SHORT COMMUNICATION

Conceptualising digital capital in higher education institutions, its value during Covid 19 pandemic and beyond

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Introduction

In recorded history there are many accounts of pandemic diseases that left catastrophic havoc in their wake (Peters, Jandric & McLaren 2020; World Health Organisation 2020; Chaka 2020). These ancient but ongoing human diseases like the COVID-19 virus and the resulting pandemic are not exceptions, according to international health records (World Health Organisation 2020; UNESCO 2020).

Among the many immediate repercussions of the COVID-19 outbreak was the required shift of many higher education institutions (HEI's) from a blended teaching and learning model to an online/distance learning platform. While many HEIs around the world have embraced e-learning using online educational tools and resources (Crawford, Butler-Henderson, Rudolph, Malkawi, Glowatz, Burton, Magni & Lam 2020; Chaka 2020), Chaka (2020) indicates that many new online teaching and learning programmes in the higher education sector need more attention. Many government policy initiatives have been launched for HEIs to be able to continue to teach and also contain the virus.

Even so, these interventions have not done enough to prevent many of our students from falling behind in their learning commitments from across the world (Lange 2020; Wang and Inoue

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2020; Tapper, Batty & Savage 2020). Moreover, students and academics were not all ready to transition to this new teaching and learning environment due to a lack of digital information literacies and competencies. The other burning issue in South Africa is the presence of a real digital divide. For achieving education equity, many ambiguous concepts of disagreement, in the transition from face-to-face to blended to online teaching and learning environment, still need to be addressed (Zhang *et al.* 2020; Ali 2020).

Literature focuses on certain deficiencies such as inadequate online teaching infrastructure, teachers' inexperience, the information gap, and the complex environment at home. (Murgatrotd 2020). According to Ali (2020), "large-scale, national efforts to utilise technology uniformly to support distance online learning during the COVID-19 pandemic are emerging and evolving quickly".

Therefore, the potential value of digital capital during the Covid-19 pandemic in respect of higher education needs to be explored and the knowledge gap strategically filled, which will unfold in the following subsections of this article.

Conceptual framework

This paper reviews related theories to conceptualise an integrated digital capital framework for higher education. A theory may be presented as a rationale, discussion or argument, which aids the explanation of any phenomena that occur in any part of the world (Creswell 2013).

Three fundamental theories were adopted as a foundation for the development of the new integrated digital capital conceptual model. The E-learning framework reproduced from Khan 2001, Bourdieu's conceptualised theory through the Digital capital, 'A Bourdieusian perspective on the digital divide', was modified by Ragnedda and Ruiu (2020), and 'DigComp: The Digital Competence Framework for Citizens' by Carretero, Vuorikari and Punie (2017).

The Khan octagonal E-Learning Framework (2001) was used to explain how the three key players (learner, academic staff, and institution) are involved in the effective transition and delivery of online teaching and learning in higher education (HE).

