Uninterrupted Sustained Silent Reading (USSR) was initially proposed by Lyman Hunt and later promoted and organized by McCracken (1971), Pilgreen (2000), and various other scholars. Although this program has gone by different names (Jensen & Jensen, 2002), its core objective remains consistent: to cultivate a sustained interest in and habit of reading through long-term reading. In Taiwan, Modeled Sustained Silent Reading (MSSR) has been actively promoted by Chan and his team for many years. In today's era of rapid knowledge development, reading is regarded as a critical skill for learning. Fostering lifelong reading habits can effectively enhance knowledge and skills, thereby supporting lifelong learning (Chan et al., 2018; Chien et al., 2011). "Book talk" are one of the key promotion methods, aiming to further stimulate students' interest and enthusiasm for reading through mutual sharing and discussion of book content.

With the rapid advancement of artificial intelligence and emerging technologies, various fields such as machine learning, natural language processing (NLP), generative artificial intelligence (genAI), and large language model (LLM) are developing at a pace beyond imagination. Technologies like ChatGPT and DALL-E are opening up new possibilities in daily life. While some worry that these technologies might replace humans, current

insufficient research evidence to support this view. Instead, most research focuses on the complementary interactions between these technologies and humans (Jeon & Lee, 2023; Noy & Zhang, 2023).

However, it should be noted that in fields like medicine, Weng et al. (2023) found that ChatGPT was unable to pass Taiwan's Family Medicine Board Exam. In the field of education, Kohnke et al. (2023) explored the use of ChatGPT in language learning and discovered that while ChatGPT often provides answers with great confidence, these answers can be incorrect, and there is no quick verification method for users. Obviously, applying such incorrect information in real-world situations could lead to negative consequences. Therefore, in most professional fields, there is a need for prompt engineering and specialized database training. For instance, chatbots designed for book talk with students (Liu et al., 2024; Liu et al., 2022) utilize specific book content and have response limitations. Most students interviewed stated that they perceived these chatbots as real people.

Past research has primarily focused on designing book talk between students and chatbots (Liu et al., 2024; Liu et al., 2022). However, interaction and communication between students and teachers remain crucial in education. The use of technological products also raises concerns and limitations, as they may reduce human interaction (Akyuz, 2020). Therefore, this study aims to continuously support both teachers and students during book talk. Following several interviews with teachers, a system was developed that integrates AI assistant to enhance teacher-student emotional and communicative connections. This system also assists teachers in addressing the difficulties and challenges encountered during book talk with students.

2. Literature Review

2.1 AI in Education and AI Assistant

Since the 1980s, many researchers have applied AI technology to the field of education (Nwana, 1990). Early research primarily focused on the design of "intelligent tutoring systems." With advancement in hardware technology over the years, numerous studies have systematically reviewed recent applications and developments of AI in education (Chen et al., 2020; Zawacki-Richter et al., 2019). Additionally, the outbreak of the COVID-19 pandemic has intensified interest in the potential of AI in education, with Kamruzzaman et al. (2023) highlighting several applications in digital classrooms and intelligent tutoring systems.

In recent years, AI technology has evolved from being a mere tool to becoming an ideal assistant in education. Chen et al. (2020) noted in their review that AI plays a crucial role in tasks such as assessment, grading, and providing feedback on student submissions, thereby freeing teachers to engage in more one-on-one interactions with students. Kamruzzaman et al. (2023) highlighted that AI can collect and process student assignments, automate grading, and provide real-time support and guidance as virtual teachers, helping to mitigate the lack of face-to-face interaction between teachers and students. Zawacki-Richter et al. (2019) identified four main application areas of AI in education: intelligent tutoring systems, profiling and prediction, assessment and evaluation, and adaptive systems and personalization. They also reviewed how AI can create profiles and predictions based on student data, diagnose students' strengths and weaknesses, provide feedback, evaluate student understanding, engagement, and academic integrity, and support teachers in instructional design. These studies collectively show that AI technology holds great potential for both educational institutions and individual teachers. Administrative tasks can be automated and performed more efficiently, reducing the heavy workload traditionally shouldered by educators and enhancing the overall flexibility and effectiveness of education (Chen et al., 2020; Kamruzzaman et al., 2023; Zawacki-Richter et al., 2019).

