Future of Education, Creativity and 21st century Challenges in Nigeria

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ABSTRACT Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits. Attending school is to better the future of the child. Children learn ways to make them happy, to get a job, wealth, and a better standard of living. The Nigeria school system is now outdated and ineffective in a real, highly dynamic world that is changing very fast. The present system does not motivate students because they are made to follow instructions all day long with little or no room for creativity. This paper explores some of the challenges faced in the educational sector of Nigeria in the present world of educational technologies. The challenges are numerous due to lack of political will and under-funding of the sector in the face of glaring natural wealth. The state of education in Nigeria is compared to the present state of education in other countries in a descriptive way; whether schools are well-equipped, and teachers possess the knowledge, and skills, to create and implement an effective structure to impart the 21st-century skills on students in Nigeria. Creativity, as one of the key 21st-century skills and material constraints to eradicate poverty in Nigeria, is also highlighted. Creativity programmes give students ownership over their learning, working their way through tasks, and hacking other processes that they are interested in. With the global exponential growth of knowledge in many fields, especially in science, technology, engineering and mathematics, the 21st-century student, especially from developing countries, face new intellectual challenges. In conclusion, education policymakers and stakeholders in Nigeria should create effective teaching and learning environments that students need to develop the knowledge and skills that better prepare students for the demands of 21st-century workforce and succeed in life. The Nigerian government should invest adequately in the educational sector and provide the conducive environment and ideal collaborators, so that, the potential for fostering creativity through education and training, for national economic benefit, and the application of creative resources to improve the effectiveness of teaching and learning can be harnessed appropriately.

Keywords: Educational technology, 21st-century, material constraints, student, creativity, skills, policymakers

Introduction

Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits. Educational methods include storytelling, discussion, teaching, training, and directed research. Education frequently takes place under the guidance of teachers or educators, and also learners may also educate themselves (Dewey, 1944). Formal education takes place in a school environment with classrooms of multiple students learning together with a trained, certified teacher

of the subject (Cedefop, 2009). Attending school is to better the future of the child. Children go to school to learn ways to make them happy, to get a job, wealth, and a better standard of living.

The traditional system of education was designed in the industrial age and is now outdated and ineffective. Schools have not changed much for hundreds of years. However, presently, there is the flipped classroom, which is an instructional strategy in which computer-assisted teaching is integrated with classroom instruction. Students are given basic essential instruction, such as lectures, before class instead of during class. Instructional content is delivered outside of the classroom, often online. This frees up classroom time for teachers to more actively engage with learners (*Gabrieli, 2009).*

In Nigeria at present, children are attending schools whose system is now outdated and ineffective in a real, highly dynamic world that is changing very fast. There is, therefore, a growing concern that something is not right with our present educational system of teaching or learning. Creativity programmes give students ownership over their learning, working their way through tasks and hacking the engineering design process or other processes that they are interested in.

In our present educational system, the student's world is controlled by the system because they are given instructions on what to do and what not to do all day long and cannot reason for themselves or are not in control of situations. That is, the students are not in control of their lives, which is not the best because there is no motivation by the school system. Students follow instructions all day long with little or no room for creativity.

Creativity as One of the Key 21st Century Skills

Creativity is a phenomenon whereby something new and somehow valuable is formed. The created item may be intangible (such as an idea, a scientific theory, a musical composition, or a joke) or a physical object (such as an invention, a literary work, or a painting). It is a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, etc. (Torrance, 2002) and involves the production of novel, useful products (Mumford, 2003). While innovation is the implementation of creative ideas either by being put into active use or by being made available for use by other parties, firms, individuals, or organizations (Amabile and Pratt, 2016). We are naturally creative, and as we grow up, we learn to be uncreative.

Creativity is a skill that can be developed and a process that can be managed. It is associated with many factors, including conducive environments, ideal collaborators, personality traits, and even a quest for spiritual muses. Creativity has also been identified as one of the key 21st-century skills. Scholarly interest in creativity is in the potential for fostering creativity through education and training, the fostering of creativity for national economic benefit, and the application of creative resources to improve the effectiveness of teaching and learning.

