SINIRSIZ EĞİTİM VE ARAŞTIRMA DERNEĞİ

Sınırsız Eğitim ve Araştırma Dergisi

Eğitim ve Araştırma Education and Research

The Journal of Limitless Education and Research

Kasım 2020
Cilt 5, Sayı 3

Nowember 2020
Volume 5, Issue 3

Sınırsız Eğitim ve Araştırma Dergisi
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The Journal of Limitless Education and Research
Nowember 2020, Volume 5, Issue 3

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Journal of Limitless Education and Research(J-LERA) is an international refereed journal published three times a year. The responsibility lies with the authors of papers.

İNDEKSLER / INDEXED IN

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Dear Readers,

We are delighted to present you the November 2020 issue of The Journal of Limitless Education and Research. Our journal has been published continuously by the Limitless Education and Research Association (SEAD) since 2016.

The aim of our journal is to publish theoretical and applied studies in the field of education and research, to share scientific information at national and international level, to prepare an environment for the production of new information, to announce innovations and to contribute to scientific production. For this purpose, priority is given to qualified research and compilation studies.

The Editorial Board of our journal and the members of the Scientific Committee consist of academicians who are experts in their fields. Our journal, which is getting stronger with the valuable contributions of scientists, continues its publication life without compromising its academic quality.

The Journal of Limitless Education and Research, published three times a year, is scanned in various national and international indexes and receives many citations. Our journal, which has a SOBİAD impact factor of 0.3 in 2019, will be published both in Turkish and English as of this issue. Thus, it is aimed at reaching a wider audience.

Our journal will continue to meet with readers in the forthcoming issues as a distinguished publication that includes articles on education and research as well as up-to-date interdisciplinary academic studies.

We wish our journal to contribute to the scientific field, and thank all editors, authors and referees who contributed to its preparation. With our best regards.

LIMITLESS EDUCATION AND RESEARCH ASSOCIATION

Sınırsız Eğitim ve Araştırma Dergisi, Cilt 5, Sayı 3

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Değerli Okuyucular,

Sizlere Sınırsız Eğitim ve Araştırma Dergisinin Kasım 2020 sayısını sunmaktan büyük mutluluk duyuyoruz. Dergimiz, Sınırsız Eğitim ve Araştırma Derneği (SEAD) tarafından 2016 yılından bu yana kesintisiz olarak yayınlanmaktadır.

Dergimizin amacı, eğitim ve araştırma alanında yapılan kuramsal ve uygulamalı çalışmaları yayınlamak, bilimsel bilgileri ulusal ve uluslararası düzeyde paylaşmak, yeni bilgiler üretilmesine ortam hazırlamak, yenilikleri duyurmak ve bilimsel üretime katkı sağlamaktır. Bu amaçla nitelikli araştırma ve derleme çalışmalarına öncelik verilmektedir.

Dergimizin Editör Kurulu ile Bilim Kurulu üyeleri alanında uzman akademisyenlerden oluşmaktadır. Bilim insanlarının değerli katkılarıyla giderek güçlenen Dergimiz, akademik kalitesinden ödün vermeden yayın hayatını sürdürmektedir.

Yılda üç sayı olarak yayınlanan Sınırsız Eğitim ve Araştırma Dergisi, çeşitli ulusal ve uluslararası düzeydeki indekslerde taranmakta ve çok sayıda atıf almaktadır. 2019 yılı SOBİAD etki faktörü 0,3 olan Dergimiz, bu sayıdan itibaren hem Türkçe hem de İngilizce olarak yayınlanacaktır. Böylece daha geniş bir okuyucu kitlesine ulaşmaya çalışılmaktadır.

Dergimiz önümüzdeki sayılarda, eğitim ve araştırma alanına yönelik makalelerin yanı sıra disiplinler arası güncel akademik çalışmaların yer aldığı seçkin bir yayın olarak okuyucularla buluşmaya devam edecektir.

Dergimizin bilimsel alana katkılar getirmesini diliyor, hazırlanmasında emeği geçen bütün editör, yazar ve hakemlere teşekkür ediyoruz. Saygılarımızla.

