A Paradigmatic Analysis of Generation 'Z' Competences, Digitalization, and Quality Assurance Mechanism

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ABSTRACT

Gen Z is entering Pakistan Higher Education Institutions (HEIs). This generation is true digital natives: from early youth, they have been exposed to the internet, social networks, and mobile systems. There is a growing understanding that higher education institutions should develop a quality assurance mechanism for the digitization of the academic processes for Gen Z keeping in view their competencies. The researchers collected data from a sample of 200 faculty and Gen Z students using cross-tabulation by using SPSS. The findings offer valuable insight: 61% of faculty and 87% of students prefer using" social media in their academic process versus traditional methods", and 83% of faculty and 88% of students are in favor of "capacity building for digitization of academic process". 94% of faculty and 76% of students recommend adoptable "quality assurance mechanism for digitized academic process". Keeping in view, the quality assurance mechanism for digitization of the academic process for Gen Z, we need to train HEI faculty and Gen Z students for the adoption of digital processes. This will directly contribute to the uplift of existing quality assurance machoism in HEIs. The novelty of this study is to introduce innovations for the enhancement of student–teacher learning through digitization in Higher Education Institutions in Pakistan. The recommended process of digitization can also be improved by innovative ideas and good practices by researchers in regional and global HEIs. National and international Higher Education Institutions may take lead from this study while planning and undertaking new research initiatives for hybrid learning focusing on the digitization of the academic process for Gen Z teaching, its quality assurance mechanism, and recognition of their qualification.

INTRODUCTION

The development of nations always depends on the quality of their next generation and opportunities provided to them. As stated by AnickTolbize (2008), a generation is a

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particular age group that shares important life events, birth years, and location at crucial progressive stages. Generation with same age group share events that affect their beliefs, manners, thoughts, and reactions. People, carry their traits and influences from their loved ones, race, status, gender, religion, region and more, but some wide generalizations are possible about those born in approximately the same years. Generation Z (Gen Z) students are true digital populace as they've born and grown-up up with digital devices and smart phones at their fingertips. Social media is the intermediate that connects Gen Z to the world around them and connects the world to Gen Z (Dorsey and Jason, 2016). A student can believe that sending a WhatsApp or text message can get a faster reply from teachers other than really trying to talk to them when they both are in the same institution. This generation frequently uses social media as compared to others as medium which connects them to digitized world. This new generation can easily handle online and distance education. The necessity for online has developed significantly in the world after spread of coronavirus (COVID-19) pandemic. Recent world restrictions imposed by Covid-19 have enhanced the significance of e-learning and teaching in higher education (HE) generally and worldwide education particularly (Dwivedi et al., 2020). Due to pandemic, higher education Institutions of developed countries have developed and purchased online infra structure and gadgets but there has been little concern of how those ICT will be utilized in coming days (de Wit & Altbach, 2020). The role of academic leaders in HE and learning is vital for development of any generation for innovative digitalization. Education should be crafted in a manner that it should follow the requisite innovative and digitized quality parameters. The variety of innovative products have flooded markets with technology and services. (Parasuraman & Colby, 2007). As mentioned in the report of International Association of Universities (IAU) report (2020a), there are major challenges to e-learning (1) the field of study, (2) learning abilities and teaching techniques, and (3) technical infrastructure and accessibility. In today's digitized era, quality education has become a global goal where academic leadership of university should aim at the formation of personalities and intellectual abilities of the graduates. This paper highlights and incorporate digital technology in curriculum development, assessment results and teaching learning methods. It also develops quality assurance for digitization process and recommends measures for degree recognition at national and international levels.

LITERATURE REVIEW

In present era, five human generations are working in the world at same time. International Higher Education Institutions (HEIs) is facing challenges to educate young generation (Generation Z), keeping in view their competencies. Before analyzing the competencies of Generation Z, first we introduced these generations:

Traditionalists: This generation was born between 1928 and 1945 and very few are available in workplace. They are loyal to their job and expected to be respected, they value job orientation and money (Rampton J, 2017). Baby Boomers: Born between 1946 -1964, They like authority and power. Also expect monitory and non-monitory rewards. They are focused and keep a unique mindset (Rampton J, 2017).

Generation X: They were born between 1965 -1980. They like flexible schedule and acknowledgement from the higher authority, stock, bonuses, and gift as financial rewards (Rampton J, 2017).

