Representation of E-Learning Ideological-ware Resources in COVID-19 Articles

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Abstract

The COVID-19 revolution compelled higher education institutions (HEIs) to use e-learning or a digitalised curriculum (DC) to save or complete the 2020/ 2021 academic calendar/ year. Ideological-ware resources are cognitive processes that drive or manage human actions in using hardware and software resources to address human needs. These resources are translated into theories of e-learning/ digital curriculum. When HEIs were compelled to use a DC, they applied various theories that represented ideological-ware resources. However, there is a lack of awareness about human internal intelligence and natural actions which can be used to promote natural identities, further shaping the DC ideological-ware resources in education. As such, this study examines ideological-ware resources used by HEI academics in teaching during the COVID-19 revolution. A pragmatic paradigm and the natural identities framework (NIF) were used to encase this study. Text analysis and document review were applied in processing data from 20 purposively and conveniently sampled publications for this study. The findings indicate that most of the theories used, promoted a performance-based (equality) and/ or competence-based (equity) curriculum at the expense of the pragmatic or natural curriculum that promotes justice or

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natural actions in curriculum. This suggests that the teaching was only addressing professional needs in terms of 'what' questions, and/ or societal 'how' questions. A pragmatic curriculum is driven by the importance of actual actions, beliefs (ideological-ware resources) behind the actions, and their consequences. This study therefore recommends the use of DC ideological-ware resources that promote justice and natural actions, thus addressing personal needs through personal 'who' questions, and philosophical needs through 'why' questions.

Keywords: Equality, equity, ideological-ware resources, intelligence, justice, natural identity

Introduction

Ideological-ware resources are in essence theories applied in education. Through reading and interrogating various studies, researchers are able to establish the presence of theories that represent ideological-ware resources, thus driving educating spaces. For example, studies conducted during the COVID-19 revolution on curriculum for/ of teaching refer to ideological-ware resources (theories) that promote a performance-based and/ or a competence-based curriculum. Such would be at the expense of pragmatic and natural actions that promote justice as a cause of concern (Khoza 2021a; Khoza 2021b).

On the one hand, a performance-based curriculum is driven by a principle of equality in which resources are prescribed on the principle of 'one size fits all' or equality. In other words, a digitalised curriculum (DC) or electronic learning (e-learning) resources are used according to strict higher education institution (HEI) prescribed rules. It is believed that when the rules of e-learning resources are correctly followed, they produce high academic performance/ achievements. Although a performance-based curriculum may promote passive students, students are able to cognitively master their course content and achieve high academic marks. A performance-based curriculum is driven by descriptive 'what' questions in order to address professional needs. Such can be achieved through systems of equality which involve questions on content, objectives, resources, activities, level, environment, role, reason, assessment, and more (Mabuza

& Khoza 2021).

Learning management systems (LMSs) are the most popular prescribed hardware and software resources that drive a performance-based curriculum of a DC. Some examples of LMSs are Canvas, Blackboard, Moodle, WebCT, inter alia (Czerniewicz 2018; Mpungose & Khoza 2022).

On the other hand, a competence-based curriculum of a DC is driven by processes of equity in which resources are used to generate activities to be applied by students. By such means, students construct skills for the achievement of learning outcomes based on their everyday knowledge (Hoadley 2018). Although a competence-based curriculum may promote active students who can socially defend themselves, the students may not be able to cognitively master their course content, and achieve high academic marks.

A competence-based curriculum is driven by operational 'how' questions. Such questions can address societal needs through processes of equity which involve questions such as how learning takes place, or how outcomes are achieved. Social media sites (SMSs) are the most popular hardware and software resources that drive a competence-based curriculum of a DC. Some examples of SMSs are Facebook, WhatsApp, and Twitter; there are others (Branch 2018; Mpungose & Khoza 2021).

A cause of concern is the limited/ missing awareness of DC or e-learning ideological-ware resources (beliefs/ theories) that address human internal intelligence and natural actions. Such theories are elicited through understanding personal/ individual 'who' questions and philosophical 'why' questions, respectively (Govender & Khoza 2022; Makumane & Khoza 2020; Morgan 2014). Awareness of human internal intelligence (based on pragmatic curriculum) and natural actions promote justice and natural identities or values in education. This particular cause of concern motivates this study to examine DC ideological-ware resources used by HEI academics in teaching during the COVID-19 revolution.