SINIRSIZ EĞİTİM VE ARAŞTIRMA DERNEĞİ

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The Journal of Limitless Education and Research

DOI: 10.29250/sead.797372

Posted Date	Article Type	Acceptance Date
19.09.2020	Review	07.10.2020

Innovation and the Digital Transformation of Education

Prof. Dr. Tom GİLLPATRİCK, Portland State University, tomg@pdx.edu

Abstract: Digital transformation institutions expect fundamental disruptions in nature of both demand and supply of the economic delivery model for higher education. The key drivers of change for education are; the rapid introduction of new digital technologies, the development of new educational delivery systems, and economic models and the changing educational expectations from a new generation of learners, digital natives. Student expectations stemming from their interactions with Virtual Reality (VR)/ Augmented Reality (AR), Artificial Intelligence (AI), gamification, personalization will drive their educational choices. Thus, faculty and institutions will need to "up their game" in the development of services and experiences that will meet student expectations. As a result, this will require new delivery methods and restructuring of educational systems and structures.

Keywords: Innovation, digital transformation, education

Cited in: Gillpatrick, T. (2020). Innovation and the Digital Transformation of Education. *The Journal of Limitless Education and Research, 5*(3), 194-202. DOI: 10.29250/sead.797372.
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1. Introduction

Much has been written about the digital transformation of business, government and all aspects of global society over the last decade. A report by the World Economic Forum (in 2018) describes a potential $100 trillion-dollar impact of digital technologies. This digital transformation of society is defined as "Profoundly impacts all facets of human society – from government services, education, healthcare, transportation, agriculture, manufacturing, energy, to the future of work." (Zang & Hon, 2020). Indeed, because of the pace of change today, it is underlined that individuals all live in a volatility, uncertainty, change and ambiguity (VUCA) characterized world (Bennett, 2014).

The rapid development and implementation of digital technology is reshaping all sectors of global society. In business, new technologies and business models have created vast amounts of new wealth, consumer value and made many existing businesses obsolete through the processes of innovation as described "creative destruction" by Schumpeter (1942). In Schumpeter's theory, disruptive new technologies lead to new innovations, the creation of new structures along with destruction of old methods, and ways of doing things. Innovation occurs when a new technology and way of doing things is successfully adopted by the marketplace. Thus, invention is the discovery of a fresh idea or technology; and innovation is realized when that fresh idea is adopted by society.

Today digitization is a key driver of innovation in education. It is estimated that there are roughly 1.5 billion students in the global education system (more than 200 million college students) at an expenditure of nearly 5 trillion USD$ [United Nations Global Education Monitoring (GEM) report, 2019]. While education has always been innovated in methods, pedagogy and policies, the pace of change brought about by digitization is fundamental and transformational. Technology is fundamental to educational innovation. New Information Communications Technologies (ICT) such as the printing press, computers, electronic media, and the internet greatly affect teaching modalities. However, the rapid pace of new technologies has accelerated change in education and schools are positioned to radically transform the process of education at all levels in global societies. Examples of transformational technologies extend beyond the internet and include Virtual Reality (VR) / Augmented Reality (AR), Artificial Intelligence (AI), personalized learning, gamification, IoT and redesigned learning spaces among other emerging technologies (Newman, 2017).

While these trends have been discussed for some time, the global pandemic brought about by Covid-19 that has in the view of many accelerated the adoption of technology and rethinking of educational processes by 5-10 years in the estimation of many. The UN reports that more than 1.5 billion students have had their educational programs disrupted by the pandemic (UN, 2020-March). This disruption, like most disruptions, has created both challenges and opportunities. Challenges include what has been described as a growing technology gap between wealthier nations and less developed nations, and populations based on access and the availability of technology.

