

Full Length Research

The Impact of Artificial Intelligence on 21st Century Library and Information Services

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It is not an argument that the libraries in developing countries are yet to digitize most of their materials, but rather an argument that raises the capitalistic aims of the information industry. Librarianship is quick to defend against this argument, but where the profession struggles is in admitting its faults in regards to digital progression. Historically, the library has been reluctant to change, often waiting for a particular technology to reach market saturation before reacting to a new trend. Once a patron has been readily-exposed to a technology across multiple venues, then the library should adopt its use. Due to the ever-increasing presence of artificial intelligence (AI), a literature scan on libraries engagement with AI was conducted with effect on library and information services.

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INTRODUCTION

Library World offers new technology content every day. Some of our pieces related to technology tools can be found in the libraries (Education World, 2021). Artificial intelligence (AI) is one of the emerging trends and applications of computing in libraries. It involves programming computers to do things, which if done by humans, would be said to require intelligence. Education World, (2021) opined that the ultimate promise of artificial intelligence in libraries is to develop computer systems or machines that think, behave, and in fact rival human intelligence, and this clearly has major implications on librarianship.

The application of artificial intelligence in the library most especially in the developed world has become pervasive. They include expert systems for reference services, book reading and shelf-reading robots, virtual reality for immersive learning among others. Although the incorporation of artificial intelligence in libraries can be

perceived to alienate librarians from their users, it will probably help libraries do more rather than taking over the jobs of librarians. It will enhance their services delivery. Artificial intelligence will greatly improve library operations and services and will upgrade and heighten the relevance of libraries in an ever-changing digital society, (Omame and Alex-Nmecha, 2021)

Artificial Intelligence

According to McGraw-Hill Encyclopedia of Science and Technology,(2007) in Omame and Alex-Nmecha, (2021) intelligence is the ability to think and learn facts and skills and also apply them when necessary. McGraw-Hill Encyclopedia of Science and Technology,(2007) in Omame and Alex-Nmecha, (2021) opined that the prospect of developing computers or machines that perceive, learn, reason and behave like human beings has fascinated many people. Humans are born with an

innate ability to perceive, reason/think and act, which develops and improves over time as a result of so many factors especially education. Intelligence in humans is measured by the Intelligence Quotient (IQ) obtained through series of aptitude test focusing on different aspects of intellectual functioning. Similarly, developing intelligent computers that perceive, think and behave like humans is the crux of Artificial Intelligence.

Intelligence in computers or machines depicts their ability to accomplish specific task in the presence of variability and monitor its environment and appropriately adjust its actions based on what it has sensed as prerequisites for intelligence. Intelligences in machines is an anthropomorphism in that intelligence is defined by the criterion that the actions would appear intelligent if a person were to do it. According to Ex Libris (2019) as cited in Oname and Alex-Nmecha, (2021), intelligence in machines not only gives such devices the ability to learn but they are also configured to improve with use to perform functions better without being explicitly programmed because they are built to recognize and imbibe patterns efficiently on much higher scales than humans.

Artificial intelligence already touches many of our daily computing activities, most of the computer systems and mobile phones being developed today have artificial intelligence features and we have probably used them not knowing that they are intelligent machines. Examples of Artificial intelligence in computers are speech recognition, natural language processing, self-driving or autonomous cars, machine learning, deep leaning and robotics. Artificial intelligence works based on perceptual recognition unlike human beings that operate on deep cognition. The power and advantage of Artificial intelligence lies in the fact that computers can recognize patterns efficiently at a scale and speed that human beings cannot.

Adejo and Misau, (2021) expressed that, in the educational sector, AI is used to teach the little children who are at the play group, preparatory and kindergarten classes to impact knowledge on them using robots as teaching aids to be used in the classrooms. In the medical sphere, during the early stage and trial moments of Covid-19 pandemic, AI was used as one of the most important and effective technology that screened the virus and symptoms and it helped to manage the crisis at the time that the virus was ravaging.