Generation Y: This generation was born after 1980 and presently this is largest group in the world. They are technical savvy and always expect monitory rewards. (Rampton J, 2017).

Generation Z: This generation is just after born generation Y and presently are in HEIs are entering to workplace. This generation is social media lover and has working knowledge of social media applications. This generation has numerous terminologies like "Gen Tech, I Gen, Online Gen, Post Millennials, Facebook Generation, Switchers, "always clicking". (Dolot A, 2018). Below table- 1explain the generation and their cited researchers.

TABLE 1: GENERATIONS

GENERATION AGE	AUTHOR(S)
Born 1990 and later	Dobiesz- zarczynska and Chomątowska (2014, p. 407). Warwas and Wiktorowicz (2016); Hołysz -swierkosz (2016); Wojtaszczyk (2013)
Between 1990 and 1999	Half (2015)
Between 1992 and 2000	Tulgan (2015)
Between 1992 and 2012	White (2017)
Between 1993 and 2006	Turner (2013)
After 1995	Opolska-Bielańska (2016); Ensari (2017); Dudek (2017)

Source: (Generation age range, Dolot A, 2018)

Competencies of Generation 'Z'

Gen Z may have special competencies and distinctive means of learning, but they are usually eager to learn.

Awareness for Learning. As per Accenture report "Gen Z Rising," shows that Gen Z is eager to involve and learn communication, management skills and problem solving.

Video Learner. Gen Z raised in digital era which includes Facebook, Instagram and YouTube, therefore preferred means of e-learning (Demirbilek et all 2022)

Positive Learners. When Generation Z needs some news and information, they just find on web without waiting for instructors on preschedule class.

Social Learners. This generation always communicate with friend, relatives on Facebook and social media happens instinctively to this generation. strategically probably depends more on an individual's education than on their generation. It requires problem-solving, research and analysis skills.

Mobile Learning Generation. Gen Z could be considered the first truly mobile generation. Gen Z is used to doing everything from shopping to browsing the news on their mobile device anytime, anywhere. So, for this gen, a mobile learning experience is a must.

Walking in Groups. A study by Robert Half highlighted that more than 60% Gen Z working together with in a tiny group.
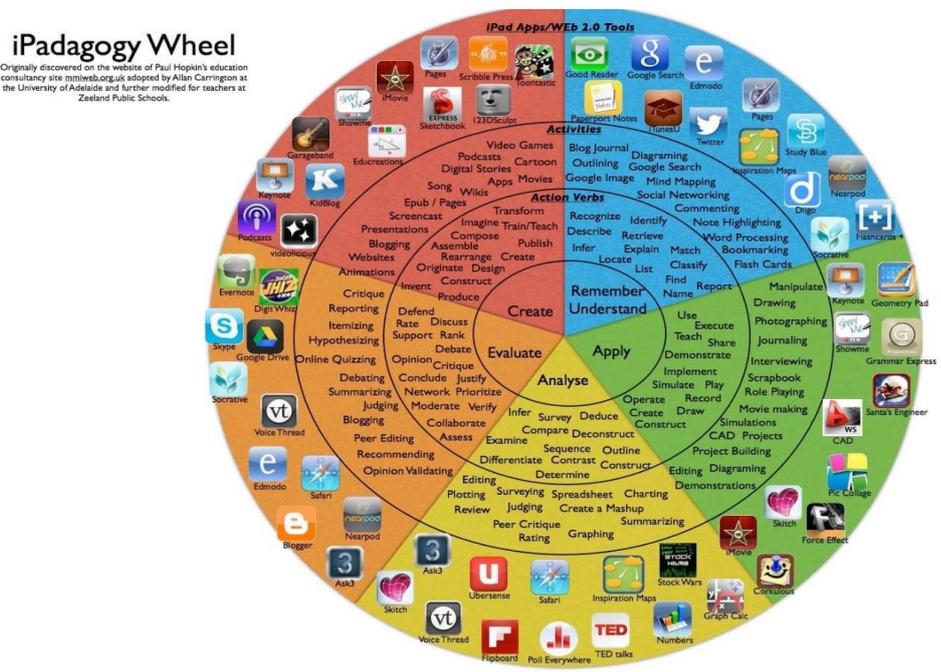
Not Necessarily "Tech Savvy". As per Ryan Craig, it is only myth that Gen Z is digitally skilled. Grown up in tech ecosystems doesn't essentially indicate, that they are proficient at professional applications. It requires research, problem-solving and analysis skills.