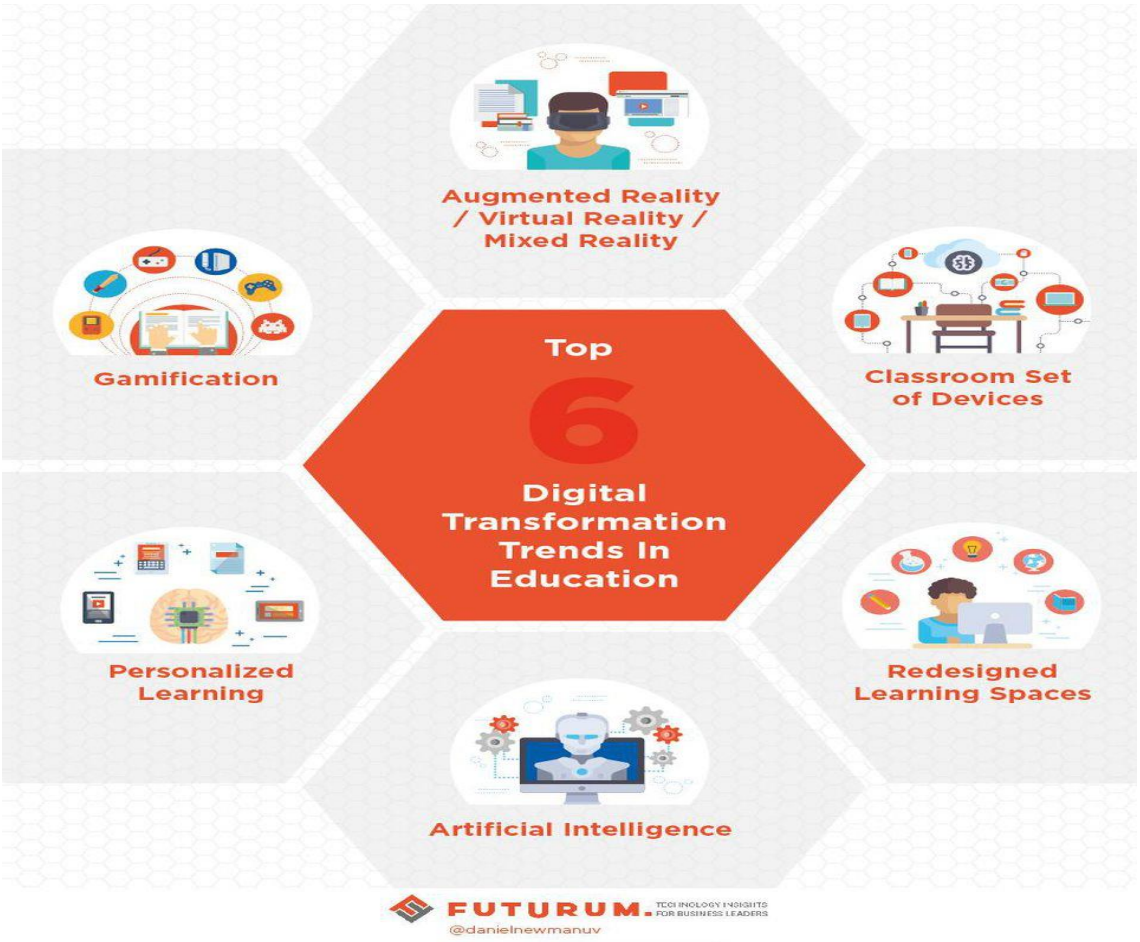

Figure 1. Top Digital Transformation Trends in Education (https://www.forbes.com)

Along with new technologies and fresh ideas for innovation to occur, there must be behavioral changes in a population and adoption of these new technologies and fresh ideas. In my four decades of experience in teaching at a number of universities in Europe, Asia and the America's both the technologies available for instruction and the willingness of both students

and faculty to use them has changed substantially. Initially, information was communication among students using books, chalkboards, lecture/discussion, case studies and projects. Communication between professor and student was largely "in person" and supplemented by reading; therefore, it was largely, "passive-in-nature".

Education theorists often note that these traditional teaching modalities are among the least effective ones in learning. Moreover, many believe that active learning modalities are stronger methods to build learning as presented in the figure below.