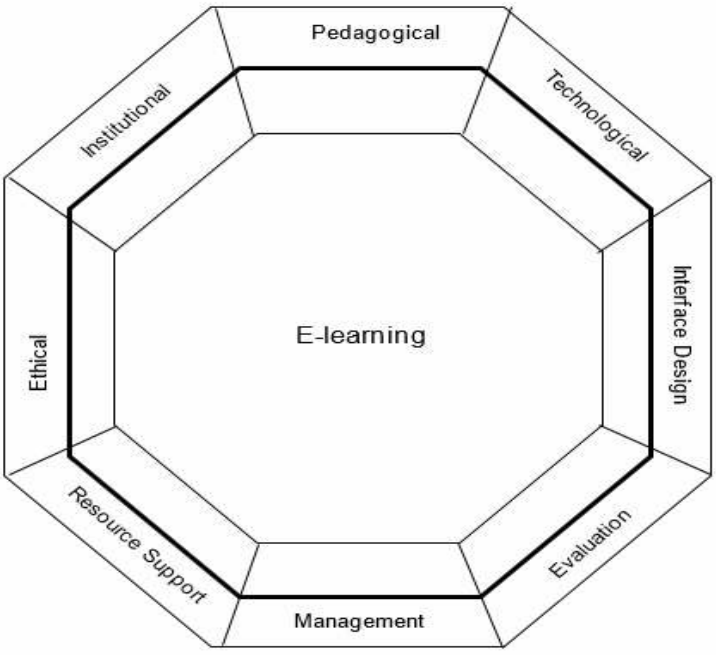

Figure 1: The e-Learning Framework (Khan, 2001)

Figure 1, followed in a clockwise manner, provides eight different dimensions for e-learning which are: a pedagogical dimension that represents the art of teaching and learning, the technological, which implies the framework as it examines issues of technology infrastructure in e-learning spaces. The interface design is the overall look and feel of e-learning platform, evaluation is the assessment or appraisal of the learners, and the evaluation of the instruction and learning environment. The management of e-learning discusses the maintenance of the e-learning environment and distribution of related information. The resource support dimension of the framework examines the online support and resources provided in the learning environment, ethical considerations of e-learning space relate to privacy, copyright and security, and institutional dimension is concerned with issues of administrative affairs, academic affairs and student services (Khan 2001; Khan 1997).

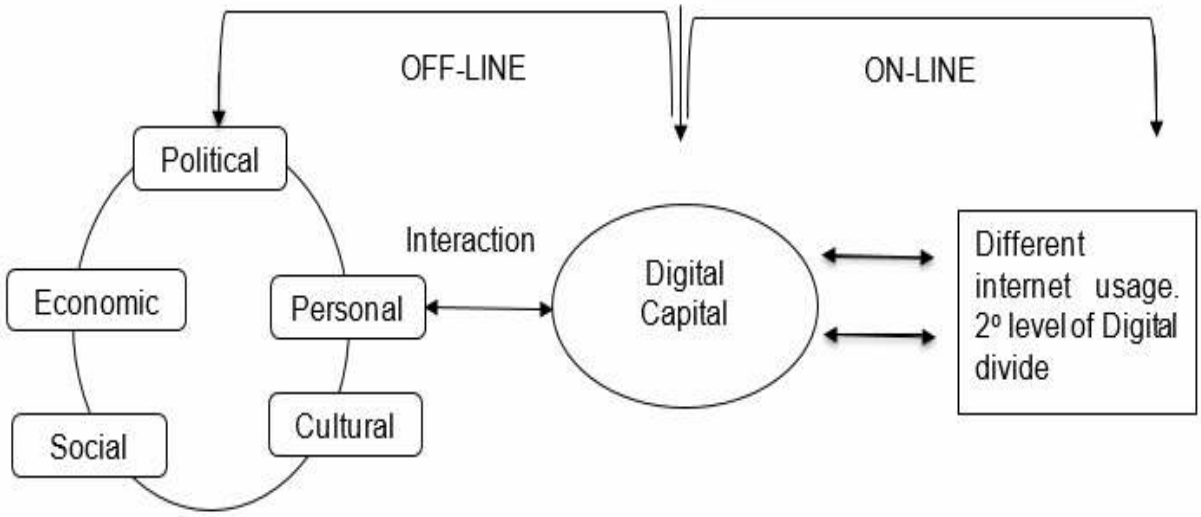

Figure 2: The digital capital bridge between the offline and online experience (Ragnedda & Ruiu 2020)

Digital capital has been theorised as a new capital by Ragnedda and Ruiu (2020) and is said to be skillsets of and access to a set of digital competencies and technologies. Since it's a specific capital, it should also be operationalised (see Figure 2).