Mobile Learning Generation. This is first time Gen Z could be considered genuinely mobile generation. Gen Z is used to do almost all activities on internet, so mobile learning is must for this generation.

Covid-19 pandemic has imposed closure of world business, schools, and sports activities by compelling all organizations to move to e-learning platforms. Fry (2001) highlighted that e- learning is the use of internet applications by developers and digitalization is to develop means for educational requirement, instructional delivery, and management of program. As per Hrastinski (2008) there are two types of online learning, i.e., synchronous, and asynchronous. Digital transformation is not a new trend, and it has been associated with HEIs for few times now (Leszczyński et al., 2018). Digitalization of HEIs is a current issue and academics should take it seriously and establish ICT infrastructure so that universities ready to meet future tectological challenges (Lehmann, 2017). This digitalization proposed to adopt integrate technological sustainable management to address recently covid-19 pandemic challenges (Abad-Segura et al., 2020). Strielkowski (2020) highlighted that covid-19 instigated digital transformation of HE, and as a result, innovations in HE that would normally take several years due to managerial hiccup were now ready within short period of time (Glabiszewski, 2022. Leo, 2022)

Revolutions in digitalization i.e., mobile computing, social network, I-cloud, and big data have created a chance to create a learning environment which does not require time and space. There is a dire need to evolve a digitalization for global education system after pandemic. In pandemic, most of the HEIs developed their Campus Management System (CMS) to incorporate required changes in their teaching methodologies. To teach technology most effectively, we must shape digitalization within our disciplines and courses (Naga PC, 2018). This has also transformed the marking of e-learning as problem

position to a "saviour" position. Below I-pedagogy wheel is consisted of software used in e- learning mode. To bring innovation in education, HEIs should train their faculty and Generation Z in software/application mentioned in pedagogy wheel.

Source: (Pedagogy Wheel Carrington, A., 2016)

A learning ecology which has been created by new innovative such as cloud computing, big data and social networking and offer a new opportunity to individual to learn in own time and space. Gen Z will now plan their own academic endeavors keeping in view commitments and goals. To meet the colossal requirement of global mobile learning will require use of important tools like MOOCs, virtual classrooms, and remote labs. With a growing intensity of complication, it will be extremely significant to impart greater understanding to Gen Z. This can be accomplished with the increased use of scenario based and blended education, and exercise tailored knowledge.

Modern Techniques for Digitalization at Higher Education Institutions

Digitalization in HE has its impact on two main components i.e., *Services conversion* concentrates on producing new innovative academics applications and changing present structure to digitalized. This normally changing face to face lecture into video lectures ones, quizzes, and provision of ICT infrastructure. *Operations conversion* would conversion of all operational of academics including program development, examinations, admission process or incorporating of Learning Management System (LMS). Few digitized technologies may be used for Gen Z students in HEIs are as under:

Podcast: Podcasts are recording of oral lectures and can be download later. Students may reuse and shared with colleagues. It is also useful for hearing impaired students (Naga PC, 2018).

Mobile Learning: Smartphones are the instant communication and available on user 's palm. User can use as social media as good and bad influences. It can also use for academic and work from home activities (Dorsey et al, 2016).

Blogging. In blogging you can create, evaluate, and analyze the substance. Blogging can reflect to teacher about teaching and academic activities (Naga PC, 2018).

Electronic Learning: E learning is delivery, training and learning academic by innovative electronics means (Salem Alkhalaf, 2012). It requires electronic device i.e., computer, laptops, and tablets to inculcate academic and learning material (Maneschijn, M, 2005).

Social Media and Higher Education: In social media people share ideas and common interest make groups. During covid-19, Facebook, WhatsApp, Zoom, and YouTube were helpful to continue academic activities in time of crisis. While using social media, there are lot of concerns about wastage of time and undesired and unnecessary flow of information (Naga PC, 2018).

Internet of Things: Academic leadership of HE is investing huge resources in IOTs. It provides enormous e- data and assist automation process in HEIs.

Smart lightning: Now it's high time to replace traditional lighting system to solar system installation to meet the financial needs of HEIs.

 Blockchain: The blockchain is a contemporary skill which utilized to control and distribute flow of knowledge in a safe and efficient way. It can also check cheating through authenticity check.

Security: It is a paramount importance with introduction of innovative digitalization in HEIs. Institutions should implement cybersecurity measures such as firewalls, data prevention systems and different types of antivirus servers to protect the security of network.