Creativity begins with a foundation of knowledge, learning a discipline, and mastering a way of thinking. One can learn to be creative by experimenting, exploring, questioning assumptions, using imagination, and synthesizing information. Learning to be creative is akin to learning a sport. It requires practice to develop the right muscles and a supportive environment in which to flourish. The dominant factors of why some people are more creative than others are usually identified as process, product, person, and place (Rhodes, 1961).

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Creativity is difficult for a lot of people to quantify; it's a broad term, but an important skill. Creativity and expertise is what makes the difference between an amateur and a professional. Creativity is usually a personal talent. Some people seem to learn a language effortlessly; others seem to be highly talented when it comes to sport. It's also possible for people to succeed at something, even if they're not exceptionally gifted in that field. Sometimes it's simply a question of putting more effort in. The same goes for creativity. It's important to understand that individuals are already creative in their daily life. Each website that you develop, every dish that you cook, the decisions you take each day shows you are being involved with creativity. Anyone can learn to be more creative in their work and life. However, there might be times that the desired results are not achieved.

The essential aspect of stimulating a person's creative mind is observation. It is understood that creativity is a cognitive process, influenced by both social and personal factors. Creativity is also something of a gift. When presented with a problem, some people will come up with creative concepts in a matter of minutes, while others may need a day to deliver stereotypical solutions. Fortunately, the creative ability can be improved. First and foremost, theoretical knowledge of creativity is important. It will help to understand why one is creative, how you are creative, and why sometimes it just won't work. Having a bad day is only partly an explanation. Suffering creative block can *always* be explained. Having this theoretical knowledge will mean that it's possible for you to find solutions to your creative problems.

The beliefs that only special, talented people born that way are creative diminish our confidence in our creative abilities. To reach high levels of ability, a person must not possess an innate potential called talent. Excellence is, however, determined by opportunities, encouragement, training, motivation, and most of all, practice. Few persons show early signs of promise prior to parental encouragement, and no one will reach high levels of achievement in their field without devoting thousands of hours of serious training.

Material constraints such as lack of money, materials, or equipment and social amenities such as electricity, water, including the security of lives and properties, etc., affect creativity. Depending on contingency factors such as climate and necessity, there is either a positive or negative relationship between constraints and creativity and innovation (Hoegl *et al.,* 2008; Weiss *et al.,* 2011). Material constraints can starve creativity (Amabile *et al*., 1996) where adequate material resources are needed to engage in creative activities like experimenting with new solutions and idea exploration (Amabile *et al*., 1996). On the other hand, people tend to stick to established routines or solutions as long as they are not forced to deviate from them by constraints (Stokes, 2007; Moreau and Dahl, 2005) in which sense; scarcity is an important driver of creativity (Neren, 2011). For example, material constraints facilitated the development of jet engines in World War II (Gibbert and Scranton, 2009). There is, therefore, the need for higher levels of motivation and skills when working on creative tasks under constraints (Hoegl *et al.,* 2008).

Creativity to Eradicate Poverty in Nigeria

Nigeria should break out of the norm of regular classrooms and adopt creativity programmes. Making student learning experiences more engaging, teaching students how to collect and analyze data, identify patterns, breakdown complex problems into their more controllable parts, deduce solutions, construct models and develop algorithms should be made a top priority. The present system where a group of students who have

different passions and interests are expected to learn the same coursework at the same time, the same way and at the same pace has some challenges. Persons are unique and different in their approaches, and we also have different levels of understanding and reasoning. Teaching a group of students and assessment of their learning by what they can memorize and retain for examination and forget after exams is not authentic. Test scores also create unpleasant situations and embarrassment for teachers, parents, and students. Highly talented children who are good at practical work and not theoretical learning are highly frustrated in the present system. Such children or students can also end up with behavioral problems in school because they are not engaged in their passion projects and therefore, can start and think of acting up. Talent and potential often go unnoticed or unrecognized in such situations.