Digital capital is further introduced as a valuable tool that can enhance the understanding of the digital inequalities which exist in the digital divide. It can be explored in the tri-part levels, which are: firstly, the inequalities in accessing ICTs, secondly, inequalities in the Internet usages, and thirdly as inequalities for tangible outcomes derived from Internet use (Ragnedda 2017). However, Bourdieu was reluctant to consider media technologies as an exact and autonomous subject of study (Sterne 2003), as he believed they had become embodied in contemporary society's social texture.

Initially, policymakers, as well as researchers, concentrated on the gap between those with access to information communication technologies (ICTs) and those who were excluded (Hoffman, Schlosser and Novak, 1998; Katz & Aspden 1997), thereby defining the digital divide as a form of inequality in accessing new ICTs (Besser 2004). Recent research led by Van Deursen & Van Dijk (2019) shows that this first level of digital divide still characterises an obstacle in developing countries (Pearce & Rice 2013; Zhang 2013) and the advanced ones.

Thus, it is proposed that the digital divide should be understood as a complex phenomenon that does not solely result from an inequality of access to ICTs. Furthermore, the dual division between those who gain access and those who are excluded does not apprehend the complexity

and multidimensionality of the digital divide (Ragnedda 2019). Moreover, accessing the Internet does not imply having (profitable) access to its content (Newhagen & Bucy 2004). Hence, the literature shows that access to ICTs, and digital inequalities, may be due to different skills, competencies, and know-how in using ICTs.

Therefore, once the gap in accessing ICTs is bridged by the possession of both a device and an Internet connection, the second level of the digital divide arises, which is correlated to inequalities and differences in using ICTs (Hargittai 2002; Selwyn 2004). Policymakers and even scholars have often analysed inequalities in Internet usage between diverse groups by aiming at different levels of digital literacy (Buckingham 2007). Hence, these are related to various socio-economic and socio-demographic factors.

The third level of the digital divide has been newly introduced (Ragnedda 2017; van Deursen & Helsper 2015; Wei, Teo, Chan & Tan 2011), focusing on inequalities regarding social benefits that persons obtain from access to and usage of ICT. For digital-dependent communities such as university campuses, an increased number of people access and use ICTs. It is progressively essential to explore the consequences and social implications of the inequalities in Internet usage (Van Deursen & Van Dijk 2014) and the irregular populated benefits and tangible outcomes in accessing and using ICTs (Ragnedda 2018).

Identifying the constituent components of digital capital has enhanced the understanding of how the elements contribute towards the three different levels of the digital divide. Therefore, it aids the understanding of both social and digital inequalities. In Ragnedda and Ruiu's (2020) attempt to make digital capital an operational tool, digital inequalities were considered as both effects and triggers of other types of imbalance (Robinson, Cotten, Ono, Quan-Haase, Mesch, Chen, Schulz, Hale & Stern 2015). As it arose throughout the definition of digital capital, the conceptual model proposed by Ragnedda and Ruiu (2020) defines digital capital as a specific bridging capital that incorporates both elements related to access and competencies (Ragnedda 2018).

However, Ragnedda and Ruiu (2020) took the challenge a step forward and proposed an empirical model to capture and quantify the constitutive components or elements. In their model, the direction was based on an extensive literature review, in which they integrated aspects related to digital technologies (material and physical access) with digital competencies (internalised ability) identified as 'DigComp: The Digital Competence Framework for Citizens' by Carretero, Vuorikari and Punie (2017). Similarly, this study incorporates the new digital capital as an empirical tool to intersect (bridge) itself with the other 5Cs, the e-learning framework by Khan (2001), digital access, and digital competencies. Based on literature, the conceptual framework for this study will be a construct of the Khan e-learning framework (2001), the modified second degree offline and online experience framework proposed by Ragnedda and Ruiu (2020), and the 'DigComp: The Digital Competence Framework for Citizens'.

