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AN OVERVIEW OF THE TRENDS IN THE PROCESS OF EDUCATION FROM ANCIENT TIME TILL TODAY

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Abstract

The paper examines the various trends in the process of education right from the inception of man on earth. It examines that man started the process of education by thinking on how to solve his immediate challenges after existence which later initiated the idea of traditional education, the system that operates in accordance with the needs and aspirations of individual societies. The early philosophers then started to think about the liberal and universal education in the middle age, where various philosophers gave various inputs which result in a more formal education system. Egyptian civilization was also considered as part of various trends in the process of education which energizes the emergence of science and technology. The paper also examines the era of industrial revolution in Europe and role played in the process of education. New trends continue to emerged, between 20th and 21st century education has taken a different dimension from traditional mode of education to progressive education which the paper highlighted and realized that we are facing 4th industrial revolution which is characterized by science and technology with potential challenges on education and future workforce. Therefore, the paper suggested that, school should embrace online learning, blended learning and educationists should device possible ways of saving human societies from the future challenge.

Keywords: Trends, Education, Process of Education, Industrial Revolution

Introduction

Education can be seen as any act or experience that has formative effects on the mind, character or physical ability of the individual. The effects can only be realized through effective education that can bring change in behavior of the individuals. Education like human being is dynamic, it starts from simple to complex, it changes structure, it changes interest and aspirations. These common features of education make it flexible to change in its processes, curricular and products.

The process of education undergoes various trends due to the course of time, needs and aspirations of the societies. This started right from the existence of man, through the middle age era, Egyptian Civilization, industrial revolutions, to the 21st century. All these eras recorded remarkable differences in the process of education. This paper highlighted on the process of education within each transition period and predicts the expected trend in the near future

Concept of Education

In simple terms Rousseau viewed education as the child's development from within. Education may be defined as a purposive, conscious or unconscious, psychological, sociological, scientific and philosophical process, which brings about the development of the individual to the fullest extent and also the maximum development of society in such a way that both enjoy maximum happiness and prosperity. In Short, education is the development of individual according to his needs and demands of society, of which he is an integral part (Kumar & Ahmad, 2008). Education therefore, develops in the body and soul of the pupil all the beauty and all the perfection he is capable of. Aristotle sees education as the creation of sound mind in a sound body. It develops man's faculty specially his mind so that he may be able to enjoy the contemplation of supreme truth, goodness and beauty.

John Dewey described Education as not a preparation for life, rather it is the living. Education is the process of living through a continuous reconstruction of experiences. It is the development of all those capacities in the individual which will enable him to control his environment and fulfill his possibilities. It is also seen as the complete development of the individuality of the child so that he can make an original contribution to human life according to the best of his capacity.

In its wider sense, education is the total development of the personality. In this sense, education consists of all those experiences, which affect the individual from birth till death. Thus, education is that process by which an individual freely develops his self-according to his nature in a free and uncontrolled environment. In this way, education is a lifelong process of growth environment. Education begins with the birth of a child and ends with his death. It is a continuous process. Continuity is the law of life. Education is not limited to the classroom only; it is also not limited to a particular period of life. Throughout life one goes on learning to adjust oneself to the changing patterns of life. Change is the fundamental law of human existence. Life is a continuous process of growth and development and so education is also a continuous process (Kumar & Ahmad, 2008).

Historical Evolution of Education

The process of education varies with the time, space and requirement. Education from the onset was informal and traditional in nature. But with the course of time and requirements it undergoes various trends. Education is as old as the human existence. After the existence of man on earth, the issue of survival came up and for man to survive he must think. So, when there is challenge, one must think to find a way out. For instance, man faced the challenges of weather, food, security, shelter, among others. Man has to think constructively to solve those problems. Therefore, man does not think haphazardly. This marks the beginning of education and thought or process that succeeded in solving human problems. Provision of solution to those challenges marked the beginning of human knowledge. As man advances and continue to procreate, he began to think on how to educate the children or the younger ones. As the children asked questions and challenges for human survival were becoming complex. Man was mandated to seek for further different ways of answering questions this brought the idea of traditional education.

In ancient Sparta education was not individualistic but socialistic. Each man was born not for himself, but for the state. The state itself was a school. The immediate aim of this state-controlled system of education was to train the youths in military barracks away from home, to develop a hardy mind in a hardy body, to produce courageous soldiers. Individual liberty was thus not allowed. Education was primarily physical (Kumar & Ahmad, 2008).

