Devansh Grover
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Digitalization and Digitization of Education

“Our world has always been in a race between technology and education. Usually these two go hand in hand, but whenever technology raced ahead of education, it led to social pain and inequality until at some point the whole education system gets turned upside down in order to keep up” (David Middelbeck, 2019). We come across the words ‘digitalization’ and ‘digitization’ many times today in daily life. Gottfried Wilhelm Leibniz's invention of the binary number system in 1679 appears to have been the catalyst for the beginning of digitization. It began to gain traction after a while when computers were developed and became commonplace - and with computers today we live. In her article Digitization: An overview of Issues, Prof. Harsha Parekh (2001) provided a formal definition of digitization: “Digitization refers to the conversion of an item – be it printed text, manuscript, image, or sound, film and video recording - from one format (usually print or analogue) into digital. The process basically involves taking a physical object and essentially making an “electronic photograph” of it.” (p.1). Today, this concept has been extended to almost everywhere around us, and education is no exception. Infrastructure consisting of digital equipment to teach and learn can be seen in many schools, colleges and educational institutions around us.

According to Godin and Terekhova (2021, as cited in Berawi, 2020), the development of information and communication technology (ICT) has influenced the transformation of technology-based education methods and has contributed to the increased productivity of educational institutions and will continue to do so. Some important peripheral components towards digital bound classrooms are listed below:

1) Smart Boards: A smart board, often referred to as an interactive whiteboard, functions as a large touch-sensitive surface equipped with sensors to detect user input, similar to traditional computer input devices like mice and keyboards. It works in conjunction with a projector to display a computer's output on the whiteboard, effectively transforming it into a sizable touchscreen interface.

2) Classroom PCs: In modern classrooms, students are often required to create numerous reports, assignments, and presentations. Therefore, a fundamental necessity for a digital classroom is the availability of personal computers, laptops, or tablets. These devices allow students to store and access substantial educational content whenever needed, facilitating a more personalized and adaptive learning experience.

3) Projectors: Projectors are an essential component of the digital classroom setup. They play a crucial role in displaying presentations, both for educators and students, enabling a more immersive and comprehensive learning environment. These projectors are connected to laptops and project the content onto a large screen, such as a whiteboard, for enhanced visual presentations during lessons.

4) Internet Connectivity: To effectively integrate information and communication technology (ICT) into education, a reliable and uninterrupted internet connection is paramount. Ensuring a stable internet connection is essential for seamless sharing of information, quick access to study materials, research reports, and various educational resources, including international reports from entities like the World Bank. This connectivity facilitates efficient communication and access to a wealth of educational resources. (“Digitalization of education in India – An analysis”, 2019).

Education has been digitalized and digitized to the point that people can get entire degrees through online mode of learning. There are teachers on the internet, millions of students yearning to learn for school, university, competitive exams or something else or even just for the sake of learning. "The importance of social networks, virtual reality technologies, and Internet applications for modern youth encourages educators to use information and communication technologies for educational purposes" (Frolova, Rogach, & Ryabova, 2020, p. 314). Top tier universities like Harvard have made their courses available for free on the internet, giving rise to some of the highest-skilled people in their fields. For instance, the creator of Node.js, Ryan Dahl, learned to program primarily through online resources and open-source contributions and felt that highschool was understimulating. (“Ryan Dahl, Node.js Creator, Wants to Rebuild the Runtime of the Web”, 2023). Albeit being the most popular ‘digitized’ source of education today, it isn’t just the internet that has ‘digitized’ education; it was common for students to have entire

CDs and pen drives containing educational lectures and notes from their schools and coaching centers, especially in a developing country like India in which internet was mostly a revolution brought about by Reliance's Jio back around 2016. However, the internet still grew to be the most popular source of digitized education everywhere in the world anyways, and a major part in making that happen was done by COVID-19. "The constraints created by the COVID-19 pandemic have created the need for innovative methods of presenting courses and study material. The lockdown procedures, initiated to slow down the spread of the COVID-19 virus, have forced people into isolation" (Calitz & Cullen, 2021, digiTAL 2021, p. 8). Key among the benefits is the improved accessibility that digitalization provides; technologies have enabled learners to access educational resources more conveniently and at a lesser expense than traditional methods, making education more universally accessible. This was (and is) particularly relevant in light of the COVID-19 pandemic, when digital technologies enabled a seamless transition to online learning, ensuring that education remained undisrupted even in the face of global crisis. However, drawing from global academic literature and empirical research findings, it is evident that distance education should not be considered the primary pedagogical approach. Instead, it serves as an extension and enhancement of the traditional university educational system. Devoid of genuine classroom interactions, the educational process would lack effectiveness and fail to yield favorable outcomes in the education of undergraduates and postgraduates. ("Digitalization of Educational Processes in Universities", 2020). This also does not mean that it can be completely ignored; instead a balance must be achieved. According to Sundar (2020), "More than half of the global workforce will require significant reskilling or upskilling over the next three years. This is largely because workplace skills become obsolete rapidly in the digital age. EdTech solutions such as online courses or certifications can help the Indian workforce and employers keep up with changing skill requirements." ("Digitizing education in India: All you need to know", India Today). In India's context, according to Goteti (2021), "While the concept of ed-tech platforms entirely replacing the physical classroom-based learning seems unlikely for the foreseeable future, it is certain that ed-tech platforms will further elevate India's ed-tech sector's standing on a global level." ("How digitization in education is fuelling growth in India's ed-tech ecosystem", India Today).