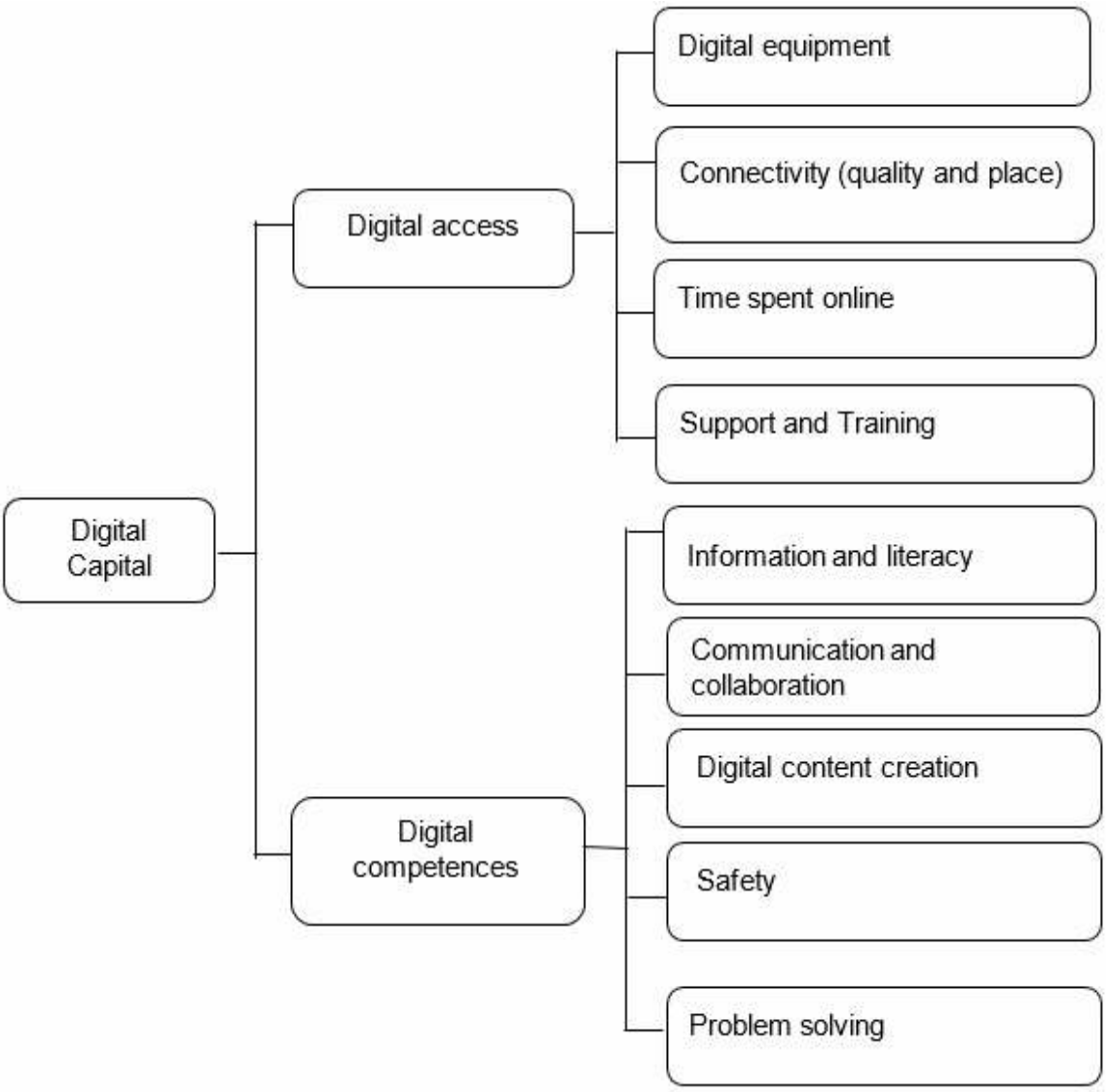

Figure 3: Constitutive components of digital capital (Ragnedda & Ruiu 2020)