In Athens, the individual occupied the pivotal position in the education field. Athenian education aimed at harmonious development of personality physical, intellectual, moral and aesthetic. It secured harmony between the individual and the state, between physical and mental development, between thought and action. Its immediate aim was to develop a beautiful mind in a beautiful body. Socrates, Plato and Aristotle, the Greek idealists, discarded extremely individualistic aim of education. Socrates emphasized on the acquisition of universal and eternal knowledge or truth. Plato advocated harmonious development of all the powers of the individual and equated personal realization with social solidarity. Aristotle championed the ideal of harmony between the individual and the society, between intellect and character and theory and practice (Kumar & Ahmad, 2008).

The ancient Romans had no interest in the acquisition of purely theoretical knowledge. Their outlook was materialistic. Their highest aim of life was the attainment of material success. The aim of Roman education was, therefore, to produce a worthy citizen of the Roman state, able to enjoy the rights and perform the duties of a citizen.

In context of Nigerians' traditional education, the young ones were trained through apprenticeship and folklore. The rationale was to develop the child economically, socially, morally and intellectually.

Education in the Middle Age

During the middle ages, education was wholly a priestly affair. Mysticism, monasticism, chivalry and scholasticism dominated life in every field. Education was absolutely formal in character and religious in outlook. This is a transitional period between traditional system of education to a more formalize system.

With the passage of time, this liberal humanistic education degenerated into an artificial and formal system. Against this artificial education the Realistic movement started under the leadership of Bacon and Comenius. According to them, ignorance was at the root of all evils. So, they pleaded spread of universal and integrated knowledge. The child's individuality, his powers and interests were given supreme importance. Due to religious, social, psychological and pedagogical reasons, a new theory of education, known as theory of mental or formal discipline came into vogue. John Locke was the historical representative of this new doctrine. According to him, the aim of education should be to produce a sound mind in a sound body. The aim of education would be to discipline all the faculties such as memory, imagination, perception, thinking etc (Kumar & Ahmad, 2008).

A true individualistic ideal of education came into existence in the 18th century. J.J. Rousseau revolted against the existing artificial and demoralized system of education. He not only championed the cause of the common people but also the cause of the child in

the field of education. Thus, naturalism appeared in education. Rousseau's concept of negative education emphasized education according to nature. The child was regarded as the important and the central factor in the field of education. The aim of education should be therefore, spontaneous natural self-development of the child's nature in close contact with nature. Kant was greatly influenced by the individualistic concept of education and defined education as the process by which man becomes man through his voluntary efforts.

Pestalozzi introduced the psychological tendency in education and with it the child-centric movement in education received a new momentum and fillip. According to him, education was the process of the spontaneous unfolding of latent powers of the individual towards perfection. Herbart shouldered this task and he developed a systematic psychology of the methods of teaching. Froebel, the German idealist, regarded education as the spontaneous development of a joyful, creative self-activity (Kumar & Ahmad, 2008).

The Egyptian Civilization and Education

The history of civilization started in the Middle East about 3000 BCE Egyptian culture and education were preserved and controlled chiefly by the priests, a powerful intellectual elite in the Egyptian theocracy who also served as the political bulwarks by preventing cultural diversity. The humanities as well as such practical subjects as science, medicine, mathematics, and geometry were in the hands of the priests, who taught in formal schools. Vocational skills relating to such fields as architecture, engineering, and sculpture were generally transmitted outside the context of formal schooling (Britannica, 2021).

Egyptians developed two types of formal schools for privileged youth under the supervision of governmental officials and priests: one for scribes and the other for priest trainees. At the age of 5, pupils entered the writing school and continued their studies in reading and writing until the age of 16 or 17. At the age of 13 or 14 the schoolboys were also given practical training in offices for which they were being prepared. Priesthood training began at the temple college, which boys entered at the age of 17; the length of training depending upon the requirements for various priestly offices. It is not clear whether or not the practical sciences constituted a part of the systematically organized curriculum of the temple college (Britannica, 2021). Rigid method and severe discipline were applied to achieve uniformity in cultural transmission, since deviation from the traditional pattern of thought was strictly prohibited. Drill and memorization were the typical methods employed. But, as noted, Egyptians also used a work-study method in the final phase of the training for scribes. Fahim and Zoair (2016) Added that, the primary and secondary education levels in the ancient Egypt were devoted to provide students with some knowledge and skills concerning reading, writing and analysing some texts, basics of mathematics, swimming, music among others. They aimed to prepare them for their future professions whatever its direction. The examination of the educational operations in ancient Egypt was based on different archaeological and documentary sources. The remains of some schools discovered in Thebes and Kharga Oasis could present some aspects of educational facilities in Ancient Egypt from the New Kingdom. The documentary sources are numerous and cover many aspects of education process as: school exercises inscribed on ostraca, wooden or stone tablets, papyri, teachers‟ manuals and ancient Egyptian's maxims.