Artificial Intelligence (AI) And Machine Learning: Today artificial intelligence is playing a significant role in progress and future of world. HEIs are also benefitting from this latest innovative technology and digital transformation. AI is being used for advance analysis, teaching assistant and internet of things (IoT) data etc. Advanced countries are using AI in HEIs' Learning Management Systems (LMS) to answer frequently asked questions (FAQ) and systematically guide students and faculty to academic processes.

RESEARCH METHODOLOGY

A survey was conducted in National Defence University (NDU) Islamabad-Pakistan by incorporating faculty and Gen Z students. As the population was unknown, therefore not all the potential respondents could be approached. Here in this study convenient sampling technique was employed. We targeted around 450 respondents, however, a total of 200 respondents responded and the feedback was inputted in the software for further process. Data collected was also analyzed using cross tabulation of relevant questions through SPSS.

After a lot of deliberations and discussion with experts, important questions were finalized with face validity and reliability, then those were asked to inquire about the proposed framework. A total of 200 respondents provided the feedback and that was analyzed in the light of research objectives.

ANALYSIS

Analysis was carried out based on the descriptive and inferential statistics. Below are the tables showing the descriptions about the respondents.

TABLE 2 GENDER DISTRIBUTION OF THE RESPONDENTS (N=250)

CATEGORY	FREQUENCY	PERCENT	CUMULATIVE PERCENT
Male	119	59.5	59.5
Female	81	40.5	100.0
Total	200.0	100.0	

The above table depicts that Males (119) are higher in frequency than Females (81) at NDU.

TABLE 3 DESIGNATION DISTRIBUTION OF THE RESPONDENTS (N=200)

CATEGORY	FREQUENCY	PERCENT	CUMULATIVE PERCENT
Faculty	85	42.5	42.5
Student (Gen Z)	115	57.5	100.0
Total	200	100.0	

The above table reflects that sample consisted of 42.5% Faculty and 57.5% Gen Z students.

TABLE 4 – PERCENTAGE WITHIN DESIGNATION

RESEARCH QUESTION		DESIGNATION		TOTAL %
		FACULTY %	STUDENT %	
Do you feel comfortable using social media for - digital methods vs traditional methods	S/ Disagree	16.7		7.1
	Disagree	22.2	8.3	14.3
	Neutral		4.2	2.4
	Agree	55.6	54.2	54.8
	S/ Agree	5.6	33.3	21.4
Total		100	100	100

The above table depicts that 87% Gen Z students and 61 % faculty are very interested to use "social media as digital tool.

TABLE 5: RESPONSES ON RESEARCH QUESTIONS (1)

RESEARCH QUESTION		DESIGNATION		TOTAL %
		FACULTY %	STUDENT %	
Do you feel that faculty requires training to use digital media for e-learning	Strongly Disagree	5.6		2.4
	Disagree	5.4		2.4
	Neutral	5.6	12	4.8
	Agree	66.7	45.8	54.8
	Strongly Agree	16.7	42.2	35.7
Total		100	100	100

The above table depicts that 83% faculty, and 88% students are in favor of "capacity building for digitization of academic process".

TABLE 6: RESPONSES ON RESEARCH QUESTIONS (2)

RESEARCH QUESTION		DESIGNATION		TOTAL %
		FACULTY%	STUDENT%	
Does future digitized academic process require quality assurance mechanism	Strongly Disagree		4.2	2.4
	Disagree	5.6	16.6	11.9
	Neutral		3.3	38.1
	Agree	44.4	41.7	45.2
	Strongly Agree	50	34.2	2.4
Total		100	100	100

Table above reflects that 94% faculty, and 76% Gen Z students are in favor of use of academic digitization in quality assurance mechanism.

Development of Quality Assurance Mechanism for Digitization

Quality Assurance is the organized and methodical assessment procedure of an institute or program to ascertain whether adequate requirements of academics, scholarships and services infrastructure are enhanced and maintained. Therefore, standards of excellence of HE in Pakistan require to be enhance considerably to compete the world in quality enhancement, assurance and learning economy (Batool & Qureshi, 2006). HE adopted idea of quality culture, enhancement and assurance from private industry and commercial setting (newton, 2002). Initially quality assurance mechanism was introduced in England in 1980 and known as Teaching Quality Assessment (TQA). TQA is consist of 3rd party assessment and review of an organization and further replaced in 1995 to 2001 as subject review (Cheng, 2010). Later, same review was replaced by organization/institution audit in HE by the Quality Assurance Agency (QAA) (Cheng, 2010). In Pakistan, was established in 2004 as an expert entity to introduced quality enhancement and development. (Batool & Qureshi, 2006).