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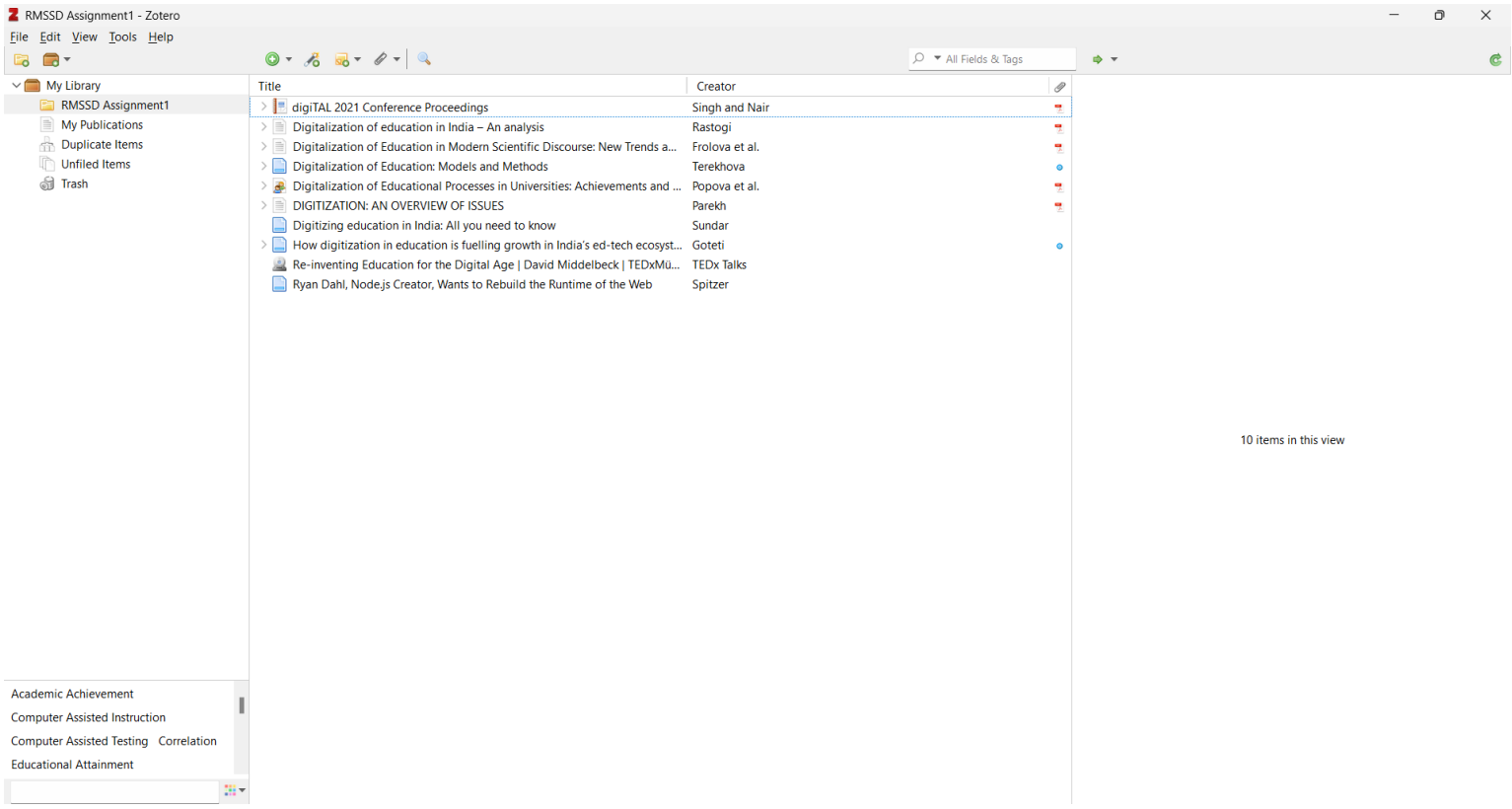

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