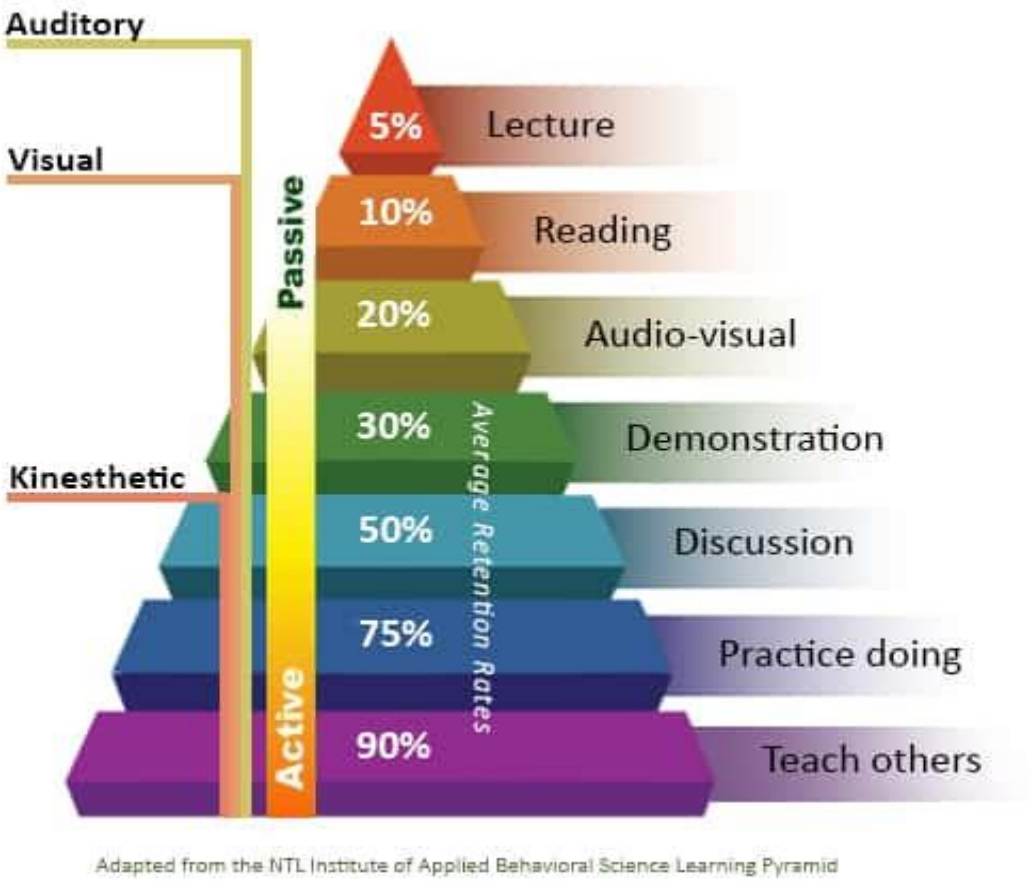

Figure 2. The Learning Pyramid (https://www.educationcorner.com/)

To encourage interaction and engagement needed for active learning, currently, many teachers have adopted the "Flipped-classroom" approach wherein what was formerly done in the classroom-lecture can be acquired outside of the classroom and what was once "homework/exercise" is done in a classroom with the participation and guidance of the

instructor. This is done to encourage a more active participatory style of learning; however, it requires new behaviors for both students and faculty (He et al., 2016).

Culture and the behavioral experience of both students and faculty are critical to educational innovation. New fresh ideas need to be accepted by both for an innovation to come to fruition. Hence, how students acquire new information and knowledge must be regarded more today. Consumption of new forms of digital information and experience is increasing predominant medium of communication. Sadly, I find that my students are much less interested in reading a book or an article; and their attention span for doing so or listening to a lecture is apparently much less than in the past. Today's students spend time consuming YouTube content, social media, video games, and using mobile communication formats. There has been much research on the use of these new communication tools by young populations. And as noted before, there are emerging new technologies as well.

This creates a critical challenge and opportunity for faculty and institutions by increasing a question of how we can effectively innovate our teaching methods given the plethora of new communication technologies and desires of our students. A significant challenge is the amount of change required by both faculty and institutions to effect change and adopt education innovations. While not all faculty are enthusiastic about innovating their courses and teaching modalities, I have found that many invest significantly amounts of time and personal resources to better effect learning with their students. A more significant challenge than faculty adoption of educational innovation is systematic change at the institutional level. The entire university educational systems have developed over decades of relatively slow evolution. The system, which includes academic scheduling, physical infrastructure using in-person, online and hybrid modalities, has not significantly changed for decades. Many faculties have innovated the vast majority of students to have been educated in an instructor/lecture/ textbook methodology by using traditional in person contact which has been migrating to online and hybrid formats for about 20 years. Covid-19 has accelerated that trend with students all over the world towards learning via remote (synchronous) or fully online (asynchronous) modalities. Additionally, faculty and institutional research expectations may limit perceived benefits of investing into teaching innovation. These factors maybe restraints on innovation.

