

Artificial Intelligence and Multimedia Facilities in School Libraries: Possibilities for the Future

M.O. Ragnathan

MLISc Librarian,
GEMS Modern Academy
moraghunath@gmail.com
raghunathan.o_mhs@gemsedu.com

Abstract: *This paper discusses the role of latest technologies in present day school libraries, possibilities for the future and how to show the application of Artificial Intelligence along with effective use of the latest multimedia facilities.*

Keywords: *Artificial Intelligence, AI Robot, Chat GPT, multimedia, visual media, school library, learning engagements, 21st century library, collaboration, partnership, Middle East, GEMS Education, GEMS Modern Academy*

Introduction

School libraries are not only places to access books or curriculum-based information but homes for community-building tools as well. The role of the school library is changing and growing, and the librarian must be in the front rows of that change. However, most of the librarians are not adequately trained by institutions for the task. Master's-level library science programs are not given to train the next generation library professionals for the dynamic and vital work of creating and leading programs. The untrained librarians are working without formal program training which is leading to inefficient service in the school library.

Importance of the Application of Latest Technologies

The application of the latest technology is very important for the growth of the learning space and marks as highly relevant in the era of digitization. The contemporary library services in

the academic sector, especially the school libraries, have a lot of possibilities for the use of technology to serve as the ideal space to develop various skills through self-paced learning with the help of reference, research, and intellectual recreation. A modern school librarian must think about effective use of the school library platform to deliver engaging learning and productive sessions, aimed at developing and enhancing 21st century skills. Then only we can find the solution in the libraries that are adaptable and agile, considering students' unique circumstances while still offering opportunities. The role of the school librarian is changing in this scenario.

The Role of Modern Technology in School Libraries

Fresh technology has an important role to play in school libraries. Here are some ways in which technology can enhance the functionality and effectiveness of school libraries:

Digital Resources: Technology has made it possible to digitize and make available a vast range of resources, including books, journals, videos, and other media. School libraries can now provide access to online databases and e-books that students can access from anywhere at any time.

Automation: Library automation systems can help librarians manage library resources more efficiently. This can include automated cataloging, circulation, and resource sharing. Automation can also help students find and access the materials they need more quickly and easily.

Collaboration: Technology can facilitate collaboration among scholars and preceptors. For example, online discussion forums, wikis, and social media platforms can enable students to share information, work collaboratively on projects, and provide feedback on each other's work.

Personalization: Technology can enable libraries to personalize learning experiences for students. This can include recommending resources based on a student's interests and past reading history, providing interactive learning tools, and creating individualized learning paths.

Accessibility: Technology can make library resources more accessible to students with disabilities. For example, text-to-speech software and screen readers can help students with

visual impairments access written material, while audiobooks and captioned videos can help students with hearing impairments.

Overall, the latest technology can help school libraries become more efficient, accessible, and student-centered. By embracing the latest technology, school libraries can play a vital role in supporting the educational needs of students in the digital age.

Role of the School Librarian

With advancements in technology, the role of librarians has evolved, and school library services have expanded beyond traditional book borrowing. Now, students can not only showcase their skills confidently during library sessions, but they also perceive the school library as a hub of teaching and learning.

Inquiry learning requires students to develop a range of skills including problem-solving, decision making and others. For that, the library must serve as the ideal space to develop these skills through self-paced learning with the help of reference, research, and intellectual recreation. Librarian's roles have changed to match the changing needs of students by allowing them more voice, choice and ownership in their reading and learning activities, as well as paving the way for them to further explore their interests. As a media specialist, the role of an academic librarian is to utilize the most recent technologies to direct students to reliable and updated resources.

From September 2016, the GEMS library network conducted various professional development workshops for its member librarians to explore how the latest library services can be led in school libraries. It helped our librarians to inquire about the best utilization of the latest technology along with the selection and provision of authentic and updated e-resources effectively and efficiently in the school library. Performance Appraisal also has been implemented in the GEMS schools to mark the professional progress of the library professionals as well as define and guide to the goals and objectives.

Latest Technologies for School Library Practices

There are several latest technologies that can be utilized in school library practices to enhance the learning experience of students. Here are some examples:

Learning Management Systems (LMS): An LMS is a software application that enables the management and delivery of educational content. It can be used to create and deliver online courses, manage assessments, and track student progress. School libraries can use an LMS to provide access to e-resources, online tutorials, and other learning tools.