In Taiwan, Liu et al. (2022) highlighted the challenges teachers face in interacting with all students due to the students' varying language abilities and interests. They proposed that AI chatbots could address this issue by acting as reading companions. The study found that

chatbots can effectively assist students in understanding English vocabulary and book content, thereby enhancing their reading experience and engagement.

2.2 Learning Through Reading

Chien et al. (2011) developed the My-Bookstore digital system to promote MSSR among Taiwanese students, encouraging them to become active book recommenders. Chan et al. (2018) implemented MSSR in elementary schools for many years and used Interest-Driven Creator theory to explain why students become interested in reading and develop reading habits. De Naeghel et al. (2014) found that teacher involvement is strongly associated with adolescents' intrinsic reading motivation. Gasser et al. (2022) highlighted that reading narrative fiction can enhance children's sociomoral abilities, fostering imagination, empathy, and critical thinking. Liu et al. (2022) and Liu et al. (2024) found that AI chatbots, as book-talk companions, can establish a high level of social connection, maintaining students' situational interest in reading. This interaction creates a positive reading experience and continuously promotes their interest in learning. In summary, reading not only enhances students' academic abilities but also supports their social and emotional development. The use of digital systems and AI technology further enhances students' reading experiences and learning interests.

3. Research Method and Design

3.1 Book Wish Lists and Teacher-Student Book Talk

For a long time, teachers at this school have conducted two main activities in the classroom: Book Wish Lists and Teacher-Student Book Talk. In the Book Wish Lists activity, students begin by selecting 3 to 5 books of interest from the class library to create their wish list for the month. Based on each student's past reading history, the teacher then recommends an additional 3 to 5 books. This activity not only helps teachers understand students' reading preferences but also encourages students to explore a broader range of book content. The goal is to promote more diverse and in-depth reading among students.

In the Teacher-Student Book Talk activity, students shar the content of the books they have read with their teachers. Through interaction with teachers, students practice oral expression while deepening their comprehension of the book's content. Additionally, teachers can understand students' reading interests and current reading status, allowing them to offer more personalized guidance and support.

3.2 The Four F's of Active Reviewing

The Four F's of Active Reviewing, proposed by Greenaway (1990), are derived from his active reviewing cycle. These four key questions are: Facts, Feelings, Findings, and Future. Teachers use these questions in conversations with students to help them reflect more deeply and understand the content they have learned. This framework is also applied in designing GPT prompts that assist teachers in their book talk with students.

The prompt, originally in Chinese and translated into English, is: "(Based on the verbatim transcript and summary points of the book talk activity.) The teacher will guide students to discuss the book according to the following four outlines. Please analyze the book talk activity and provide feedback and suggestions based on these four outlines (e.g., which points were less mentioned by students, parts that may have been unclear): 1. This is a story about '…'. 2. I saw '…' in the book. 3. Shared experiences with the author. 4. From today, I decide to '…'." If teachers encounter difficulties in extending discussions, the system provides multiple reference questions based on these four key points to guide them in leading students into more meaningful conversations.

3.3 Design-based Research

This study employs the design-based research method (Brown, 1992; Collins, 1992) for system development and planning. This approach emphasizes iterative testing, verification, and optimization to improve the system. The participants include approximately 75 students from grades 2 to 6 and 5 teachers at an experimental elementary school in northern Taiwan. The process involves three semi-structured teacher interviews and two system implementation tests.

Initially, after the teacher interview, three main issues were identified: difficulty in fully understanding the available books in the class, challenges in tracking each student's reading history using paper-based wish lists, and the lack of recording tools for Teacher-Student Book Talk activities. These issues hindered teachers from effectively understanding students' reading interests and statuses, which impacted the effectiveness of book recommendations. To address these challenges, the system was developed.