Classroom exams might not validly measure what students should be capable of when they graduate from school and enter their first job. As the factual knowledge of a student can be measured during their learning process, the application of their knowledge is best tested when they work on projects in the field. It is a known fact that students who experience difficulties with online assignments, tests, or examinations do have the opportunity to practice more until they achieve the required scores. This opportunity positively reassures students unlike the one-off class exams and will diminish the number of students losing confidence in their academic abilities. Skill should not only be assessed on academic paperwork alone but also performance in the field.

Projects, more than lecturing, give students opportunities to enhance their skills. Students are more engaged in creativity programmes than in traditional classrooms and as such students who have behavioral problems during school are too involved in their projects to think of acting up. Testing hands-on lessons, among other things, allow students to understand how things operate or work. This also creates significant improvement in comprehension of how nature works. Schools should go beyond assignments and get students to become creators. The 21st century belongs to creators as we can see by the superstars in almost every field of endeavors lately.

The modern world value persons who are creative, can communicate ideas, and collaborate with others. But children cannot develop these values when the system controls the student's life. Children should be given the opportunity to help strengthen their skills and indirectly taking charge of their own lives.

Integrating digital learning technologies (DLT - Artificial intelligence) into the school curriculum is great but unfortunately; the teachers in public schools in Nigeria are not well equipped in terms of training and retraining (Staff development) to impart on the students. Technology plays an increasingly significant role in improving access to education for people living in impoverished areas, developing countries, and Nigeria in particular. However, the lack of technological advancement is still causing barriers with regards to quality and access to education in developing countries (Aleed, 2016). The government should be dedicated to providing infrastructures such as regular power supply through which the disadvantaged may access educational materials.

Critics of DLT focus on the fear that teachers, including preachers or minister of churches, will be replaced with robotic avatars. Their worries have already materialized as we now have classrooms with students staring at screens and worship places with worshippers also starring at screens. DLTs are tools that teachers should leverage on and should allow teachers to focus their precious time and resources on helping students. As technology is rapidly churning various gadgets into society and classrooms, little wonder that technology has already replaced over human intelligence.

Students are no longer willing to reason for themselves but to resort to the use of technology. Computers have already taken over statistical analysis and the description and analysis of data and the prediction of future trends. To some extent, human reasoning is no longer necessary in the inference of logic and trends from these data. Students can now learn anything from anywhere and at their own pace without being present in the traditional classroom.

It is not enough to hire teachers; they must stay current with the trends in education, especially when it comes to the adoption of technology in the classroom. To achieve this standard, teachers must be encouraged to equip themselves constantly. Education reform is difficult and worse for public schools. There is a need for a clear vision to transform our schools. It should be one with a clear purpose; Universities in Nigeria now have their work cut out for them by the National Universities Commission that churns out curriculum after curriculum without caring whether the staff is trained to meet these requirements. They have to be creative and work through the curriculum to get their students ready for exams. They also have to meet the demands set by trying to satisfy students' various learning styles etc.

Unfortunately, all of this micro-managing has left schools bereft of actual progress in meeting the needs of students in a rapidly changing world. We need to start with a clear, concise vision of what schools are and what they ought to be doing. Nigeria is over-saturated with schools that do not work. Creativity can prepare students to compete globally, using education. It can transform persons for future readiness and eradicate poverty. Creativity as an innovation enterprise can surely break the poverty cycle in developing countries if persons are equipped with highly competitive skills essential for the 4th industrial revolution job market. Quality education makes a difference in people's lives. It is therefore essential to have an education that is relevant and lifts people out from the traps of poverty.

Educational Technology in Modern Education

Educational technology has been defined by the Association for Educational Communications and Technology (AECT) as "the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources" (Richey, 2008, p. 1) (Januszewski and Molenda, 2010, p. 1). Educational technology is the process of integrating technology into education in a positive manner that promotes a more diverse learning environment and a way for students to learn how to use technology as well as their common assignments (Education week, 2016).

As careers are adapting to the future freelance economy, education of students should also adapt to project-based learning and working. Education should involve organizational, collaborative, and time management skills as basics that every student can use in their further academic careers. Students should already get acquainted with project-based learning before graduation. Thankfully, Nigerian universities have now commenced the compulsory Student Industrial Work Experience Scheme (SIWES) where students are posted to relevant industries or institutions for one semester where experience in 'the field' is emphasized within courses. This is the equivalent of a student internship in Europe.

