

Perceptions of First-Year Students from Disadvantaged Backgrounds of E-Learning at the Durban University of Technology, South Africa

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Abstract

The introduction of innovative e-learning and teaching methods at universities of technology necessitates examining students' perceptions of these methods in the promotion of student success. In South Africa, most first-year students are not exposed to methodology of technology-aided learning during their high school career, especially those from disadvantaged demographics. The purpose of the study is to examine student perceptions regarding their experience of e-learning at a South African university of technology with specific reference to the success of first-year students from disadvantaged backgrounds. Using qualitative research methods through structured interviews, we discovered that first-year students from disadvantaged backgrounds are experiencing challenges regarding access to resources such as computers, laptops and a reliable internet connection. Furthermore, inadequate training on the use of online resources and unsatisfactory performance during online assessments were discovered and these are heightened by the Covid-19 pandemic. First-year students from disadvantaged backgrounds are exposed to a variety of barriers that have an adverse impact on their success. The conclusion is that higher education institutions must avail the necessary resources to facilitate seamless assimilation of first-year students into their new environment.

Keywords: first-year students; disadvantaged backgrounds; perceptions; e-learning; Covid-19; university of technology

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Introduction

The fast-developing world of innovative technologies compels higher education institutions (HEIs) to improve on their teaching and learning strategies. This need has been further exacerbated by the Covid-19 pandemic which inadvertently forced all universities worldwide to engage in e-learning. Digital technologies are now an integral aspect of the university student experience used to enhance students' learning. Research on e-learning and teaching has gained impetus in the past 10 years (for example, Bates 2019; Owston, York, and Murtha 2013). Using technology-aided learning and teaching approaches with face-to-face approaches introduces first-year students to a new and unfamiliar territory that could be thrillingly exploratory to some, but that can also act as a cultural shock to others.

The latter experience is contrary to popular assumptions that today's youth, coined "digital natives" by Marc Prensky (2001), are all computer savvy and are all in a position to manipulate and learn through the use of the latest technological instruments. The aim of this article is to examine students' perceptions of e-learning approaches in promoting academic success among the first-year students from disadvantaged backgrounds at a chosen university of technology (UoT) which is the Durban University of Technology (DUT) in South Africa. Facilitating the adaptation to this exciting environment depends on different variables and, in the long term, directly affects students' success and output. This will help researchers understand student experiences of these e-learning methods.

The modern world of scientific and technological progress embodied in the digital economy demands that the education system be in constant evolution in accordance with the needs of society, thereby searching for the most progressive teaching modes (Meskhi, Ponomareva, and Ugnich 2019).

Literature Review

Alenezi (2020) describes e-learning as a learning procedure whose creation is through interactions with the digital delivery of content, services based on the network and support provided by lecturers and other support structures. E-learning methods encompass the supplementing of face-to-face learning methods with online lecture material to learning being done entirely online via learning management systems (LMSs) (Guri-Rosenblit 2005; Shemla and Nachmias 2006). The latter has been the most prevalent today owing to the Covid-19 pandemic.

For universities to successfully deliver e-learning, a well-developed set-up with regard to infrastructure is warranted, where students are capacitated and upskilled in the use of online tools. Capacity development in the use of e-learning tools for educators is also essential to the transformation and adaptation of their instructional and assessment

approaches, to keep up with students' needs and to advance their educational opportunities (Evans and Robertson 2020).

Prensky (2001) coined the term “digital natives”, referring to children born in the environment dominated by the use of techno-gadgets such as video games, cell phones, video cameras and a variety of modern techno-tools. He based his assumptions on this generation of children, adolescents and now adults being born in the era in which they were exposed to digital technology, which gave them the ability to manipulate technological gadgets from an early age. New terms later emerged such as “Net Generation” or “Net Geners” (Tapscott 2009), and Jean Twenge called them “iGen” (Evans and Robertson 2020, 275).

Kirschner and De Bruyckere (2017) argue that teachers' lack of digital knowledge and proper training in technology-mediated teaching and learning impedes digital natives from successfully learning using this platform. The digital natives or iGen who are now adults and possibly teachers, if properly trained would be in good standing to pass on the technological pedagogical knowledge to the new generation of students. This means that while realising the importance of digital literacy, each generation of teachers needs to be trained and prepared to transmit improved technological skills and knowledge to the next generation of students (Evans and Robertson 2020).