In the economy and commerce, experts in Integrated Marketing Communications (IMC) are of the view that the AI technology is assisting the customers' daily lives thereby making every task and chores easier. The area of business economy is therefore leveraging solely on AI to develop brand management strategies as a fundamental part of their vision and mission. Companies in the business world have been encouraged to key into the use of artificial intelligence in the running of the affairs of their various organizations. Artificial Intelligence will

help companies in getting better results in their operations. It is therefore suggested that brand managers and marketers should use artificial intelligence as a game changer so as to optimize value in increasing competitive market. The use of Artificial Intelligence in all facets of life will help to cut wastage and cost of production and delivery of goods and services thereby helping to get a better result in their operations (Adejo and Misau, 2021).

Vijayakumar & Sheshadri, (2019) in Adejo and Misau, (2021) explained that the intensive pressure on librarians to provide high quality services to library users due to information explosion in our present society have led to incorporation of modern technologies. Artificial Intelligent have found its way into the library as a chat box that handle directional questions on library website, overdue alert, response to simple informational requests and direct users to relevant resources in the library. Artificial Intelligent is a collaborative robots used to interact with human on the library floor and perform complex or repetitive tasks. Artificial Intelligence (AI) is a suitable attempt to replace human power with the machine. The adoption of AI in the library will influence connectivity of information technology and actively support information usage as well as easing clients' search and immediately address their needs. The impact of artificial intelligence and advanced computer technology on the nature of future libraries will be enormous and the quality difference varies from experts.

The development of societies in recent times have been facilitated by the growing demand of access to information, and libraries are the prime source in providing this access. The paradigm shift in the format and dynamics of information and knowledge as a result of the rapid advancement in computer technology and software applications especially artificial intelligence, have shifted libraries to a demand of the commensurate supply of the same technologies. Unless libraries begin to exploit the new technologies and innovate their information and services delivery, they may face obsolescence in this era (Oname and Alex-Nmecha, 2021).

Uses of Artificial Intelligence

Asemi & Asemi, (2018) in Oname and Alex-Nmecha, (2021), explained that Artificial intelligence is used in many areas such as medicine, military, business, education, gaming, libraries etc. The idea of creating artificial intelligence systems in libraries dates back to 1990. These intelligent library systems provide knowledge-based services to both the library staff and patrons. Application of artificial intelligence in library system encompasses descriptive cataloguing, subject indexing, reference services, technical services, shelf reading, collection development, information retrieval system etc. These have gone beyond Natural Language

Processing (NLP), and knowledge-based services. With the advancement in artificial intelligence programming, creating a smart library is not only a possibility but a matter of time. Corroborating this assertion, Corke (2013) in Omame and Alex-Nmecha, (2021) reported that researchers and experts in the field of artificial intelligence are creating intelligent systems which can think and behave like librarians – library robots.

Artificial Intelligence in Libraries

According to McGuire (2021) there are some technologies that distract students, right? Keeps them from focusing? One solution is to ban phones and computers from the libraries. Another solution is to harness their tech-savvy and engage students with online tools that will help them complete assignments while still engaging them electronically. Whether they're working on a research essay, a presentation, a science project, or a math report, there are ample tools available in library to make the process more engaging for students.

Think about it—if students are growing up in a world that requires them to be tech-savvy, then should not tech play a big role in their library experience? Here are ten picks for tools to engage students in the libraries especially public libraries.

According to McGuire (2021) **15 Technology Tools to Engage Students in the Library especially public Library are:**

- 1. Augmented Reality Apps:** These are apps that reveal show programmed into machines.
- 2. Flipgrid:** Flip (formerly **Flipgrid**) is a video discussion and video sharing app, free from Microsoft, built for classrooms and beyond.
- 3. Video Games:** I know this is general—merely saying 'video games' is not actually a 'student engagement tool.' However, video games literally do not work without player input—and thus student engagement. The right game could change your libraries.