Students are already incorporating so much independence into their learning process by searching for information online, that mentoring will become fundamental to student success. Students should be involved in forming their curricula. Maintaining a curriculum that is contemporary, up-to-date, and useful, is only realistic when pro-

fessionals, as well as youths, are involved. Critical input from students on the content and durability of their courses should be encouraged for an all-embracing study program. From personal experience with students, they are more committed and achieve excellent grades when they are allowed to design and execute their school projects rather than stuffing one down their throats. Teachers will form a central point in the pile of information that students will be paving their way through. Though the future of education seems remote, the teacher and educational institution are vital to academic performance.

Students these days have information on everything in the world on their fingertips because of the invention of digital media technology. Technology has made it possible for anyone to learn anything. But for fear of losing control, the system is not leveraging on these incredible resources. The present system of education is outdated and ineffective. If learning has to be effective and engaging, then there is no doubt that we need to change our system of education fundamentally. However, educational technology aids are still lacking and where they exist are inadequate in Nigerian universities.

Modern electronic educational technology is an important part of society today *(León-Portilla, 2012)*. Educational technology encompasses e-learning, instructional technology, information and communication technology (ICT) in education, EdTech, learning technology, multimedia learning, technology-enhanced learning (TEL), computer-based instruction (CBI), computer managed instruction, computer-based training (CBT), computer-assisted instruction or computer-aided instruction (CAI), learning platforms, etc (Reagan, 2005).

A virtual education course refers to a form of distance learning in which course content is delivered by various methods such as course management applications, multimedia resources, and video conferencing (Sanz and Bergan, 2006). Virtual education and simulated learning opportunities, such as games or dissections, offer opportunities for students to connect classroom content to authentic situations (Robinson, 2006). Those who receive personally differentiated instruction, with ubiquitous access to digital resources and learning opportunities in a range of places and at various times, have been termed smart learning (Ross, 1976). Smart learning is a component of the smart city concept (UNESCO, 2008).

'E-learning may either be synchronous or asynchronous. Synchronous learning occurs in real-time, with all participants interacting at the same time. It refers to the exchange of ideas and information with one or more participants during the same period. Examples are face-to-face discussion, online real-time live teacher instruction and feedback, Skype conversations, and chat rooms or virtual classrooms where everyone is online and working collaboratively at the same time. Since students are working collaboratively, synchronized learning helps students become more open-minded because they have to actively listen and learn from their peers. Synchronized learning fosters online awareness and improves many students' writing skills.

Asynchronous learning is self-paced and allows participants to engage in the exchange of ideas or information without the dependency of other participants′ involvement at the same time. It may use technologies such as learning management systems, email, blogs, wikis, and discussion boards, as well as web-supported textbooks, hypertext documents, audio video courses, and social networking using web 2.0.

Deficient Capacity Building in Nigeria

Even though resources are plentiful in Nigeria, lack of a programme for indigenous capacity building limits output or allows for inappropriate efforts. Some international "collaborative" research programs are of this category in which the effort of the local scientist is confined to arrangements for specimen collection, their preservation, and transportation to laboratories outside Nigeria (Obire, 2003). Granted anything that adds to knowledge in a scientifically approved way is research, and the records of observations made in the course of clinical duties may help determine some health priority problems. Capacity building must include the skill to originate ideas, design and create new tools or methods of investigation, collate results, apply objective methods for the analysis of findings, and make observations on results so obtained in such way that further work can be facilitated or make recommendations implementable. In a sense, scientists studying only within the developing countries are deficient in knowledge due to lack of state-of-the-art equipment and instruments and social amenities (Obire, 2003).

Nigerian universities have been classified as glorified secondary schools. Nigeria has neglected the greatest asset of any nation, human capital or human resources. Our educational system needs an overhaul or drastic reforms as it has gone down the drain (Bakare, 2019). The government should not only be interested in the establishment of new universities but also in the funding of these universities. In as much as the establishment of new universities is welcomed, expected standards should be maintained. The existing universities should be well funded, upgraded and well equipped (Obire, 2018).