Research findings have purported that student's experiences and learning styles do affect their level of incorporation of e-learning materials into their learning practices (Kivunja 2014). Student's personal circumstances, their level of motivation or attitude towards learning, computer literacy, and approach to learning directly affect the successful infusion of e-learning platforms (Alenezi 2020). In corroborating this position, Kosloski and Carver (2017) cite studies conducted by the Bill and Melinda Gates Foundation suggesting that student perceptions of instruction not only predict student achievement, but also achievement gains than standardised testing measures or classroom observations. Probing student perceptions of the learning environment and instruction may help lecturers to determine the way in which to improve practices and to ultimately improve student learning in using e-learning platforms as methods of instruction (Bill and Melinda Gates Foundation cited in Kosloski and Carver 2017; Seymour-Walsh et al. 2020).

The increased integration of content management systems, such as Blackboard, Moodle, slides and video recordings, as a teaching method in the face-to-face classroom (Kirschner and De Bruyckere 2017; Lust et al. 2011), is meant to enhance the quality of teaching and learning, and the comprehension of new content matter and higher-order learning. There is an expectation that since twenty-first century students have been introduced to the use of technology from an early age, they would seamlessly adjust to the technology-aided learning strategies at university level. According to Henderson, Selwyn and Aston (2017), learning in visual form with digital technologies has the potential to enhance student learning and to improve the memory of learned

experiences. Amid the said benefits of technology-aided teaching and learning, the phenomenon we explored in this article is the state of readiness and adaptation of first-year students from disadvantaged backgrounds when introduced to this teaching and learning and assessment approach and its efficacy. Owing to the Covid-19 pandemic, most universities expedited the use of e-learning as a form of e-learning to mitigate the situation.

Transformation of South African Universities

Post-1994 and the attainment of democracy, new legislation has made it possible for many South African students from disadvantaged background to access HEIs. According to the report of South African Market Insights (2020), approximately 7.4 per cent of youths aged 20–24 years came from the lowest household income quintile compared to 47 per cent with Bachelor qualifications who came from high-income family backgrounds. Many HEIs are experiencing a rapid increase in registrations of first generation of students from disadvantaged backgrounds. Among the many challenges accompanying this trend is that many of these students come from low-income families and unfortunately many are not completing qualifications in the minimum graduation time (South African Market Insights 2020).

Transforming HEIs and creating access for disadvantaged students over the years have triggered a debate about the quality and readiness of students entering HEIs. Stereotypical attitudes have been created that the entrance requirements have been lowered, which have resulted in more students from disadvantaged background entering institutions. This perception is strengthened by the low numbers of students graduating in the minimum time and relatively fewer pursuing postgraduate studies (Cornell and Kessi 2017; Petersen, Louw, and Dumont 2009).

This phenomenon was also fuelled by the funding policy of the Department of Higher Education and Training (DHET) by which universities were funded based on throughput rates. In recent years, the DHET policy (2020) changed the funding to the number of students accepted leading to the high entrance numbers. However, this was not followed by the same commitments from universities to see students through. Cornell and Kessi (2017) state that the stereotypical discourses on the lowering of academic standard by students from disadvantaged backgrounds in institutions previously reserved for students from affluent backgrounds places blame on transformation rather than on the HEIs. These kinds of discourse create an impression that the environment at HEIs readily accommodates students from various educational, social and economic backgrounds being assimilated and seamlessly succeeding.

Statistics indicate that students from low-income economic backgrounds have high rates of early school leaving and poor transition rates to tertiary education and employment (South African Market Insights 2020; Tentsho, McNeil, and Tongkumchum 2019). It has been found that students' ultimate success at HEIs depends immensely on the experiences they have during their first year. Although students arrive at universities

motivated and with high aims of succeeding, one needs to acknowledge that the transition from a high school set-up to a university environment is mainly accompanied by great anxiety and fear of failure (Al-Sheeb, Abdulwahed, and Hamouda 2018). Despite the supporting programmes introduced to provide first-year students with assistance in developing essential skills and learning strategies, HEIs are still experiencing unacceptably high rates of dropout of students at this early stage of their university learning careers (Al-Sheeb, Abdulwahed, and Hamouda 2018). Other contributing factors include the lack of accommodation, transport and hunger.