Modern education was introduced under the auspices of Pasha Muhammad Ali who reigned 1805-1848. He started a dual system of education at the time: one serving the message attending traditional schools (Mansourya) and another called Madrasa (Arabic word for school) for the elite civil servants. The Mansourya taught students the basics of reading and writing throughout memorizing and reciting Qur'anic verses with no emphasis on experimentation, problem-solving or learning-by-doing; while the Madrasa offered a more modern educational pedagogical (Hartman, 2008). Ali Pasha sent two organized student missions to study in Paris. French involvement in Egyptian education was not initially a government project, but rather evolved to become a government project by the end of the Pasha's rule. The first mission was a personal venture to keep the spirit of the 1798 Napoleonic expedition alive through informal cultural imperialism. The French government was involved in the second student mission of 1844. It was motivated by their colonial interests in North Africa (Archana, 2018).

Somi (2018) described that Egyptian's educational achievements and contributions to human civilization are many. In art, modern painting and sculpture borrowed much from Egyptian models. In architecture, Egyptians were the first to successfully use mass with stone in copying the massive desert cliffs and mountains to build the pyramids, are of the enduring wonders of the world. In literature, the Egyptians used proverbs, similes, aphorisms, etc, to teach moral conduct, ethods that are in extensive use in today's teaching. In mathematics, the Egyptian method of multiplication was until recently used in Eastern Europe and Asia. In medicine, the Egyptians had knowledge of physiology, surgery and blood circulation, and are the originators of the Hippocratic Oath. In writing, the Egyptians developed hieroglyphics and invented the earliest known writing materials. "Paper: is an abbreviation of "papyrus", which was a plant cultivated in Egypt and used for writing.

However, there are critics of Egyptian citizens who argue that these achievements were not built upon due to the stagnation and decline that followed the end of the old Kingdom. That as it may be, but the foundations of modern western world developments in science and technology in ancient Egypt civilization are not in dispute (Somi, 2018).

Industrial Revolution and Education

Industrial revolution in modern history, is the process of change from an agrarian and handicraft economy to one dominated by industry and machine manufacturing. It was the transition to new manufacturing processes in Europe and the United States, in the period from between 1760 to 1820 and 1840 (Councilof Europe, 2021). This transition included going from hand production methods to machines, new chemical manufacturing and iron production processes, the increasing use of steam power and water power, the development of machine tools and the rise of the mechanized factory system. The Industrial Revolution also led to an unprecedented rise in the rate of population growth. Textiles were the dominant industry of the Industrial Revolution in terms of employment, value of output and capital invested. The textile industry was also the first to use modern production methods (Landes, cited in McCloskey, 2004).

The Industrial Revolution began in Great Britain, and many of the technological innovations were of British origin (Wrigley, 2018). By the mid-18th century Britain was the world's leading commercial nation (George, 1998), controlling a global trading empire with colonies in North America and the Caribbean, and with major military and political

hegemony on the Indian subcontinent, particularly with the proto-industrialised Mughal Bengal, through the activities of the East India Company.(Tong, 2016). The development of trade and the rise of business were among the major causes of the Industrial Revolution(Landes cited in Hopkin, 2000).

To understand the first industrial revolution was catalysed by Newton when he formulated his laws of motion. Because from then onwards motion was better understood and quantified, it was possible to design stem engines that mechanised much of the work that was traditionally done by humans. The second industrial revolution was catalysed by Faraday and Maxwell who unified magnetic and electric forces and this led to electricity generation and electric motor which were instrumental in the assembly lines that have come to dominate many industries. The third industrial revolution was catalysed by the discovery of a transistor which ushered the electronic age that gave us computers and internet. The fourth industrial revolution will revolutionise industries so substantially that much of the work that exists today will not exists in 50 years (Marwala, Mahola, and Nelwamondo, 2006).