Virtual and Augmented Reality: Virtual and augmented reality technologies can be used to create immersive learning experiences that allow students to explore virtual environments and interact with digital objects. School libraries can use these technologies to create virtual tours of historical sites, simulate scientific experiments, and provide interactive storytelling experiences.

3D Printing: 3D printing technology allows for the creation of physical objects from digital models. School libraries can use 3D printers to create prototypes of scientific models, historical artifacts, and other educational resources.

Mobile Devices: Mobile devices such as smartphones and tablets can be used to access e-books, online databases, and other learning resources from anywhere. School libraries can create mobile apps that allow students to search for and access resources, and to communicate with librarians and other students.

Artificial Intelligence (AI): AI can be used to create personalized learning experiences for students by analyzing their learning data and providing customized recommendations. School libraries can use AI-powered tools to recommend reading materials based on a student's interests and reading level, and to provide feedback on their writing assignments.

- **AI Robot:** AI robots can aid in organizing and managing the library's collection. They can scan and catalog books, update the database, and ensure that items are properly shelved. This helps streamline the inventory management process and allows for efficient tracking of library resources.
- **Chat GPT:** The utilization of the Chat GPT software in research and essay writing is a new possibility in the school library. Chat GPT is a large language model developed by OpenAI, based on the GPT-3.5 architecture. It is designed to

understand and generate natural language responses to text-based inputs in a conversational manner.

By embracing these technologies, school libraries can provide more engaging and interactive learning experiences for students, thereby becoming more relevant and valuable in supporting the educational needs of students in the 21st century.

Role of AI Robot in the School Library

Book Recommendation: AI robots can analyze students' reading preferences and suggest appropriate books based on their interests, reading level, or curriculum requirements. By considering a wide range of factors, such as genre, author, and reading history, AI robots can provide personalized recommendations that help students discover new books and foster a love for reading.

Assistance and Information Retrieval: An AI robot can act as a digital librarian, helping students and teachers find books, reference materials, and other resources in the library. It can provide information about the availability and location of books, suggest related materials, and offer recommendations based on user preferences.

Library Organization and Inventory Management: AI robots can aid in organizing and managing the library's collection. They can scan and catalog books, update the database, and ensure that items are properly shelved. This helps streamline the inventory management process and allows for efficient tracking of library resources.

Educational Interactions: AI robots can engage with students in educational activities, promoting reading and learning. They can assist in storytelling sessions, conduct interactive quizzes or educational games, and provide information on various topics. This interactive element can enhance the overall learning experience and make the library more engaging for students.

Language Learning Support: AI robots equipped with language processing capabilities can assist students in language learning. They can provide pronunciation guidance, help with vocabulary and grammar exercises, and engage in conversational practice. This personalized

language support can be particularly beneficial for students who are learning a second language.

Maintenance and Security: AI robots can contribute to the maintenance and security of the library. They can monitor the library's premises for any potential security issues, detect misplaced or mishandled books, and assist in general upkeep tasks such as tidying up shelves or alerting staff to any maintenance needs.

Data Analysis and Insights: By collecting data on library usage patterns, book preferences, and user behavior, AI robots can help generate valuable insights. This information can assist librarians and school administrators in making data-driven decisions regarding book acquisitions, resource allocation, and library services improvement.

It is important to note that while AI robots can bring numerous benefits to a school library, they should not replace human librarians. Rather, they should be seen as tools to augment and enhance the library experience, working alongside librarians to provide efficient services and support to students and educators.

Practice of AI Robot in the School Library

We realized that the school library must be outfitted with global changes and students' informational needs. As part of our vision of the future library, we have successfully implemented an Artificial Intelligence robot -Pepper- in the GEMS Modern Academy school library with the collaboration of the school IT department. The newest addition of this AI robot made an impact in the library atmosphere. With the effective utilization of the latest technology in the regular library practices, the application of Artificial Intelligence has brought tremendous changes in the library services. The AI robot, 'PEPPER' has played a key role in the new game, especially when it comes to help the young readers to discover their next favourite book. Students share their general queries like the name of the author, title of the book, shelf number, etc. with Pepper. Once 'Pepper' knows a child's Lexile level, it can recommend books for reading that are personalized to their reading level, ensuring that every book recommendation is tailored to each student's unique needs. This is very interesting and creating robots can also help with reading strategies to improve growth of reading and foster a love of reading.