Governments should ensure the development of the youth in the country. It is in the interest of the present generation to ensure that there is a future for our children, ensure efficient power supply, and ensure quality health care delivery system, and other infrastructure or amenities. With the many assets in Nigeria, the government should maximize the potentials for the benefit of the nation. The consequences of unemployment and joblessness of youths is insecurity. Nigeria is now experiencing invasion from outside and from within. What happens to millions of jobless youths who have no way of providing themselves? The government and society need to create more jobs to engage the citizens.

A comprehensive review of classrooms and laboratory teaching practices, and of supporting materials and documents relative to key working conditions should be rigorously conducted. This will shed light on the degree to which educators use emerging technology and other resources to assess and manage information and create new learning opportunities well integrated with 21st-century learning objectives. It will also aid in accessing professional development that supports the application of 21st-century skills in teaching strategies in the classroom in creating and achieving a vision for teaching 21st-century skills and Engage in important education decisions in a consistent and meaningful manner.

Helping students attain the skills necessary to compete in the 21st-century marketplace requires a challenging curriculum for all students. Schools in Nigeria should be fundamentally committed toward a common vision of creating meaningful relationships with students, providing students with relevant instruction that prepares them for the realities of the world around them and ensuring rigorous learning opportunities that help them excel in the workforce. Rigorous courses require teachers with sophisticated knowledge of their field. Relevance in the classroom requires teachers with the flexibility, time, and creativity to teach their subject matter in different ways.

Nigeria should provide working conditions for teachers that contribute to rigor, relevance, and relationships, ensuring that all students develop skills for critical thinking, problem-solving, communication, collaboration, and innovation.

Professional development to improve the capacity of teachers

Professional development provides teachers with the ability and relevant knowledge and skills most needed to teach effectively and to help students learn. Professional development should be incredibly important and valuable. Providing the rigor cornerstone of school reform requires teachers with sophisticated knowledge of their field, new curricula, and instructional delivery strategies, and new mechanisms for measuring the mastery of complex skills needed to succeed in 21st-century life.

Unfortunately, many schools and teachers in Nigeria lack the knowledge, skills, and tools to create and implement an effective structure to impart the 21st-century skills on students. Also, schools in Nigeria are yet to adopt the technology. The intelligent use of technology can transform and improve almost every aspect of school, modernizing the nature of the curriculum, student assignments, parental connections, and administration. Online curricula now include lesson plans, simulations, and demonstrations for classroom use and review. With online connections, students can share their work and communicate more productively and creatively. Teachers can maintain records and assessments using software tools and stay in close touch with students and families via email and voicemail. Schools can reduce administrative costs by using technology tools, as other fields have done, and provide more funds for the classroom. Students have abandoned their textbooks. Instead, they plan, research, and implement their experiments using material gathered online from reliable resources.

Improve Learning Efforts and Development of 21st Century Skills by Improving Teaching and Learning Conditions

There are new demands on schools in Nigeria to provide students with the knowledge and skills necessary to compete and succeed in the 21st-century. With the global exponential growth of knowledge in many fields (especially in, Science, technology, engineering and, Mathematics), the 21st-century students and worker, especially from the developing countries, face new intellectual challenges. For students to compete in a global economy, they need to produce, analyze, and communicate knowledge, not just learn it. Unfortunately, mounting evidence demonstrates that the majority of students and schools are under-prepared and ill-equipped for 21st-century work and citizenship.

School reform should be built on the premise that helping students compete in the 21st-century marketplace requires schools to offer challenging curriculum to all students, create courses relevant to the lives and goals of today's students, and surround these students with teachers who know and care about them. Schools should be fundamentally committed towards a common vision of creating meaningful relationships with students, providing students with relevant instruction that prepares them for the realities of the world around them and ensuring rigorous learning opportunities that help them excel in the workforce. The government should provide working conditions for teachers that contribute to rigor, relevance, and relationships, ensuring that all students develop skills for critical thinking, problem-solving, communication, collaboration, and innovation.