This paradigm shift was initiated by nothing other than the advancement in the human knowledge within the era. Dewey's observation from 1923 is often cited in contemporary debates about the relationship between industry, education and the economy in the twenty first century. Binkley et al (2011) noted another exponential shift in economic growth from manufacturing to information and knowledge services at the beginning of this decade which has impacted and transformed the nature of the modern-day workplace. They argue that employees need to be adaptable with the relevant communication, complex problem solving and innovation literacy skills to respond to new demands and changing circumstances in the labour market and expand the power of technology to create new knowledge and increase.

Contemporary Trends in Education (the 21st Century)

21st century comes with the trends of progressive education. Much emphasis was placed on using science and technology in education for the practical solution of human problem. We are living in the modern world of science and technology. Modern civilization is known as a technological civilization. Science and technology have become a part of our day-to-day life. Man has been using the contribution of modern technological means extensively for his comfort, delight, and improvement of the standard of living. Increased productivity and improved quality of production in our industries have been made possible through the use of modern educational technology.

Keeping in view of the changing needs of society, curriculum needs to be modernized in order to adjust with the present scientific and technological changes. It may be noted that the use of science and technology has given rise to certain misunderstandings and misconceptions among the people. It has brought about quick changes in society to which all sections of people cannot conform to. Also, it has led to certain social problems by creating a big gap between the haves and the have-not, elite, and illiterate. It has created the problem of social disorganization and disequilibrium. As such the curriculum has a challenging task of modernizing the attitude and outlook of all sections of people in the society in the context of such rapid changes. It must make people understand and appreciate the use of science and technology for the betterment of their lives.

The process of education under this trend brought changes in the process of teaching and learning. It is obvious that the use of internet in the teaching and learning is indispensable in this era. Excite (2021) described that while World Wide Web has redefined the practices and procedures in almost every area of life, it has certainly brought revolutionary changes in the field of education. The success story of online education is a significant example as it is serving the people from various different backgrounds. Everyone from mid-career professionals to housewives can earn degrees and diplomas in their selected fields through online schools and colleges. Online education is preferred because of its extendibility and expediency. The growth of technological capabilities meant that a variety of media and learning-support tools now exist to help students receive a high-quality education through the Internet.Slaughter (2009) added that through the use of tools such as cell phones, texting, instant messaging, chat rooms, and wikis, teachers can instruct students using the tools that they are already comfortable with, to most effectively disperse information and academic content. The use of e-library is becoming tradition among teachers, students and institutions. Various reading materials are accessible through e-library which brought store of knowledge more closely to the learner and make learning easier.

Learner-centered approach is also used contrary to traditional way of teaching and learning. This is an idea propounded by John Dewey. In learner-centered classrooms, one can see much of John Dewey's social learning theory and educational beliefs in action. He viewed the classroom as a social entity for children to learn and problem-solve together as a community. In these classrooms, children are viewed as unique individuals; students can be found busy at work constructing their own knowledge through personal meaning, rather than teacher-imposed knowledge and teacher-directed activities (Schiro, 2013). Children will be seen learning-bydoing in these classrooms and they will be solving problems through hands-on approaches. When teachers plan for instruction, student interests will be taken into consideration and curricular subjects will be integrated with an emphasis on project learning. Montessori schools are additional models which show evidence of John Dewey's theories in classrooms in the 21st century. The Montessori method of teaching aligns with the learner-centered ideology of curriculum design, by insisting that teachers design appropriate curriculum through careful observation of their students. Curriculum should be based on students' talents, personal interests, and their physical and social needs (Montessori, 2013). Montessori viewed traditional schools as boring and monotonous institutions that stifled student creativity. Furthermore, she noted that in an effort to get students on-task, teachers in traditional schools relied heavily on reward and punishment schemes in order to force children to pay attention.

The contemporary trend in education brought about the changing role of a teacher, unlike in traditional schools where teacher dominated the business of teaching and learning. The 21st century has changed the concept of a teacher too. More than a data feeder, the teacher has become someone who nurtures the learners adequately. This trend has become the crux of the student-centered approach to learning. The teacher has become a person who guides his/ her class through activities and sharing the wonder of discovery. Though involved in the activities, a teacher should keep an eye on monitoring the personal progress of individuals and helping the ones who need special attention and help. As technology has grown, it has also changed how teachers relate to their students and their classrooms. With a wealth of information at their fingertips, students today have the tools they need to uncover a tremendous amount of facts and knowledge independently.