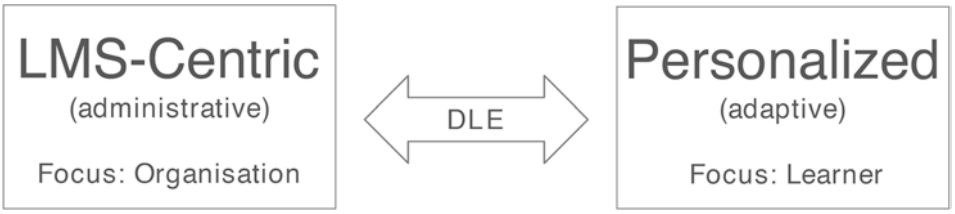

Figure 3. Digital Learning Environment (DLE) Type and Focus (Schmidt & Min Tang, 2020)

The development and linkage of administrative tools such as Learning Management Systems (LMS) will need to be adaptable and support increasingly individualized instruction expectations from students. System adaptability and flexibility to change will be increasingly important in a digital educational environment.

In America, the business model of both public and private universities has come under great stress due to Covid-19. Universities are typically heavily capital intensive regarding physical plant and buildings and largely characterized by high fixed-costs which limit budget flexibility. Traditional economic support from government has dwindled and today student tuition and external fund raising is a much more significant part of institutional economic support. For many schools having students on campus living in dorms, eating at campus facilities and sports programs are significant sources of budgetary income. Remote and online education have challenged the financial models of these schools and constrains resource flexibility. Some observers have forecasted that higher education will be broadly restructured with massive consolidation. For instance, Scott Galloway, a professor at New York University predicts sweeping partnerships between a few elite universities and large technology companies, like Google and Amazon (Walsh, 2020).

As foreseen, an increasing percentage of enrollment moves into online education away from classroom contact to the economics of education shifts. Today, the value that students going to a campus education receive a degree (certification) educational content and an educational experience. Now, perhaps a good portion of that value- the experience will be diminished through remote instruction. While a few students like it for convenience, most all students are found to deduce their preference toward an in-person experience. As students work on their education from at home, the value perceived of a traditional campus experience, which is reflected in tuition is likely to diminish. This will lead many to search for lower cost options often in geographically distant locations because the digital connection and often the quality of the content, degree reputation is the same or better. This in turn will have an effect

on student behaviors, lead to new behavioral expectations, and create both winners and losers among educational institutions.

2. Discussion and Conclusion

In an educational environment that is undergoing rapid digital transformation, institutions should expect fundamental disruptions in nature of both demand and supply that will dramatically upend the economic delivery model for higher education. Universities need to develop offerings and institutional structures that are more flexible and resilient to thrive in a volatile, uncertainty, change and ambiguity (VUCA) educational environment. This will be a major challenge; universities and faculties all over the world are not famous for the speed of adaption in the presence of change.

Three key drivers of change for education are a) the rapid introduction of new digital technologies, b) the development of new educational delivery systems and economic models and perhaps most importantly from an innovation perspective, and c) the changing educational expectations from a new generation of learners who have grown up with these new technologies in their lives. Student expectations stemming from their interactions with VR/AR, AI, gamification, personalization will drive their educational choices. A challenge here is that most educational offerings tend to lag the experiences that students have with marketplace offerings. Faculty and institutions will need to "up their game" in the development of services and experiences that will meet student expectations. And this will require new delivery methods and restructuring of educational systems and structures. Thus, I see opportunity and significant challenge for institutions and faculty. Those that develop educational content and systems to engage a new generation of learners will have opportunities to market their services to a larger, more global marketplace. The development of more personalized educational offerings that include different auditory, visual and experiential learning modalities may lead to a better educated population more capable of dealing with the complexities of a modern VUCA world.

The challenge; we, both institutions and faculty, must be open to change. And we must accelerate the changes we are making and develop educational systems that allow for innovation. It has been underlined that necessity is the mother of invention which leads to innovation. In my country, US, higher education is under severe stress, the cost of education has skyrocketed much faster than other services. Many schools and programs have been closing in recent years and there is a real threat of a much larger academic consolidation. Changes in demand and new forms of competition have disrupted the traditional academic model that has

existed over my entire career. Nonetheless, as an academic, I am optimistic and excited about the opportunities. There is much to learn from new technology and colleagues the world over. Digital technology allows greater opportunity for collaboration and integration of content and programs from around the world. Rather than just develop content for a few hundred students on my campus, there are now opportunities to source and distribute content around my country and the world. Much like globalization 30-40 years ago brought global products into all of our marketplaces, we should be ready for any change and collaboration so that we catch the speed of the age.

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Figure 1 https://www.forbes.com/sites/danielnewman/2017/07/18/top-6-digital-transformation-trends-in-education/#6912114e2a9a

Figure 2 https://www.educationcorner.com/the-learning-pyramid.html.