The implementation of Artificial Intelligence robots in the school library helped to aid in lowering inefficiencies and delays in the conventional approach. The AI robot helped to integrate into the library services such as students' inquiries regarding personalized books, book recommendations to a whole new level, etc. It engages with young readers to determine their reading preferences, preferred genres, and reading levels. This way 'Pepper' the robot helps the students to make reading more accessible and enjoyable.

Application of Chat GPT

The GPT in Chat GPT stands for "Generative Pre-trained Transformer," which refers to the model's ability to generate natural language text based on patterns learned from a large corpus of training data. The model is pre-trained on vast amounts of text data, which allows it to generate responses that are often relevant and coherent. Chat GPT can be used for a variety of applications, including customer service, language translation, and educational support. It is capable of understanding the context of a conversation and generating appropriate responses, which makes it a valuable tool for engaging in open-ended conversations.

In daily practice, we perceived that Chat GPT is a powerful language model that has the potential to transform the way we communicate and interact with technology. As the model continues to improve and evolve, it is likely to have a significant impact on a wide range of industries and fields.

Characteristics

Chat GPT is a large language model that is based on the GPT-3.5 architecture, which was developed by OpenAI. The key characteristics of Chat GPT are;

Natural Language Processing: Chat GPT is designed to understand and process natural language, which means that it can interpret and respond to text-based inputs in a conversational manner.

Machine Learning: Chat GPT is based on machine learning algorithms that enable it to learn and improve over time. It has been trained on a vast amount of data, which allows it to generate responses that are often accurate and relevant to the user's input.

Contextual Understanding: Chat GPT can understand the context of a conversation and use that information to generate appropriate responses. It can use previous messages in a conversation to inform its understanding of the current message.

Open-Ended Conversations: Chat GPT can engage in open-ended conversations with users, meaning that it can continue a conversation on a topic for an extended period.

Multilingual Capability: Chat GPT can communicate in multiple languages, which makes it a useful tool for international communication and for users who speak multiple languages.

Overall, Chat GPT is a powerful language model that is capable of understanding and generating natural language responses in a conversational manner. Its ability to learn and improve over time makes it a valuable tool for a variety of applications, including customer service, language translation, and educational support.

Limitations

While Chat GPT is a powerful language model with many benefits, it also has some limitations. In daily practice, we have found some limitations in the application of Chat GPT in the school library and institution.

Bias: Chat GPT can sometimes reflect the biases that exist in the training data it was trained on. For example, if the training data contains a disproportionate amount of negative sentiment towards a certain group, Chat GPT may inadvertently replicate this bias in its responses.

Lack of Common Sense: While Chat GPT is capable of generating natural language text that is often coherent and relevant, it does not possess common sense knowledge in the same way that humans do. This can sometimes result in responses that are nonsensical or illogical.

Inability to Learn from Physical Interaction: Chat GPT is based solely on processing natural language text, which means that it cannot learn from physical

interaction or experience. This can limit its ability to provide meaningful responses to certain types of questions or queries.

Dependence on Training Data: Chat GPT's ability to generate responses is dependent on the quality and quantity of the training data it was trained on. This means that it may not perform well on tasks or topics that are not well represented in the training data.

Overall, Chat GPT is a powerful language model that has many potential uses, but it is important to be aware of its limitations in order to use it effectively. As with any technology, it is important to consider the strengths and weaknesses of Chat GPT before deciding how to use it in a particular application.

GPT4

GPT-4 is an advanced version of chat GPT. That is, the GPT-4 is a step forward from Artificial Intelligence to the new idea of artificial general intelligence. This is the perfect predecessor, with enhancements enabling better understanding and the ability to distinguish nuances. This results in delivering more accurate and logical responses from the AI platform.

Multimedia Facilities in the School Library

The adoption of latest technologies supported the implementation of various activities such as Online Quiz, Book trailer, Book Review presentation, Book talk video, Skit from the book, Author portfolio, Library Newsletter, etc. in the library very effectively.