In this environment, many students value less of a top-down delivery method. Instead, teachers now function more in a facilitative role. Their job has slowly evolved into a position where they help students understand how to learn, to love learning, and how to uncover and understand the information they find.

Lifelong learning is another human resource development approach brought about by the contemporary changes in education. Each industrial revolution has changed the nature of work and jobs in astounding ways. The current 4th Industrial Revolution may impact an incredible 50 percent of jobs as tremendous technological progress leads to changes in how people do their jobs. Professionals who want to remain competitive in their environment will need to constantly re-skill themselves. They cannot assume that an education they earned in the first half of their professional career will be all they need for the rest of their working lives. This offers chances for schools to grow as they create new programs and adult learning opportunities to help their alumni thrive within the changing professional space.As technology changes society, it has also had a dramatic impact on how people earn and prepare for their professional careers. The institutions that learn how to remain on top of these changes will position themselves for growth and success. Consider how these trends may impact education and what they mean for institutions of higher learning moving forward (Insight, 2021).

Teachers and students may be familiar with STEM (science, technology, engineering, and math) curriculum and how it prepares students to enter the workforce with practical, high-demand skills. But adding the arts alongside these subjects (thus creating STEAM: STEM plus arts) can improve your students' academic performance. For example, adding art assignments to science and Math lessons can help low-achieving students understand STEM subjects better. And it improves creativity—a useful skill for any academic subject. Plus, STEAM curriculum is shown to provide students with a more well-rounded and practical education than STEM alone (Waterford, 2021).

Expeditionary learning brings the learning out into the world expediting the need to learn more than what's confined inside the classroom walls but even more so using the world to learn. Students feel engaged in learning while achieving goals and accomplishing character development when exposed to learning outside (Teach Thought. 2019. Experiential learning is a strategy that, according to the UC Denver Experiential Learning Center, allows students to develop knowledge and skills in a setting outside of the classroom. For elementary students, options for experiential learning may be limited. But you can still make the most of this strategy by taking students on field trips (virtual or otherwise) and providing students with assignments that encourage them to learn outside of school (Waterford, 2021).

All these approaches and many more like blended learning, constructive learning and others not mention above were meant to make learning more meaningful to the life of the learner and society. The trends put learners into consideration with the integration of technology the learning processes were made easy with effective outcome and high productivity.

The Future Prospects of Education

The fourth Industrial Revolution (4th IR) is the stage in the development of knowledge in which the lines between physical, digital and biological spheres are being blurred

(Schwab, 2016). Organizations cannot compete in this ever-changing environment without proper knowledge and lack of capacity for renewal. The landscape of educational technology was transformed by the 4th IR. The rapid changes of knowledge have developed the new model of education for the future. Speed, fusion of different technologies, breadth and depth and return to scale makes the 4th IR different (Xing & Marwala, 2019). Toynbee (2011) was critical of the notion that Britain's national wealth had increased during the early decades of the nineteenth century with the detrimental effect on many individuals and it is important to understand the true impact on education for everyone. He described the first industrial revolution as disastrous and a period leading to "a rapid alienation of classes and the degradation of a large body of producers". Colin (2017) worried about educators. He said; "their readiness in responding to the 4th IR, and questioned if universities are capable of managing the convergence, fluidity, power shifts, contingency and ethical issues that came along with the 4th IR.

Higher education particularly university remained the ultimate body that produced professionals and specialist in different disciplines for the consumption of the labour market and wider society. Xing & Marwala (2019) observed that, higher education in the fourth industrial revolution is an obscure, rationalistic and energizing open door which can possibly change society to improve things. The fourth industrial revolution is fuelled by counterfeit consciousness and it will change the work environment from assignments-based attributes to the human focused qualities. As a result of the joining of man and machine, it will diminish the subject separation amongst humanities and sociology and in addition science and innovation. For example, there is one restaurant in Ipoh that use 'celebrity robots' which replaced waiters/waitress to serve the customers. This shows that the automation of services lessens the use of human service. Beyond technology lies inequality because the accessibility to technology and connectivity are not equal. Many people are displaced because they lost their jobs, 7 billion world population but only 3.5 billion have access to connectivity.