The DUT, as many other UoTs, has put in place measures that would enable first-year students to be introduced to the technologically advanced methods of teaching and learning. Platforms such as Moodle and MS Teams are used to enhance the quality of teaching and learning and to make it even more possible for students to access learning content. The Faculty of Management Sciences' eleven departments have an average annual intake of 3 700 first-year students. Most departments are based at the DUT's ML Sultan campus, with other departments based at the Riverside campus in Pietermaritzburg. In this study, we focus on students based at the ML Sultan campus.

In this article, we seek to explore the experiences of first-year students from disadvantaged backgrounds, when encountering for the first time the technology-aided teaching, learning and assessment methods at UoTs.

Students from disadvantaged backgrounds put significant effort into succeeding despite the various barriers that many encounter such as access to resources during their academic journey. It is therefore incumbent on HEIs to ensure that teaching, learning and assessment take place in an environment that is conducive to learning. The teaching and learning environment has to be adapted based on the educational and technological backgrounds and basic needs of the students.

The constructivist philosophy supports the view that students are central to their own learning and that their perception of their learning environment is an imperative element of the way in which they form an understanding of their role in the class, their self-conception and self-reflection, and the way in which they interact with the lecturers, other students and course content (Kivunja 2014; Seymour-Walsh et al. 2020; Stefl-Mabry, Radlick, and Doane 2010). First-year students create their own comprehension and information of the new environment around them. According to Alenezi (2020), when students are confronted with new concepts, they try to reconcile these with their prior knowledge and experiences, aiming to create a new reality.

The changing reality of first-year university students' demographics means that they present diverse demands because of personal and social factors that warrant swift interventions facilitating "seamless" integration and access to available facilities. The gap between prior experiences and new knowledge has the potential to lead to withdrawal or feelings of alienation or disengagement on the side of first-year students.

Mann (2001) explains alienation as the situation of an individual being separated or isolated from group activities which that individual should be part of. Alienated students may isolate themselves from others and develop resistance to involvement with course materials and learning activities that include the use of online activities (Johnson 2005; Morinaj et al. 2017). According to Coates (2010), student engagement should include the following characteristics: active and cooperative learning; involvement in challenging academic tasks; constructive relationships with academic staff; and a feeling of belonging, encouraged through the institution's learning environment or community. Disengagement therefore has the potential of the student losing interest in academic activities. Consequently, poor performance may result and in extreme circumstances, the student may contemplate dropping out of university.

Research Methodology

This is a qualitative study. As Mohajan (2018) states, the qualitative research method is used to gain an in-depth understanding of the particular problem. This includes capturing people's observations, feelings, opinions, practices and experiences in the particular atmosphere and context in which they act and answer (Creswell 2014). Qualitative research does not aim to reach conclusions that can be generalised based on a representative sample, but the aim is to gain insights into a studied phenomenon and grasp the variety in the studied structure (Roblek et al. 2019). Furthermore, in a qualitative study, the depth of the collected data is essentially more important than the numbers (Burmeister and Aitken 2012; Margaryan, Littlejohn, and Vojt 2011). As the purpose of the study is to understand student perceptions of blended learning as an e-learning method at the DUT, the qualitative research approach is most suited.

The purposive sampling approach was employed to collect the data. This method was used for its suitability as it enables the researcher to select the best-suited participants owing to the impact that they would have on the results of the study (Etikan, Musa, and Alkassim 2016; Mehmetoglu 2004). To enable us to answer the research question, first-year students from disadvantaged backgrounds registered for various programmes in the DUT's Faculty of Management Sciences at the Durban campus were interviewed. The reason for targeting participants from lowest quintile high schools was to assess the students' preparedness and their readiness for using e-learning as such schools are purportedly not well equipped with regard to technological facilities. Andoh-Arthur (2019) refers to gatekeepers as people who provide researchers with access to the research population. For the current research, the Institutional Research Committee (IREC) served as the gatekeeper. Before the survey, we obtained approval from the DUT and administered the survey according to the requirements as approved by the IREC.