Keeping in view, Higher Education Commission- Pakistan's scheme of study for graduates, researchers have suggested following innovative digitalized QA processes for Gen Z students:

TABLE 7: ANALYSING PROCESS, DIGITIZATION AND QUALITY ASSURANCE

SR.	PROCESS	DIGITALIZATION	QUALITY ASSURANCE
a.	Admission Process • Admission Test e.g., Entry/ GRE/ GAT/ NAT/ SAT • Interview on Skype/WhatsApp • Course Registration	Availability of online session on Campus Management System (CMS)	• Realtime conduct of aptitude test on PC with auto shuffling of questions • Regional Centers connected to central interview panel • HEC Attested Degree • Biometrics
b.	Assessment • Quizzes • Assignments • Presentations • Sessional Examination	Availability of online session on CMS	• Conducted in Computer labs • Uploaded on student account and pop up when opens account • Student Teacher relation established on CMS for exchange of assignment, quizzes etc. • Marks update within 24 hours of

		conduct
c. Feedback from stakeholders • Students • Faculty • Employer • Alumni	Availability of Quality Enhancement Module on CMS	Emails to their respective accounts with mandatory check on their accounts (linked with final exam admit card for student and performance appraisals weightage for faculty)
d. Post-Graduate Research • PhD Comprehensive Exam • PhD Bi-Annual Progress Review • Public Defense	Skype, IA/VR, WhatsApp, or any video call-based Software	Examiners, Panels, and students are virtually available at designated different locations
e. Central Data Repository • Faculty Folder • Student Folder • Course Folder • Digital Library Software (LibMax) • HR Module • Examination Module • Registration Module • Executive view for Vice Chancellor & senior management.	Availability on CMS	• Login activity regularly monitored • Incentive linked with timely update of account • More than 200,000 books available online • Employee Management System

Keeping in view the significance of quality assurance for the Gen Z students' progress and their future careers, followings are suggested:

- Quality of digitalization is a significant element of HEIs for academic leadership, quality managers and policymakers in higher education institutions (Doneva at al, 2018).

- Faculty and students should be familiar with innovative digital application and software, and at same time HEIs arrange training for them.

- Where possible, digitized assessment system is carried out by more than one examiner for cross check and transparency.

- To have a reliable academic assessment, it is significant to ensure the quality of the online tests on Learning Management System (LMS) by academic experts.

- Students feedback, if necessary, should be linked to improve digitization processes in LMS.

Accreditation and Recognition of Gen Z Degrees among Global HEIs

The accreditation organizations create assessment and procedures to check institution are fulfilling the required standards (Hassan, 2014). Growing trend of (international) student mobility is another challenge, i.e., greater number of Gen Z students want to enroll in other countries as part of their degree program, but their earned credit hours do not transfer. Gen Z students can accommodate for advance studies or transfer of credit hours at global level if HEIs meet the international standard and eligibility through bilateral agreement like

Washington Accord 1989 and may provide an accreditation to Gen Z students to study and work in other parts of the world.

Employer involvement, either formally or informally, in the revision of study programs would help identify the knowledge, skills, and attitudes graduates need. Employers may be involved in revision of study programs for Gen Z students who are under their supervision as interns. There is a need for Gen Z students to attain variety of dimensions: communication skills- speaking and content writing, familiarization with own and foreign culture for achievement of future employment at national and international level through cross mobility.

CONCLUSION

Generation 'Z' is a comparatively more intelligent than previous generations. Soon this generation would be highest in numbers in the world population. This generation think differently from previous and would also create opportunities and challenges (*Dorsey at el, 2016)*. The recommended process of digitization can also be improved by innovative ideas and good practices by researcher in other HEIs. There is a dire need to comprehend new technologies, develop innovative and digitized QA mechanism, accreditation, and recognition of Gen Z degrees for employment at national and international level. Based on the conclusion, the following are suggested for future studies and guidance:

- Any country who intends to improve the global effectiveness of her higher education should needs to embrace international standards of assessment or evaluation for their national quality assurance mechanisms. International experts should be invited to participate in evaluation activities. Quality assurance mechanisms need to be more independent of government through a real third-party evaluation so that higher education be more answerable and trustworthy. This is a serious issue in developing countries where government involvement muddies the waters.