Peter in Shahroom and Hussain (2018) asserted that, universities won't survive. Higher education is in deep crisis. The college campus won't survive as a residential institution. Today's (collage) buildings are hopelessly unsuited and totally unneeded. This was a true prediction as an innovative coding University established in Paris was launched in 2013 which opens 24/7. There is no single teacher, books or tuition fees. Students work by projects and undergo several internship programs at designated levels. Once they completed the projects, they will earn points for them to go for the next level.

This brought us to the idea of Artificial intelligence (AI). Abdulaziz (2019) described that, the research of artificial intelligence has been developed since 1956, when the term "Artificial Intelligence, AI" was used at the meeting hold in Dartmouth College. Artificial intelligence, a comprehensive discipline, was developed based on the interaction of several kinds of disciplines, such as computer science, cybernetics, information theory, psychology, linguistics, and neurophysiology. Artificial intelligence is a branch of computer science, involved in the research, design and application of intelligent computer. The goal of this field is to explore how to imitate and execute some of the intelligent function of human brain, so that people can develop technology products and establish relevant theories. Artificial intelligence (AI) is the simulation of human intelligence processes by machines, especially computer systems. These processes include learning (the acquisition of information and rules for using the information), reasoning (using rules to reach approximate or definite conclusions) and self-correction.

Particular applications of AI include expert systems, speech recognition and machine vision. AI can be categorized as either weak or strong. Weak AI, also known as narrow AI, is an AI system that is designed and trained for a particular task. Virtual personal assistants, such as Apple's Siri, are a form of weak AI. Strong AI, also known as artificial general intelligence, is an AI system with generalized human cognitive abilities. When presented with an unfamiliar task, a strong AI system is able to find a solution without human intervention (Abdulaziz, 2019).

In the future there will be a lot of changes in ways of teaching and learning. The content of the teaching, roles of lecturers and students. The logic of education systems should be reversed so that it is the system that conforms to the learner rather than the learner to the system. This is the essence of personalisation. Due to rapid economic and social change, schools/university have to prepare students for jobs that have not yet been created, technologies that have not yet been invented and problems that we don't yet know will arise. Higher education sector is pressured to put up with the needs of digital communities (Schleiher, as cited in Shahroom and Hussain, 2018).

Investment in emerging technologies and human connectivity, building digital resilience, as well as institutional capabilities in digital governance and accountability, are key strategies for survival; however, it is unclear whether the higher education community are doing enough to adapt and create an enabling environment for learners, academics and practitioners to break barriers, imagine, innovate, create, and collaborate; develop a 4th IR ready ecosystem fitting to institutional contexts; stimulate greater human connectivity through the exchange of students and staff, which is enabled through global and regional networks, and consortium of higher education institutions; incorporate spiritual values, ethics and morality, national identity and a sense of connection to the community, through curriculum delivery and technology transfer; and be mindful of the benefits and risks brought about by the 4th Industrial Revolution. (Wahid and Omar, as cited in Shahroom and Hussain, 2018).

Xing & Marwala (2019) observed that, to deal with 4th IR transformation challenges, an organization need to have a successful strategy. The developing of technologies such as big data and AI will replace most of the processes. The next generations would be more attracted to the use of smartphones and the apps. New technologies transform our lives "by inventing new, undreamed of things and making them in new, undreamed of ways'. Shahroom and Hussain (2018) opined that, today, all graduates face a world transformed by technology, in which the Internet, cloud computing, and social media create different opportunities and challenges for formal education systems. As students consider life after graduation, universities are facing questions about their own destiny especially employment. These technologies powered by Artificial Intelligence are so much transforming the world that social concepts such as "post-work" are more and more defining the present period. This period requires certain skills that are not exactly the same as the skills that were required in the third industrial revolution where information technology was the key driver. These skills are critical thinking, people management, emotional intelligence, judgement, negotiation, cognitive flexibility, as well as knowledge production and management. Our starting point is to investigate the three current mega-trends as well as their consequences.