About a month after the system's implementation, the 5 participating teachers were interviewed again. The feedback indicated that the system had improved the tracking of individual students' reading histories and the management of the class library. However, despite the system providing tools for documenting book-talk content, teachers still found processing the recordings to be time-consuming. Additionally, teachers expressed a desire to share students' learning progress records with parents to enhance the effectiveness of family reading.

3.4 System Development and Functions

During the research process, the system was developed using technologies such as HTML5, CSS, JavaScript, PHP, and MySQL. Additionally, AI assistant functions were integrated using OpenAI's Whisper API and GPT API for speech-to-text conversion and content summarization. Following two rounds of teacher interviews, the system was enhanced with several key features.

First, the system allows teachers to view individual students' wish lists and make book recommendations through the interface, preventing the selection of books already present on the students' wish lists or in their reading history. Second, teachers can access students' reading history records, which are displayed in charts that show the proportions of different book categories and can be filtered by relevant criteria. Additionally, the system includes a book-talk recording and smart analysis page. After recording, the AI assistant automatically summarizes the book-talk content and offers suggestions or specific questions for teachers. This feature was later extended to students and parents as well. Figure 1 shows the system architecture diagram. These functions fully leverage the advantages of the digital system, effectively addressing the difficulties and challenges identified by the teachers.

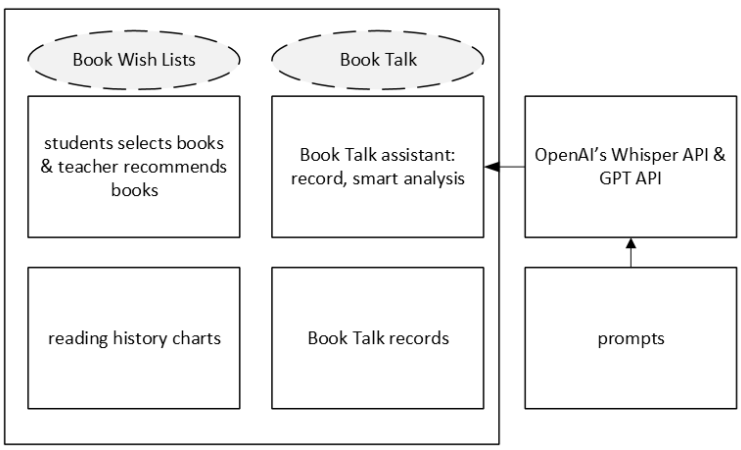

Figure 1. System architecture diagram

4. Result

4.1 Teacher Interviews

This study invited 5 teachers participating in three semi-structured interviews, each focusing on different aspects of the system. The interview questions were developed based on frameworks, Technology Acceptance Model (Al Darayseh, 2023), to ensure the validity and reliability of the questions. Prior to each interview, Teacher-Student Book Talk records and system usage logs for that month were organized, and an interview outline was prepared. The interviews primarily consisted of open-ended questions, with no fixed answers, resembling a conversational format. During the interviews, relevant information, such as the book talk records and system usage logs, was displayed to help the interviewees review and reflect on their experiences with the system. This approach encouraged participants to respond freely, sharing their thoughts and insights based on their experiences and feelings.

The first interview focused on “teachers’ thoughts on the system,” aiming to investigate their needs for functions related to the wish list and Teacher-Student Book Talk system, as well as their opinions and feedback. Example questions included: “How do teachers typically use the book talk recording tool to document the book talk process?” “When recommending books to students, do teachers refer to the students’ reading history records on the system page? If so, approximately what proportion of the time do they refer to these records?” and “Does the system’s presentation of students’ wish lists and reading history records for the month help teachers understand students’ past reading status more quickly and accurately?”