Book Review presentation: Book Review presentation is a type of presentation with the support of multimedia facilities where students share their analysis, evaluation, and thoughts on a particular book. It involves presenting a summary of the book's content, discussing its main themes, characters, and plot points, and expressing the personal opinions and insights about the work. The purpose of a book review presentation is to provide an overview of the book and offer a critical assessment that inspires others to decide whether they should read it. It allows a group of students to present their understanding of the book, highlight its strengths

and weaknesses, and articulate the thoughts on its relevance, writing style, and impact. In a book review presentation, the presenters typically cover introduction, summary, analysis, characters, writing style, strengths and weaknesses, personal responses, conclusion, etc.

Multimedia can play a significant role in enhancing a book review presentation by engaging the audience and providing a multi-sensory experience. Multimedia allows to include images, illustrations, or book cover art to visually represent the book being reviewed. This visual element can help the audience connect with the book and create a lasting impression. Incorporating video clips related to the book can add depth to the presentation (Eg: author interviews, book trailers, or relevant scenes from adaptations if they exist). This brings the story to life and allows the audience to experience the book beyond just words.

Multimedia can be used to present information about the author, such as photographs, interviews, or snippets of their previous works. This helps the audience understand the author's background, style, and motivations, providing valuable context to the review. Displaying notable quotes or excerpts from the book on slides or through multimedia can highlight the author's writing style, key themes, or significant moments. It allows the audience to get a taste of the book's content and encourages further exploration. Depending on the format of the book review presentation, students incorporate audio samples such as audiobook excerpts or readings of specific passages. This adds an auditory element that complements the visual and textual aspects, immersing the audience further into the book's world.

The multimedia facility can enhance a book review presentation through various elements. Multimedia can enable interactive elements like quizzes in the book review presentation. If there is any comparison being reviewed with other works or discussing its impact, multimedia can assist in showcasing relevant images, graphs, or charts. This visual representation can facilitate the comparison process and aid in conveying your analysis effectively.

Book Trailer: A book trailer is a promotional video created to promote a book, like a movie trailer promoting a film. Usually, we can see many book trailers as a marketing tool used by authors, publishers, and bookstores to generate interest and

excitement for a book release. In the school library, students can create book trailers and present the same in front of their peers during the library hours.

A book trailer typically includes visually appealing images, video clips, and text, accompanied by music or narration. It aims to capture the essence of the book, provide a glimpse into the story, and evoke emotions to entice potential readers. Book trailers can be published/distributed through various online platforms, including social media, Flipgrid, websites, and other video-sharing platforms like YouTube.

Book trailers serve as a creative way to engage young readers and give them a sense of what they can expect from the book. They can showcase the book's genre, themes, characters, and key plot points, creating anticipation and encouraging viewers to explore the book further. Book trailers are particularly popular for novels/fictions, but they can also be created for non-fiction books, memoirs, and other literary works.

Multimedia plays a significant role in the creation of book trailers. It allows for the integration of various visual and auditory elements to capture the attention of potential readers and convey the essence of the book. Multimedia provides a visual appeal by allowing the use of compelling visuals such as images, video clips, illustrations, sounds, or animations that can enhance the visual appeal of the book trailer. These visuals can emotionally and attractively represent the book's setting, characters, and important scenes, creating an immersive experience for viewers.

The use of multimedia allows book trailers to set the desired atmosphere and tone that aligns with the book's genre and themes. (A thriller book trailer may incorporate dark and suspenseful visuals with intense music). Just like in films, book trailers can use a combination of visuals, text overlays, and narration to introduce the plot, highlight key events, and create suspense or intrigue. This helps viewers understand the narrative structure and engage with the story. That is, the multimedia elements enable storytelling techniques in book trailers.

Overall, multimedia enables book trailers to go beyond the limitations of text and engage potential readers through a dynamic and visually appealing medium. It allows for creative storytelling, emotional impact, and effective promotion of books and reading in a digital age where visual content is highly consumed and shared.