Although the sample size is important in any study, there are no rules for size in a qualitative inquiry as the size depends on the research aim, contribution and resources available (Mohajan 2018). We collected the data with structured interviews. Before each

interview, we sought informed consent. Each interview session lasted between 20 and 30 minutes. Data saturation was reached at the twenty-fourth participant. Data saturation is the point during data collection where no new themes are emerging (Braun and Clarke 2021). We recorded and transcribed the data. We used pseudonyms to protect the identity of the participants. To deal with reliability issues, we used Creswell and Poth's (2016) intercoder agreement method. In doing this, we independently coded and analysed the data and then compared results to establish how reliable the data analysis process was. Upon completion, our analyses were similar, confirming the reliability of the research process. We used content analysis to analyse the data using the NVivo statistical software. Erlingsson and Brysiewicz (2017) refer to content analysis as a method of transforming a large amount of text into organised and comprehensible summaries.

Findings

We interviewed 24 participants and after coding and analysis, the following three themes emerged:

- students' ownership and competency in using e-learning tools;
- students' perceptions based on their experiences of e-learning; and
- e-learning competency and academic performance.

Theme 1: Students' Ownership and Competency when Using E-Learning Tools

The interview discussions revealed that all students own a mobile phone but that only 75 per cent have smartphones. Less than a quarter have laptops, whereas none of the participants have personal ownership of desktops. Mobile phones were predominantly used for informal learning and communication until the Covid-19 pandemic struck and it became the main learning tool. Based on the profile of students interviewed, although 75 per cent had smartphones, they all found it difficult to participate in online studies owing to network issues and insufficient mobile data. The 25 per cent who do not have smartphones nor laptops only participated in online learning with on-campus computers, and therefore did not engage in any form of online learning during the pandemic.

Four participants had the following to say:

Mobile phones are less expensive than laptops and are easier to carry around. (Sello, 17-year-old male)

I think we all have mobile phones but some do not have smartphones nor laptops, so online learning is impossible especially during lockdown. (Vuyo, 19-year-old male)

I own a laptop, but online learning is only possible on campus or at the student residents. At home, there's no network. (Sandra, 18-year-old female)

[T]ruth need to be said, normally most students use their mobile phones for socialising and seldom for formal learning. When their interaction is linked to learning in anyway, it is more about enquiring from friends about assignment submission dates or test dates. Very little is about content related to their studies or in exceptional situations, when they are forced to work on group assignments. (Nomaliso, 17-year-old female)

Regarding the level of competency in using tools of technology, half (12 out of 24) of the participants rated themselves as very good and good. This includes accessing learning materials with Google Scholar, lecture notes using LMS platforms and interacting with their lecturers and fellow students. The other half were not satisfied with their competency regarding the use of technology for learning. Mildred (18-year-old female) agreed that

[W]e understand that we have to learn and adapt to the new ways of learning by means of online learning. However, there will always be a gap between those who were exposed to the technology and the novices. We are not stupid, but we simply lack the skills. With more training and exposure, there are possibilities that most of us shall overcome these shortcomings as long as we are afforded opportunities to learn.

The first theme shows that, although e-learning has become part and parcel of the world we live in, most students lack either the technological gadgets or the skills to participate in it. This situation has also been amplified by the Covid-19 pandemic. This situation mirrors what is happening in other African countries as the study by Ntshwarang, Malinga and Losike-Sedimo (2021) in Botswana discovered that the use of e-learning in universities is constrained by the lack of proper tools, infrastructure and internet access off-campus.

Theme 2: Students' Perceptions Based on Their Experiences of E-Learning

The interview discussions revealed that although most participants do understand what e-learning is about, they indicated that most students did not have access to computers when at high school. They therefore entered HEIs with minimum or no computer literacy. This situation resulted in most participants experiencing challenges in accessing or retrieving learning resources from online platforms. The participants indicated that the training received by first-year students on online learning is inadequate to enable them to engage with their fellow students using platforms such as Blackboard or Moodle. Owing to the inadequate training and an insufficient number of computers, the participants felt that the institution was not yet ready to fully implement e-learning for teaching and learning purposes. The unpreparedness was therefore made prominent by the Covid-19 pandemic as most students found it difficult to adjust to online learning with little transition time. Three participants stated the following:

[T]he closest one has come the use of the computer is through the use of smart mobile phones. In fact, I did not know that a mobile phone can be seen as a form of 'computer', being a digital instrument. If we were made aware of that, one could have seen it as a

more useful instrument, more than just for sending messages and playing games. (Njabulo, 19-year-old male)

[L]ack of computer literacy from high school days impacted negatively in the process of being readily assimilated in the culture of eLearning environment (teaching and learning). Most of us students struggled to get used to the use of computers and it was even more difficult when we were introduced to platforms such as Blackboard and Moodle. You need to understand that one is in her first year; handling a computer for the first time in one's life; then having to access lectures slide online – how confusing can that be? We did receive some training. However, it was not adequate for a first time user. It was more frustrating, more especially when one noticed that some of the students were more comfortable because they were exposed to computers before. (Mary, 17-year-old female)

[A]ll along I was not comfortable with e-learning, then Covid-19 happened and made it worse. Imagine being taught and assessed through a medium that you are not conversant with. (Derrick, 17-year-old male)

As discovered by Olum et al. (2020) in Uganda, the training of students and staff members is key to improving the will and fostering positive attitudes towards e-learning. In the current study, the second theme brought to the fore the unpreparedness of the students for e-learning. Their responses suggest that their high school backgrounds put them at a disadvantage and worst of all, they receive inadequate training to become conversant with e-learning systems.

Theme 3: E-Learning Competency and Academic Performance

Half of the participants (12 out of 24) indicated that the lack of or inferior skills when using online platforms directly affects their academic performance. Their fear of taking online tests has the potential to lead to feelings of alienation, demotivation and possible failure. Similarly, Edelhauser and Lupu-Dima (2020) in their study of Romanian universities discovered that student and lecturer conversance with online testing is crucial to the success of e-learning.

In the current study, several factors have the potential to contribute to students' feeling of vulnerability when they are expected to sit for online assessments. This includes inadequate training and access to laptops and Wi-Fi, more especially after normal working hours. Furthermore, students' living conditions at their homes during the Covid-19 pandemic also contributed to this vulnerability. Most students live in informal settlements where many people share a small living space. This made e-learning a near impossible task. Three participants said:

It is pretty obvious that if I feel that I am not fully computer literate, should I be expected to do well on online assessments? (Gerald, 18-year-old male)

[D]uring the pandemic, I was living at home with my mother, grandmother, two aunties, four siblings and three cousins. We all shared a two bedroom house. Hence in addition to not being comfortable with e-learning, my living condition made it difficult to attend, concentrate and study. All these made me extremely scared of online assessments. (Rachel, 17-year-old female)

The majority of the first-year students who come from disadvantaged backgrounds experience many challenges during their early days at university. One is expected to adapt to the new environment. We encourage each other not to give up and blame our previous circumstances. Assessment time is always a challenging period for any student and the online assessments are not different. It is upon each student to make the best of opportunities presented to them. (Makhosonke, 18-year-old male)

The third theme reveals that because most students are not conversant with e-learning, they are scared of online assessments making them not perform well.

The current study has therefore provided new knowledge in the context of the DUT regarding the perceptions of e-learning based on the experiences of first-year students from previously disadvantaged groups.

Recommendations and Conclusion

Building E-Learning Campuses: Physical Resources

It is the primary responsibility of HEIs to build student-friendly environments on and off-campus, complete with relevant teaching and learning resources. The participants lamented the inadequacy of computer laboratories and off-campus resources especially during the Covid-19 pandemic. Dedicating specific computer laboratories to the exclusive use by first-year students and making these accessible throughout the day and night would enable students to confidently build competence in the manipulation of online resources. Furthermore, providing first-year students with laptops is also crucial from now onwards owing to the Covid-19 pandemic.

Students from disadvantaged backgrounds rarely have the financial muscle to purchase data to access online resources on their small gadgets such as laptops. Making Wi-Fi readily accessible would enable students to work at their own pace and engage with their colleagues in the journey of discovering online learning. Connectivity to the internet enables student access to similar resources that their teachers use.

Student Capacity Development

First-year students, more especially those from disadvantaged backgrounds, benefit from HEIs that provide basic and advanced computer literacy training courses. This would enable them to access relevant online learning and teaching resources with confidence and without feeling alienated or disadvantaged as compared to their more advanced peers. Training facilitators are expected to be empathetic and responsive to

first-year students' challenges and experiences when handling technology for the first time. The training has to cover both learning and assessment. First-year students are only trained on the way in which to attend and access e-learning, but nothing is done regarding assessments.