Google Forms

Google Forms is one of the best ways to engage all students in your classroom or library is to give students an easy (and even anonymous) way to ask questions, receive feedback, or otherwise reach out to the librarian. While there are many ways to do this, one of the most universally accessible (and free) methods is Google Forms. Whether you provide specific questions and prompts for students to respond to as an exit slip (e.g., Was there any point during today's lesson where you were confused?), or you simple leave it as a way for students to post questions anonymously (which can be useful for some struggling students who might otherwise

be hesitant to reach out), a simple messaging system or basic form can help improve student engagement.

Socrative

Like a few others on this list, you have likely heard of Socrative, a tool to “assess student understanding with prepared activities or on-the-fly questions, then adjust your assessment based on the results.”

Kahoot!

Kahoot! is a handy tool that students can use to create in-class questionnaires and quizzes. This is handy for obtaining data for graphing assignments, data for research essays, and feedback from their classmates. Kahoot! is compatible with multiple devices and has a game-like feel that will help keep students interested.

Clickers

Classroom clickers may not be the higher-water mark for innovation in education, but as a simple and useful tool that you can use almost every day, it's a no-brainer for many classrooms and libraries. This is a tool for teachers, to help assess students' understanding of concepts and their engagement with information material. With some tools, teachers can project questions onto their screen using while students answer them in real-time. Students' answers show up on the teacher's phone screen, and teachers can see which students got answers right and which didn't. This gives teachers an accurate picture of how students are following the information, and adjust their lessons accordingly.

Trello

So many students are in the habit of multitasking, a good skill to teach them is how to organize and streamline their assignments. Trello is a free and super easy-to-use tool students can use to create workflow charts. Multiple students can be added to the same board; great for collaboration on projects.

Automation and Libraries

What is perhaps the library's best kept secret, it has been its slow uptake on automation and digital technologies. To the outside world, the library is a pioneer in the quest for innovation, from video collections to audio books and databases to makerspaces, the library is viewed as an agent of change. However, those

who criticize the library speak to the physical stacks are not true (Denning and Berma, 2015 in Whearty and Hervieux, 2020). It is not an argument that the library has failed to digitize, but rather an argument that raises the capitalistic aims of the information industry. Librarianship is quick to defend against this argument, but where the profession struggles is in admitting its faults in regards to digital progression. Historically, the library has been reluctant to change, often waiting for a particular technology to reach market saturation before reacting to a new trend. Once a patron has been readily-exposed to a technology across multiple venues, then the library will just be adopting its use.

Bowden, (2019) in Whearty and Hervieux, (2020) expressed that due to the ever-increasing presence of artificial intelligence (AI), an environmental scan on academic libraries engagement with AI was conducted. The author reviewed scholarly articles, university libraries' strategic plans, and library programming to determine if any reference to AI was being made and in what context. Top research universities in the United States and Canada were considered. The primary goal was to discover what role the librarian will play in an AI-dominant future, as well as how libraries are responding to this change. Findings indicated a lack of response or awareness to the current AI trend, though a small number of institutions were found to be participating in or creating their own AI hubs.

Bowden, (2019) in Whearty and Hervieux, (2020) asserted that dominating the technology conversation for years has been the growth of artificial intelligence (AI) and machine learning (ML) in disciplines outside of the traditional sciences. Made popular by the works of science fiction, the capabilities of these two fields are only just beginning to unfold. While there is an understanding that AI is a computer program designed to replicate human intelligence, the truth is that it is so much more. Everyday applications of AI are already well-integrated into society, through technology such as driverless cars, satellites, the Internet of Things, and perhaps most obviously, the Google search engine.

CONCLUSION

The intensive pressure on librarians to provide high quality services to library users due to information explosion in our present society have led to incorporation of modern technologies. Artificial Intelligent have found its way into the library as a chat box that handle directional questions on library website, overdue alert, response to simple informational requests and direct users to relevant resources in the library. Artificial Intelligent is a collaborative robots used to interact with human on the library floor and perform complex or repetitive tasks. Artificial Intelligence (AI) is a suitable attempt to replace human power with the machine. The

adoption of AI in the library will influence connectivity of information technology and actively support information usage as well as easing clients' search and immediately address their needs. The impact of artificial intelligence and advanced computer technology on the nature of future libraries will be enormous and the quality difference varies from experts to experts.

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