Online Quiz: An online quiz is a form of assessment with the effective use of multimedia over the internet facility. It allows participants to answer a series of questions and receive immediate feedback on their performance. Online quizzes are conducted in the school library on various subjects like science, history, sports, literature, movies, etc. Online quizzes can be accessed from anywhere with an internet connection, making them convenient for participants to take at their own convenience. They eliminate the need for physical presence in a specific location and allow individuals to engage with the quiz content at their own pace (ie, a student can participate in the online quiz from home while he/she is absent during the library period).

Multimedia plays a significant role in enhancing the online quiz experience for participants. Multimedia elements such as images, videos, and animations can make the online quiz visually appealing and engaging. Visuals can be used to illustrate concepts, provide examples, or present information in a more visually comprehensible way. This enhances participants' interest, attention, and overall engagement with the quiz content. Multimedia can be used to provide clear instructions and explanations for the quiz questions. Videos, audio clips, or interactive tutorials can guide participants on how to approach the quiz, explain complex concepts, or demonstrate problem-solving techniques. Multimedia-based instructions help ensure that participants understand the quiz requirements and expectations.

Multimedia elements enable interactive learning within online quizzes. Participants can engage with multimedia content by interacting with clickable images, videos, or interactive elements embedded in the quiz. This interactivity promotes active learning, allows for exploration of additional information, and reinforces participants' understanding of the quiz topics. Multimedia aids in illustrating abstract or complex concepts more effectively. Visual aids such as diagrams, charts, infographics, or animations can be used to present information visually and aid participants' comprehension. By providing visual representations of concepts, multimedia assists participants in understanding and answering quiz questions accurately.

Multimedia elements can be employed to provide feedback and reinforcement during or after participants answer quiz questions. Visual and auditory cues, such as animated feedback messages, audio prompts, or video explanations, can be used to provide immediate feedback and reinforce correct answers or correct misconceptions. Multimedia-based feedback enhances participants' learning and helps them improve their performance. Multimedia can enhance the accessibility and inclusivity of online quizzes. By incorporating different media formats such as text, images, audio, and video, quizzes can accommodate various learning styles and accessibility needs. Participants with different preferences or disabilities can engage with the quiz content through their preferred media format, ensuring equal access and participation.

By leveraging multimedia effectively, online quizzes can become more interactive, engaging, and conducive to effective learning. Visuals, videos, and interactive elements enhance participants' understanding, provide context, and reinforce their knowledge, resulting in a more comprehensive and enjoyable quiz experience.

Book talk video: A Book talk video is a form of multimedia presentation that aims to promote and discuss a book. It involves an individual or a group of people sharing their thoughts, opinions, and insights about a particular book through their speech in video format. The purpose of a Book talk video is to generate interest and engage potential readers by providing an overview of the book's content, themes, and appeal. Book talk videos often include visuals, such as book covers, related images, or relevant clips, to enhance the visual appeal and create a more engaging presentation. Book talk videos can be shared on platforms like YouTube, social media, or personal websites. They serve to provide book recommendations, spark conversations, and create a sense of community among readers.

Multimedia facilities allow for the inclusion of book excerpts or quotes in the video and provide supporting visuals that complement the discussion in the Book talk video. Displaying selected passages or notable quotes from the book on-screen helps to convey the author's writing style, tone, and key themes. This gives viewers a taste of the book's content and can pique their interest. The author interviews or video clips can be incorporated into the book talk video easily. Multimedia elements such as music or ambient sounds can contribute to creating the desired mood and atmosphere for the Book talk video. By selecting appropriate

background music or sound effects, the video can evoke emotions, reinforce the book's themes, and enhance the overall viewing experience. Multimedia allows student presenters in a book talk video to showcase their personalities and create a personal connection with the peer viewers. Overall, the multimedia elements enhance the storytelling, visual appeal, and overall impact of a Book talk video.

Skit from the book: This is a theatrical performance or dramatic presentation that is based on or inspired by a specific book. In this context, a skit is a short performance that involves a small group of student actors portraying characters or scenes from the book. The main purpose of a skit from the book is to entertain, promote the book's storyline and characters, and potentially encourage the audience to explore the book further. It offers a unique and interactive approach to engage with the book's content and can be particularly effective in capturing the attention of peer readers, by presenting the story in a dynamic and theatrical format.