Butler (2018) examined that, the implication has to do with curricula, teaching and learning – rather than about robotic tutors. To succeed as a member of society, and as an

employee, in the era of the Fourth Industrial Revolution, numeracy, literacy and an understanding of how the world operates are all essential. Students studying the basic and applied sciences need also to understand the political and social natures of the world in which they live. For the same reasons, students who study the humanities and social sciences need to understand at least the foundations on which AI is based and operates. This is a different kind of decolonisation of curricula – even requiring, perhaps, some of the elements of the kind of education provided (at least at first-year level) by liberal arts colleges. Butler (2018) added that, further requirements: people must have the skills required to implement, manage and work with the new technology, and with one another. And, not least, to be problem solvers, to be adaptable, and to be able to express themselves in both the written and spoken word – and to make the kinds of ethical and moral decisions that are not ever likely to become successful elements of AI. This challenge is one to which educators will have to rise.

Conclusion

Education is meant to serve the humanities that is why both humans and education undergoes certain changes in the process of their development. The dynamic nature of education is what brought about the various trends in education process. Education started by the primitive societies in their struggle to solve the basic human problems, then traditional education for the immediate societies to solve peculiar social problems. As the human society progresses the need arises for liberal and universal education, expansion of which brought about industrial revolution. The industrial revolution comes in phases about 1-4 as a result of advancement of the human knowledge. Presently we are facing the fourth industrial revolution alongside its effects on present and future education.

The connection between education and society is often implied to be one-way where education is expected to fit in with economic and political trends, rather than, opposing them and representing something different. Such general understanding of the relationship between education and the socio-economic structures and what the education position involves help us to form a projection of future education associated with the fourth industrial revolution.

Suggestion

After intensive examination and overview of the process of education the various trends in education. The paper proffers the following suggestions;

Massive open online courses, is a form of education that provides stand-alone instruction online (Xing, 2015). Though much experimentation lies ahead, online courses threaten different universities in distinct ways. Two big factors underpin a university's costs: physical proximity requirement and productivity limitation. Because of the need for physical proximity enrolling more students is expensive considering the increase in buildings and instructors. Because of productivity limitation, the maximum number of students that can be compressed into lecture venues and exam-marking rosters are limited. Online courses can eliminate these obstacles by working completely differently: off campus and online model; and once an online course is created, teaching extra students becomes an advantage.

Education should be pragmatic in nature. That is the ability of the school system to solve existing problems. Most developing or under-developed countries lack innovative talent, especially at the high end. To fully grasp the opportunity of another wave of industrialization, a country's higher education system should not only focus on training knowledge-based skilled person, but have a good look at cultivating innovative talent, especially high-level scientists and technologists. These scientists must be trained in an interdisciplinary environment where technologists should understand humanities and social science and vice versa.

There should be more emphasis on the Blended Learning which provide for the integration of what the learner will acquire from the school and what personally learn on his own. To address this issue, we believe a generalized blended learning (i.e., mixed e-learning and face-to-face learning methodology) may contribute to this. It is well-known that virtual environments offer great educational value in the process of information transmission and interactive participation, either in real time (e.g., video conferences), or non-simultaneous participants involvement (e.g., forums and chats). In such process, the face-to-face teaching and evaluation can be used to develop analytical expressions and problem-solving capabilities related to mathematical matters. Lecturers at this stage can get physical feedback about the effectiveness of their knowledge transmission to students. Then the understanding of some specific conceptual issues is further assessed and reinforced via online graphic representations and multiple-choice test questions and this offers students an advantage of reviewing their results immediately.

The plurality of wearable devices produced indicates an early sign of another technology. Education establishments have to act now to realize wearables' huge potential to revolutionize the way we teach and train students and how they learn as well. Take numerical simulation, it is a very useful tool for engineers to analyse and predict the condition of real-world physical systems. In the era of the 4th industrial revolution, when the existence of cyber-physical systems become a new norm, numerical simulations play an ever-increasing important role in both education and practical applications. Within the realm of numerical simulation, Finite Element Analysis (FEA) is a versatile technique which has been practiced in various engineering fields such as analysing buildings (Marwala & Harwitz, 2017).

In the process of this high technological era, another important role that the education sector should play is to save the human workforce from being hijack by machines and computers. Human workforce is a social security through which people earned their livelihood, absence or shortage of which will force other social problems to emerge.

Reference

Abdulaziz, A. (2019). BLDM 815: Information Technology in Construction - Artificial Intelligence (AI). Unpublished Postgraduate Lecture Note 2018/2019 Session, Departtment. of Building, Ahmadu Bello University Zaria, Nigeria.