Experiences of three different higher education institutions in South Africa

At the University of KwaZulu-Natal (UKZN), the process of establishing digital capital commenced with a process of engagement with both academics and students. Regular surveys were sent to academics and students to gauge their technical infrastructure, technical competence, training and adoption requirements. Additionally, a needs analysis was conducted, to understand students' access requirements and abilities for studying online, and to develop procedures and guidelines for the implementation of online remote teaching and learning. Some measures implemented to increase the digital capital of academics included a series of digital training webinars to empower academics with skills in the prescribed learning management system (LMS), Moodle. Similarly, for students, "besides the institutional infrastructural support provided, similar digital literacy support was designed. An informative online learning portal is available for students to consult for customised instructional guides and videos on the new interaction methods required for learning and assessment with the LMS. Email and discussion

forum support is also available for those who require individual attention" (Singh 2020). While UKZN formally commenced its remote online learning on 1 June 2020, the transition to the online space has been met with mixed feelings. Some academics settled comfortably into the new mode of delivery, while others, a year later, are still finding their way in this online environment. Likewise, students are also transitioning at their own pace. What has clearly been noticed across the institution is that in 2021 the levels of engagement and attendance by students at online sessions is significantly lower than in 2020. Students seem more at ease watching recorded video clips, engaging with content offline and directing queries to academics through email or chat facilities. Academics have also been identified as being more at ease with the digital tools to support their online teaching and assessment. These speak to an inevitable increase in students' and academics' digital capital levels. Ultimately, for both students and academics to weather the storm created by the unknown trajectory of this pandemic, it is essential for all efforts to be made to enhance both students' and academics' digital capital.

The University of Johannesburg was nearing the end of the first term when class attendance dropped markedly, with students citing concerns regarding cases of COVID-19 appearing in the country. A limited number of departments with staff who were proficient with online platforms were able to deliver their lectures in the final week of the term. Such platforms included the use of Blackboard Collaborate Ultra, Skype, Zoom, Microsoft Teams, and YouTube. The sudden switch quickly highlighted a major concern amongst students – that not all students had the resources to access the lectures online.

Taking advantage of the recess (which occurred during the country's national lockdown), various units within the university worked towards shifting its teaching and learning operations online. Support was offered to both students and staff to ensure that the transition would go smoothly.

With numerous efforts to provide students with an environment that was conducive to learning, there remained challenges that were beyond the control of the university. Perhaps one of the bigger problems that dominated the list of challenges was the power outages throughout the country. For some students, the outages lasted several days, with less privileged communities being particularly affected.

The University of Zululand's COVID-19 teaching and learning recovery plan was based on academics acquiring digital capital through online instructional design expertise for the new distance online learning environment. However, this was only done through limited training in order to demonstrate knowledge and skills of developing effective instructional design. The training of academics was proposed to include the preparation of both e-learning and print learning resources for multimodal remote teaching. The e-learning champions from the four faculties presented lessons for different modes of remote teaching. The presentations were part of the institution's idea cascading ideas and developing competence and skills in online and remote curriculum packaging. This included: content selection, content presentation, content sequencing and scaffolding, developing accumulative and formative assessment tasks to assess and provide constructive feedback for active engagement in achieving the desirable learning outcomes for the online learning events.

Faculties and departments communicated with their student databases to determine their learning material needs (USB or hard copies) in preparation of materials. Faculties covered the expenses of the duplication for the materials and academics were tasked to deliver materials to various centres around the province. However, these efforts fell well short of bridging the various layers of the digital divide experienced by academics and students.

Conclusion

The COVID-19 global pandemic forced all sectors, including higher education, to commence thinking about the digital capital present in their institutions to support the change in delivery strategies, especially those who had to move all tuition at traditionally face-to-face higher education institutions to online teaching. Ultimately, for both students and academics to weather the storm created by the unknown trajectory of this pandemic, it is essential for all efforts to be made to enhance both students' and academics' digital capital

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