Teaching working conditions play a part in keeping teachers and students in school. Evidence has shown that there are powerful links between teachers' working

conditions and both teacher attrition rates and student learning conditions and achievement levels in schools. Education policymakers and stakeholders should create effective teaching and learning environments that provide the relationships, relevance, and rigor that all students need to develop the knowledge and skills necessary to succeed in life. Schools should try to help students see the relationship of the classroom to the world. Building strong relationships with students and staff, work to deliver learning opportunities that are relevant to students' interests and are closely related to the knowledge, research, and communication skills students will need to excel in rapidly changing, technology-rich, and team-oriented work environments. Creating productive relationships requires that teachers have the commitment and opportunity to support students' growth in and out of the classroom. Support should be by engaging business and education to promote a collective vision for dramatically changing schools in ways that better prepare students for the demands of 21st-century work.

Conclusion

Creativity is a skill that can be developed and a process that can be managed that has been identified as one of the key 21st-century skills. Creativity begins with a foundation of knowledge, learning a discipline, and mastering a way of thinking. The present educational system in Nigeria is devoid of creativity and the political will to provide a creativity-friendly, rich, imagination-fostering environment for students. This is very worrisome because technology is advancing globally at an unprecedented rate and creative problem solving has been identified as critical to cope with these challenges as they arise. To promote creative thinking, educators need to identify what motivates their students and structure teaching around it – teaching students to solve problems that do not have clear answers is another way to foster their creativity.

Everyone is creative every day in their life and everyone can improve their creativity so that it is commercially interesting. The Nigerian government should invest adequately in the educational sector and provide the conducive environment and ideal collaborators, so that, the potential for fostering creativity through education and training, for national economic benefit, and the application of creative resources to improve the effectiveness of teaching and learning can be properly harnessed.

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References

Aleed, Y. (2016). "Effects of Education in Developing Countries". *Journal of Construction in Developing Countries*.

Amabile, T. M and Pratt, M. G. (2016). "The dynamic componential model of creativity and innovation in organizations: Making progress, making meaning". *Research in Organizational Behavior. 36: 157-183.* doi*:*10.1016/j. riob.2016.10.001.

Amabile, T. M., Conti, R., Coon, H., Lazenby, J and Herron, M. (1996). "Assessing the Work Environment for Creativity". *Academy of Management Journal. 39 (5): 1154 –1184.* doi*:*10.5465/256995. ISSN 0001-4273.
Bakare, T. (2019). Our Universities Are Glorified Secondary Schools. *Sahara Reporters, NY.*

Byrge, C and Hanson. S. (2009). "The creative platform: A new paradigm for teaching creativity". *Problems of Education in the 21st Century. 18*: 33–50.

Cedefop. (2009), European Guidelines for Validating Non-formal and Informal Learning, Luxembourg: *Office for Official Publications of the European Communities, ISBN 978-92-896-0602-8*

Csíkszentmihályi, M. (1999). "Implications of a systems perspective for the study of creativity". *In R. J. Sternberg (ed.). Handbook of Creativity.* Cambridge University Press.

Dewey, J. (1944). *Democracy and Education*. The Free Press. pp. 1–4. ISBN 978-0-684-83631-7.

Education Week. (2016). "Technology in Education: An Overview – Education week. *www.edweek.org*. Retrieved *2016-10-31*.

Gabrieli, J.D. (2009). Dyslexia: a new synergy between education and cognitive neuroscience. *Science. 325 (5938)*: 280 - 83. Bibcode*: 2009Sci… 325.. 280G.* CiteSeerX 10. 1.1.472.3997. doi*:*10.1126/science.1171999. PMID 19608907.

Gibbert, M and Scranton, P. (2009). "Constraints as sources of radical innovation? Insights from jet propulsion development". *Management and Organizational History. 4(4)*: 385–399. *doi:10. 1177/ 1744935909341781. ISSN 1744-9359.*

Hoegl, M; Gibbert, M and Mazursky, D. (2008). "Financial constraints in innovation projects: When is less more?". *Research Policy. 37 (8):* 1382–1391. *doi:10.1016/ j.respol.2008. 04.018.*

Januszewski, A., and Molenda, M. (2010). *Educational technology: A definition with commentary*. New York, NY: Routledge.