The second interview focused on “the impact of AI assistant on teaching activities after the introduction,” aiming to understand changes in teaching behavior, the effect on teaching workload, the overall effectiveness of teaching activities, and teachers’ willingness to continue using the AI assistant. Sample questions included: “Has there been a qualitative change in the content of book talk between teachers and students after introducing the book talk AI assistant? What kind of change?” “How does the book talk AI assistant help reduce the workload or stress associated with book talk?” “Has the introduction of the book talk AI assistant met the expected benefits for teachers? Why or why not?” and “Do teachers wish to continue using the AI assistant in the future? Are there any additional expectations?”

The third interview focused on “the changes and impacts on Teacher-Student Book Talk activities after system implementation.” It aimed to deeply understand the process of these activities, interaction patterns, the quality of book talk content, and the overall impact before and after introducing the wish list and Teacher-Student Book Talk system, as well as teachers’ perspectives on book talk. For example, questions included: “From the students’ perspective, what indirect benefits do teachers believe the introduction of the wish list and Teacher-Student Book Talk system has provided (e.g., changes in the quantity or quality of book talk) ?” and “From an educational perspective, what do teachers hope students will learn from book talk in the future, or what abilities do they hope to cultivate through Teacher-Student Book Talk activities?”

4.2 Interview Results

After collecting data from the three interviews, feedback on the wish list function indicated that the digital system made the book recommendation process significantly more convenient compared to the previous paper-based method. For example, Teacher T04 mentioned that using the digital system saved nearly half the time. Additionally, the individual student reading history function was highly praised for making it easier for teachers to track students’ reading progress. Teacher T04 noted that they could quickly confirm students’ past reading statuses. All interviewed teachers expressed a willingness to continue using these functions. Table 1 summarizes the interview data regarding continued use. Teacher T03 found the system

beneficial and wished to continue, and Teacher T05 saw it as a valuable tool and hoped to keep using it for support.

Table 1. *Teacher Feedback on Continued Use of the System in the Future*

Teacher Code	Feedback
T02	I believe the introduction of these systems is helpful and beneficial for students because it allows their oral expressions to be recorded. These systems are very useful.
T03	I find the systems to be good and I want to continue using them.
T04	I will want to continue to use these two. These two systems are more convenient as they not only record the main points but also provide practical suggestions.
T05	I would like to continue using these two systems in the future. In terms of effectiveness, they are quite good.
T06	I hope these two systems can be retained because the assistance they provide is very valuable.

* The questions and content of the interviews for this study were originally in Chinese and have been translated into English.

Regarding the AI assistant function, most of the 5 teachers gave positive feedback, believing that the AI assistant transformed Teacher-Student Book Talk from casual conversations into more in-depth and reflective discussions. Teachers also expressed a desire to continue using the system in the future. Some teachers shared the following feedback: “I think the AI assistant is very helpful in subsequent data organization,” “Teacher-Student Book Talk used to be more like casual chatting. The suggestions and analysis results generated by AI have deepened my guidance, prompting students to reflect,” “I would directly show students the key points and suggestions summarized by AI, and the students were very interested. I also used it in the monthly reading report,” and “I would show students and let them know what suggestions AI provided, then guide students based on them.”

However, teachers had mixed reactions regarding whether the AI assistant increased their workload. For example, Teacher T03 acknowledged the benefits of the system, saying, “I find the systems to be good and I want to continue using them.” However, Teacher T03 also noted that the AI assistant increased their workload, stating, “Previously, there was no record of book talk with students, so now we have to start recording these interactions, which means additional management and monitoring of new content.” Teachers T04 and T05 shared similar experiences (see Table 2).