B. Xing, "Massive online open course assisted mechatronics learning a hybrid approach," in Furthering Higher Education Possibilities through Massive Open Online Courses, Chapter **12**: pp. 245-268, A. Mesquita and P. Peres, Eds., 701 E. Chocolate Avenue, Hershey PA, USA 17033: IGI Global, ISBN 978-1-4666-8279-5, 2015.

Britannica (2021). Education in the earliest civilizations: The old-world civilizations of Egypt, Mesopotamia, and North China. Retrieve from; https://www.britannica.com/topic/education/Education-in-the-earliest-civilizations

Butler-Adam J. (2018). The Fourth Industrial Revolution and education. *S Afr J Sci*. 2018; **114** (5/6): Art. #a0271, 1 page. http://dx.doi.org/10.17159/sajs.2018/a0271

Colin, L. (2017). Education and the Fourth Industrial Revolution. Retrieved from; https://medium.com/nine-by-five-media/education-and-the-fourth-industrial-revolution-111976c6a37d.

Excite (2021). Trends in Education. Retrieved from; https://www.excite.com/education/education/trends-in-education

Fahim, T. & Zoair, N. (2016). Education in Ancient Egypt till the End of the Graeco-Roman Period: Some Evidences for Quality. *Journal of Association of Arab Universities for Tourism and Hospitality* Special Issue' Ismailia Conference 2016 1-16 1

Hartmann, S. (2007). The informal market of education in Egypt – private tutoring and its implications Paper presented at the AEGIS European Conference on African Studies Leiden, 11th to 14th July 2007 by Freie Universität Berlin lasarah@web.de

Insight E. H. L. (2021). 5 Trends in Education that Continue in 2021. Retrieved from; https://hospitalityinsights.ehl.edu/2021-education-trends

Kumar, S. & Ahmad, S. (2008). Meaning, Aims and Process of Education. A lesson note for School of Open Learning University of Delhi, India.

Marwala, T. (2010). Finite-element-model updating using computational intelligence techniques:
applications to structural dynamics. London, UK: Springer-Verlag, ISBN 978-1-84996-322.

Marwala, T. & Hurwitz, E. (2017). Artificial Intelligence and Economic Theory: Skynet in the Market. Springer.

Marwala, T., Mahola U. and Nelwamondo F. V. (2006). "Hidden Markov models and Gaussian mixturemodels for bearing fault detection using fractals, In the *Proceedings of the International JointConference on Neural Networks*, BC, Canada, pp. 5876-5881, 2006.

Montessori, M. (2013). A critical consideration of the new pedagogy in its relation to modern science. In D. J. Flinders & S. J. Thornton (eds.), *The curriculum studies reader*. (pp. 19- 32). New York: Routledge.

Schiro, M. (2013). Introduction to the curriculum ideologies. In M. Schiro *Curriculum Theory: Conflicting Visions and Enduring Concerns (2nd. ed.)*, pp. 1–13. Thousand Oaks, CA: SagePublications Inc.

Scwab, K. (2016). The Fourth Industrial Revolution: what it means, how to respond. Retrieved from; https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/

Shahroom, A. A., & Hussin, N. (2018). Industrial Revolution 4.0 and Education. *International Journal of Academic Research in Business and Social Sciences*, **8** (9): 314–319.

Slaughter, T. (2009). Creating a successful academic climate for urban students. *Techniques*, 16-19.

Somi (2018). Contribution of Egyptian Education to Human Civilization. Retrieved from; https://mysominotes.wordpress.com/2018/08/25/history-of-education-4a-iii-what-are-the-contributions-of-egyptian-education-to-human-civilization

Teach Thought Staff (2019). Modern Trends in Education: 50 Different Approaches to Learning. Retrieved from; https://www.teachthought.com/pedagogy/modern-trends-education-50-different-approaches-learning/

Toynbee, A. (2011). Lectures on the Industrial Revolution in England Paperback – April 20, 2011. https://www.amazon.com/Lectures-Industrial-Revolution-England-Toynbee/dp/1447403746

Waterford (2021). 10 Popular Educational Trends. Retrieved from; https://www.waterford.org/education/educational-trends-for-teachers/

Wrigley, T. (2018). New challenges of educational change. *Improving Schools*, **21** (3): 207–208

Xing, B. & Marwala, T. (2019). Implications of the Fourth Industrial Age on Higher Education. Retrieved from arxiv.org/pdf/1703.09.