León-Portilla, M. (2012). *Aztec Thought and Culture: A Study of the Ancient Nahuatl Mind. Norman: University of Oklahoma Press. pp. 134–35.* ISBN 978-0-8061-0569-7.

Moreau, C and Dahl, D. W. (2005). "Designing the Solution: The Impact of Constraints on Consumers' Creativity". *Journal of Consumer Research. 32 (1)*: 13 – 22. *doi:10.1086/429597. ISSN 0093-5301.*

Mumford, M. D. (2003). "Where have we been, where are we going? Taking stock in creativity research". *Creativity Research Journal. 15 (2–3)*: 107–120. *doi: 10.1080/10400419.2003. 9651403.*

Neren, U. (2011). "The Number One Key to Innovation: Scarcity". *Harvard Business Review. ISSN 0017-8012. Retrieved 2019-03-26.*

Nickerson, R. S. (1999). "Enhancing creativity". *In R. J. Sternberg (ed.). Handbook of Creativity.* Cambridge University Press.

Nuria, S. and Sjur, B. (2006). *The heritage of European universities,"* 2nd edition, Higher Education Series No. 7, Council of Europe, 2006, ISBN, p. 136

Obire, O. (2003). Teaching biology courses in the face of poverty and ignorance. *In: Proceedings of American Association of College and University Biology Educators (ACUBE) 47th Annual Conference on "Biology for Contemporary Living".* Kirksville Missouri, USA. p15.

Obire, O. (2018). State of Modern Education in Nigeria. *Sofia: Bulgarian comparative education society books. 16*: 203 – 206.

Perspectives Competence Centre. (2014). "Perspectives Competence Centre, Lifelong Learning Programme". Archived from the original on 15 October 2014.

Reagan, T. (2005). *Non-Western Educational Traditions: Alternative Approaches to Educational Thought and Practice. Mahwah, NJ: Lawrence Erlbaum Associates, Publishers. p. 108.* ISBN 978-0-8058-4857-1.

Rhodes, M. (1961). *An Analysis of Creativity." The Phi Delta Kappan. 42 (7): 305–310.* JSTOR 20342603.

Richards, M. and Sacker, A. (2003). *Lifetime Antecedents of Cognitive Reserve." Journal of Clinical and Experimental Neuropsychology. 25 (5)*: 614 – 24. doi*:10.1076/jcen.25.5. 614. 14581.PMID 12815499.*

Richey, R.C. (2008). *Reflections on the 2008 AECT Definitions of the Field". TechTrends. 52 (1): 24–25.* doi*:10.1007/s11528-008-0108-2.*

Robinson, K. (2006). *Schools Kill Creativity.* TED Talks, 2006, Monterey, CA, US.

Robinson, K and Azzam, A. M. (2009). *Why creativity now?" Educational Leadership. 67 (1)*: 22–26.

Ross, E. D. (1976). *The Kindergarten Crusade: The Establishment of Preschool in the United States. Athens. Ohio University Press. p. 1.*

Stokes, P. D. (2007). "Using constraints to generate and sustain novelty". *Psychology of Aesthetics, Creativity, and the Arts. 1 (2): 107–113. doi:10.1037/1931-3896.1.2.107. ISSN 1931-390X.*

Torrance, E. P. (2002). *The manifesto: a guide to developing a creative career. Westport, Conn.: Ablex Pub.* ISBN 978-0313011863. OCLC 52769638.

UNESCO. (2008). *Education For All Monitoring Report 2008, Net Enrollment Rate in primary education*. Geneva.

Weiss, M., Hoegl, M. and Gibbert, M. (2011). "Making Virtue of Necessity: The Role of Team Climate for Innovation in Resource-Constrained Innovation Projects". *Journal of Product Innovation Management. 28 (1)*: 196–207. *doi:10.1111/j.1540-5885.2011.00870.x.*