Table 2. *Teacher Feedback on AI Assistant Function*

Teacher Code	Feedback
T02	“Previously, Teacher-Student Book Talk was mainly focused on whether students could grasp the main points. After the system was introduced, it became more about incorporating reflection.” “The suggestions and analysis generated by the AI have relatively reduced my guidance work during book talk. I think the AI assistant is very helpful in subsequent data organization.” “The analysis data generated by the AI helps reduce my workload. I always review what individual students discussed with me last time and identify areas that need further guidance.” “The suggestions and analysis generated by the AI have relatively reduced my guidance work during book talk.”
T03	“Before the system was introduced, I mainly talked with students about the story content of the book and the most impressive parts.” “The AI analysis results make it easier for me to review the previous book talk with students before our next activity.” “I usually refer to the AI-generated analysis results to understand the students’ situations.”

	“Previously, there was no record of book talk with students, so now we have to start recording these interactions, which means additional management and monitoring of new content.”
T04	“Teacher-Student Book Talk used to be more like casual chatting. The suggestions and analysis results generated by AI have deepened my guidance, prompting students to reflect.” “After reading the AI assistant’s suggestions, I know what topics to focus on for the next discussion with students.” “The key points and analysis results recorded by AI help me understand the students’ situations later.” “AI quickly informs me of the key points students discussed and how to extend the topics, making my guidance easier.” “The introduction of the system has increased my workload in certain areas, like the need for specific management and additional time to review the AI analysis.”
T05	“Before the system was introduced, I mostly asked students about the most impressive parts of the book. After the introduction, I think it systematically guides students to think more deeply about certain aspects.” “Having analysis records makes it easier to understand each student’s general situation. When talking to students next time, I am better prepared.” “The AI generates suggestions and book talk topics, allowing me to spend more time discussing students’ thoughts.”
T06	“Previously, teacher-student book talk were casual conversations about the story plot or impressive parts. After the system was introduced, I began asking students if they had similar experiences to the protagonist or author, helping them make connections.” “The book talk AI assistant provides me with more directions and focuses for guiding students.” “Before this system, I had to manually record what I talked about with students. With the system, the workload for subsequent data organization has been greatly reduced.”

* The questions and content of the interviews for this study were originally in Chinese and were translated into English.

Based on the interview data, the wish list function was highly effective in providing teachers with real-time records of students' reading histories and detailed book information. This functionality not only improved the efficiency of the wish list activity but also enabled teachers to assess students' reading statuses more accurately, allowing for broader and more appropriate book recommendations.

Additionally, the AI assistant significantly reduced the time and effort required for tasks such as recording, data analysis, and reviewing in Teacher-Student Book Talk activities. This reduction in workload allowed teachers to shift their focus toward higher-level educational tasks. With the support of real-time individual student reading histories and detailed book data, teachers were able to provide more personalized guidance and engage in deeper, more meaningful interactions with their students.

4.3 Limitations

Firstly, the study’s participants were drawn from a single elementary school in northern Taiwan, while there are over 2,000 schools across Taiwan that promote reading. As a result, this sample may not fully represent students of the same age or from different backgrounds, limiting the generalizability of the findings. Future research should consider including additional variables, such as gender differences, language abilities, or classroom learning themes, to enable more detailed analysis and broader inferences. Secondly, due to varying class schedules and teacher workloads, the amount of book talk data collected differed between classes, which posed challenges for conducting quantitative statistical analysis.

5. Conclusion and Future Directions

This study revealed that, prior to the implementation of the system, teachers had to manually observe, record, and analyze Teacher-Student Book Talk activities, which was time-consuming and energy-intensive. The AI assistant, however, now effectively supports teachers by recording the content of book talk, tracking individual student progress over time, and automatically analyzing the data into various levels of information for teachers' reference. This not only reduces the workload involved in guiding and responding to students during book talks but also enhances teachers' ability to offer more personalized teaching guidance. Teachers have expressed a willingness to continue using the AI-assisted system to improve teaching effectiveness. Furthermore, the valuable feedback gathered from these interviews has informed the ongoing optimization and refinement of the system, laying a strong foundation for its future development.

Future research will focus on integrating AI with learning companions and supporting reading among parents, teachers, and students. Preliminary plans for further system development are underway, which will further explore how to utilize AI technology to promote more effective teaching interactions and learning experiences.

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