Multimedia plays an important role in enhancing the quality and impact of a skit from the book. Multimedia elements such as projected images, videos, or animations can be used to enhance the visual appeal of the skit. Visuals can set the stage, provide visual cues, or depict key scenes and settings from the book. By incorporating multimedia visuals, the skit becomes more visually engaging and immersive for the audience. Multimedia can provide audio support to the skit, such as background music, sound effects, or recorded dialogues. The use of appropriate audio cues can help create the desired atmosphere, enhance comedic timing, or underscore dramatic moments in the skit. Audio elements add depth and richness to the performance, making it more dynamic and engaging.

Multimedia can be utilized to incorporate special effects like visual effects, lighting effects, digital animations in the skit. Multimedia can be used to engage the audience during the skit. For instance, interactive elements like polls, quizzes, or live social media integration can be integrated into the skit to encourage audience participation and interaction. Multimedia also helps to record the skit and store in a device to play in multiple venues in different timings.

Author Portfolio: An author portfolio is a collection of materials and documents that showcase an author's work, skills, and achievements. It serves as a comprehensive representation of an author's writing abilities, experience, and professional background. An author portfolio may include press clippings, media coverage, or reviews of the author's work. An author portfolio may feature links to the author's website, blog, or social media profiles. This allows the young readers to explore more of the author's work and connect with them online.

Multimedia facilities play a significant role in enhancing the effectiveness and impact of an author portfolio. Multimedia elements such as images, graphics, and videos enhance the visual appeal of an author portfolio. Including book trailers and audio samples in the author portfolio is an effective multimedia strategy. Multimedia facilities enable the inclusion of author interviews, presentations, or recorded speaking engagements in the portfolio.

Library Newsletter: Library newsletters are typically produced in a digital or print format and are often sent out on a termly basis. Multimedia plays a keen role in enhancing the effectiveness and engagement of a library newsletter. Multimedia elements such as images, graphics, and videos enhance the visual appeal of the newsletter. Visuals can be used to showcase book covers, event photos, library facilities, or promotional materials related to library programs. By incorporating multimedia visuals, the newsletter becomes more visually appealing and captures the attention of readers. Multimedia facilities can be used to promote library events and programs more effectively in the library newsletter.

Multimedia facilities enable the integration of social media content in the newsletter through embedding social media posts, sharing videos or images from library social media accounts, or providing links to the library's social media profiles. By incorporating multimedia elements, a library newsletter becomes more visually appealing, interactive, and engaging for readers. Multimedia enhances the overall reading experience, increases interest in library programs and resources, and encourages readers to act, such as attending events, exploring recommended books, or utilizing library services. It enriches the newsletter's content and creates a more dynamic and immersive experience for students.

Conclusion

This professional paper includes a discussion of the findings in the context, research, and experience of the latest technologies in the school library. Through this paper, the author also provides some recommendations for the implementation of the latest technologies in the school libraries. All these proposals highlight how the use of the latest technologies help students to experience regular library practice and lifelong learning.

References

- AI operated robot (2023, March 10). Retrieved from <https://drive.google.com/file/d/1jyqd7wqbzSX4Ov5ZAwGcNFWQyV4IGiDZ/view?usp=sharing>
- Mayes, C. (2023). School Librarians Should Approach ChatGPT with Caution | Soapbox. *School Library Journal*. Retrieved from <https://www.slj.com/story/school-librarians-should-approach-ChatGPT-with-caution-soapbox>
- Open AI. (n.d.). *ChatGPT*. Retrieved May 17, 2023, Retrieved from <https://chat.openai.com/>
- Staff. (2023, March 20). School libraries in the digital age. *Education Middle East*. Retrieved May 18, 2023, from <https://educationmiddleeast.com/features/school-libraries-in-the-digital-age/>
- Yorio, K. (2023, January 17). School Librarians Explore Possibilities of ChatGPT. Retrieved May 18, 2023, from <https://www.schoollibraryjournal.com/story/School-Librarians-Explore-Possibilities-of-ChatGPT>

Biography

M. O. Raghunathan has been working in a multicultural environment since May 2007. He is of Indian origin, working as a librarian in the Middle East region. He has more than eighteen years' experience in the field of education and is a well-experienced librarian in CBSE, IGCSE, ICSE and IB curriculum. He led the GEMS Library Network for the year 2016-2020 and has transformed the network from the traditional system to 21st Century library network through collaborative and partnership approaches.