According to King and South (2017), assessment tasks should be formulated in a way that promotes creativity, containing the framework that enables students to exhibit the real-world knowledge and skills they developed.

The National Forum for the Enhancement of Teaching and Learning in Higher Education (2020) provides the following guidelines to make online assessment accessible and inclusive:

- the assessment guidelines should be clear and with realistic expectations;
- the level of complexity of the assessment task should be in line with the digital expertise of the students;
- students should be provided with a sample assessment submission for clarity on what is expected of them;
- submission timelines for online testing should accommodate students with disabilities. Alternative online tests with assertive technologies may be arranged to accommodate differently abled students; and
- opportunities should be provided for peer assessment to enable students to support each other when preparing, discussing and developing their assessment submissions.

Without access to the internet, many e-learning projects in African countries are throttled before they even begin. Providing all the students with internet access is a very expensive proposition for most African governments, more so in the case of rural centres and remote areas, where internet connections (if available) are bound to be erratic.

Development of Relevant and Contemporary Academic Content

Content development is a critical area that is too often overlooked. Most tertiary institutions still use textbooks from the United Kingdom and the USA and there has not been a consistent drive to develop local content. Given the unique facets of Africa, the diversity of languages and cultures and the continent's specialised needs, there is a great opportunity for African countries to develop targeted plans for content development. Language and content are currently not appealing to young people, therefore our curriculum requires Africanisation. According to Letsekha (2013), Africanisation of the curriculum entails redefining the standards of education in South Africa to make sure that teaching and learning takes place and reflects the relevant context in which it is occurring. It is therefore imperative that South African scholars undertake the development of textbooks and resources that reflect our local South African context. A

context-based curriculum can therefore be designed based on these textbooks and resources.

In addition to the curriculum, student-centred universities must also create a welcoming and supportive environment which dismisses the narrow perception that institutions are more engaged in complicated academic discourses and neglect difficult transitions that first-year students are going through. The students who participated in the study acknowledged that their institution is making strides to provide the means to make the transition for first-year students into the university as seamless as possible. However, some students from disadvantaged backgrounds do fall through the cracks because of inadequate resources. HEIs must ensure that teaching and learning takes place in environments that are conducive to learning. The teaching and learning environment has to be adapted based on the educational and technological backgrounds and basic needs of students. Providing resources such as adequate computer laboratories or laptops, readily available Wi-Fi and off-campus data access is a necessity.

The recommendations of this study can be encapsulated in Figure 1. Figure 1 is a visual illustration of the interlink between important elements that are aimed at building an environment that is conducive to teaching and learning (Adkins 2013).

HEIs have the power to shape the course of South Africa, as they can train the youth to develop skills that are relevant to the knowledge-based global economy. For this to happen, the first step is for stakeholders to facilitate the preparedness of students for higher education through the provision of adequate resources that empower student learning. This, in the context of this study, refers to the availability of technology in HEIs. In a technology-driven world, students must be assisted to quickly orient themselves with its use to facilitate their learning. This can be achieved through vigorous training and making available technological gadgets and reliable internet connectivity both on and off-campus. Developing an Africanised and context-based curriculum is also critical. Equipping African scholars to develop high quality local textbooks and curriculum will have a significant impact on the quality of students.

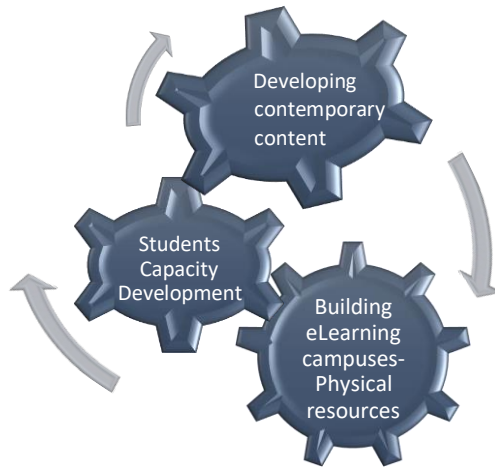


Figure1: Institutional responsibility in building e-learning campuses

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