- Keeping in view covid-19 academic emergency, Universities should not lose this opportunity and E learning should be made permanent mode of education in the future.

- New approaches and models including examinations and other methods must be developed to test Gen Z students when they complete online degree programs.

- Some developmental work must be conducted in view of developing new digitized assessment method for different online learning programs.

- The expertise in digitalization of quality assurance is need of time and should part of university LMS which regulate E-learning, innovative teaching approaches and cross border delivery of tertiary education.

- Capacity enhancement on digitization of faculty and staff of HEIs is need of the hour because qualified faculty and staff would regulate quality processes in HEIs.

- Gen Z students need to be comfortable with, and able to use, technology. To summarize, every student in the 21st century needs to be able to have a set of skills apart from their technical know-how learnt in higher education institutions, which enable them to work in a global setting (*Sid Nair, 2013*).

- A system of regional and global collaboration should be evolved for credit transfer, recognition of student qualification and peer review on lines of Washington Accord 1989.

REFERENCES

Abad-Segura et al., (2020). Covid-19 and University Learning Spaces (Doneva et al, 2018). Automated Quality Assurance of Educational Testing, Turkish Online Journal of Distance Education Vol-19, 2018

Anick Tolbize (2008), Generational differences in the workplace, https://rtc.umn.edu/docs/2_18_Gen_diff_workplace.pdf

Csobanka, 2016; Stunża, 2017, Csobanka, Z.E. (2016). The Z Generation. Acta Technological Dubnicae, 6(2), 63?76. DOI: 10.1515/atd-2016-0012.

Demirbilek, M., & Keser, S. (2022). Leadership Expectations of Generation Z Teachers Working in Educational Organizations. *Research in Educational Administration & Leadership*, *7*(1), 209-245.

Dobrowolski, Z., Drozdowski, G., & Panait, M. (2022). Understanding the Impact of Generation Z on Risk Management—A Preliminary Views on Values, Competencies, and Ethics of the Generation Z in Public Administration. *International Journal of Environmental Research and Public Health*, *19*(7), 3868.

Dolot, A (2018) The characteristics of Generation Z, https://www.researchgate.net/publication/328564137_The_characteristics_of_Generation_Z

Dorsey, Jason (2016). "Z Generation Tech Disruption" (PDF). Center for Generational Kinetics. Retrieved April 6, 2016.

Glabiszewski, W., Cyfert, S., Batko, R., Senkus, P., & Wysokińska-Senkus, A. (2022). The Competencies for Knowledge Management and the Process Orientation in the Post-Covid Economy. Generation Z Students Perspective. In *International Conference on Business Process Management*(pp. 310-325). Springer, Cham.

Hassan (2014). Quality Assurance and Accreditation in Education, Open Journal of Education Vol-2, 2014.

Luo, Y. (2022). A general framework of digitization risks in international business. *Journal of international business studies*, *53*(2), 344-361.

Maneschijn, M. (2005). The e-learning dome: A comprehensive e-learning environment development model. (Unpublished Master's thesis). University of South Africa, South Africa.

Nair, S. (2013). Quality assurance and evaluation in the higher education system of Australia. In E. Beck, & V. Messerli (Eds.), Lehrerbildung auf dem Prüfstand 2013 Quality Management in Higher Education: Optimizing the Teaching by Evaluation and Quality Circles (pp. 126-138). Germany: Verlag Empirische Padagogik.

Newton (2002). Quantitative and qualitative research in the built environment: Application of 'mixed' research approach,

Rampton J, (2017).Different Motivations for Different Generations of Workers: Boomers, Gen X, Millennials, and Gen Z, https://www.inc.com/john-rampton/different-

motivations-for-different-generations-of-workers-boomers-gen-x-millennials-gen-z.html

Rehman et al.,2021. Quality Assurance of online and Distance Learning Education for SAARC Region during Covid-19 Situation, journal of Applied Management and Social Sciences Vol 4 No. 2 (2021)

Salem Alkhalaf (2012). Assessing the impact of e-learning systems on learners: a survey, - study in the KSA. ELSVIER: Social and Behavioral Sciences 47 (2012) 98 – 104

Strielkowski (2020). Covid-19 Pandemic and Digital Revolution in Academia and Higher Education

Turner, Anthony (2015). "Generation Z: Technology and Social Interest". Journal of Individual Psychology. 71 (2): 103–113).