Literature Review: Equality, Equity, and Justice of Curriculum

Equality of curriculum suggests equal treatment of all students in terms of their support by HEIs (Figure 1), in which a curriculum is defined as a plan for education (Branch 1997; Wang *et al.* 2007).

Equality is promoted by ideological-ware resources (beliefs/ theories) of a performance-based curriculum. Such theories follow structured or linear systems in which there are specific rules that guide actions strictly. The theories of equality promoted by a performance-based curriculum follow what Ralph Tyler identifies as a product or objective model for teaching (Darwazeh & Branch 2015; Khoza 2020; Tyler 2013). Curriculum principles of the product or objective model are teaching aims/ objectives, content, organisation of teaching experiences, and summative assessment (Khoza & Mpungose 2022; Sokhulu 2021). These curriculum principles/ concepts should be used linearly in planning and teaching lessons.

Figure 1: Equality of curriculum

In 2012, South African schools adopted a performance-based curriculum, the Curriculum and Assessment Policy Statement (CAPS), suggest-

ing equality in schools. The CAPS policy comprises prescribed aims, content with specific time for coverage, teaching activities, and formal with informal assessment (Khoza 2015). The CAPS, therefore, as a performance-based curriculum is driven by equality of curriculum (Mpungose & Khoza 2021; Pires 2022). However, HEIs have an open policy in terms of curriculum issues, in which some apply performance-based, or competence-based ideological-ware resources of either LMSs or SMSs (Hoadley 2018; Khoza 2017).

Competence-based curriculum ideological-ware resources promote equity in which students are supported according to their societal needs (Figure 2) (Branch & Lee 2020; Khoza 2021a).

Figure 2: Equity of curriculum

Equity of curriculum is generated by a competence-based curriculum; ideological-ware resources are driven by non-linear or unstructured

processes, identified by Laurence Stenhouse as process models (Makumane 2021a; Stenhouse 1975). In 1998, the school curriculum in South Africa adopted a competence-based curriculum known as Curriculum 2005 which was driven by an outcomes-based education (OBE) ideological-ware resource. Twelve critical cross-field outcomes were identified for all courses in South Africa. However, HEIs were flexible in following their own independent curricula. This suggests that HEIs can produce a pragmatic or natural DC capable of bringing about justice of curriculum (Khoza 2021b).

Justice of curriculum is a natural or pragmatic curriculum-driven environment which is free from systemic barriers, in which all students are able to learn naturally (Figure 3) (Khoza & Mpungose 2022; Mabuza & Khoza 2021).

Figure 3: Justice of curriculum

Ideological-ware resources that promote justice of curriculum as an important ingredient of understanding self-identity and other values of self-

actualisation seem to be missing/limited in the publications (Hoffman 1988; Khoza 2021a). Frameworks such as the Natural Identity Framework (NIF) and others are capable of providing a platform that combines issues of equality, equity, and justice in educating. This suggests a need for the NIF, a theoretical framework that promotes spaces for self-reflection and critiques (Khoza 2021b).

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Theoretical Framework: NIF

The NIF (Figure 4) was used in this study as an extraction tool to select publications relevant to DC used during the COVID-19 revolution, and serving the 2020/2021 academic year or calendar.

The NIF is underpinned by professional identity (performance-based curri-culum for equality), societal identity (competence-based curriculum of equity) and personal identity (pragmatic curriculum for/of justice) in order to produce natural identity. Natural identity is a cognitive state in which human beings naturally reflect (re-reflect) and critique (re-critique) any action (Khoza 2021b). Such reflection would be to promote human awareness of underlying actions, consequences, and ideological-ware resources (Khoza 2021a). Modes of assessment are used to connect these forms of identity during reflection and critique revolutions. Peer assessment comes to the fore when one deals with one's colleagues; and summative assessment is used for grading/ graduating underlying actions, consequences, and/or ideological-ware resources. Formative assessment is used to establish whether the actions, consequences, and/or their ideological-ware resources are ready to be promoted or carried out.

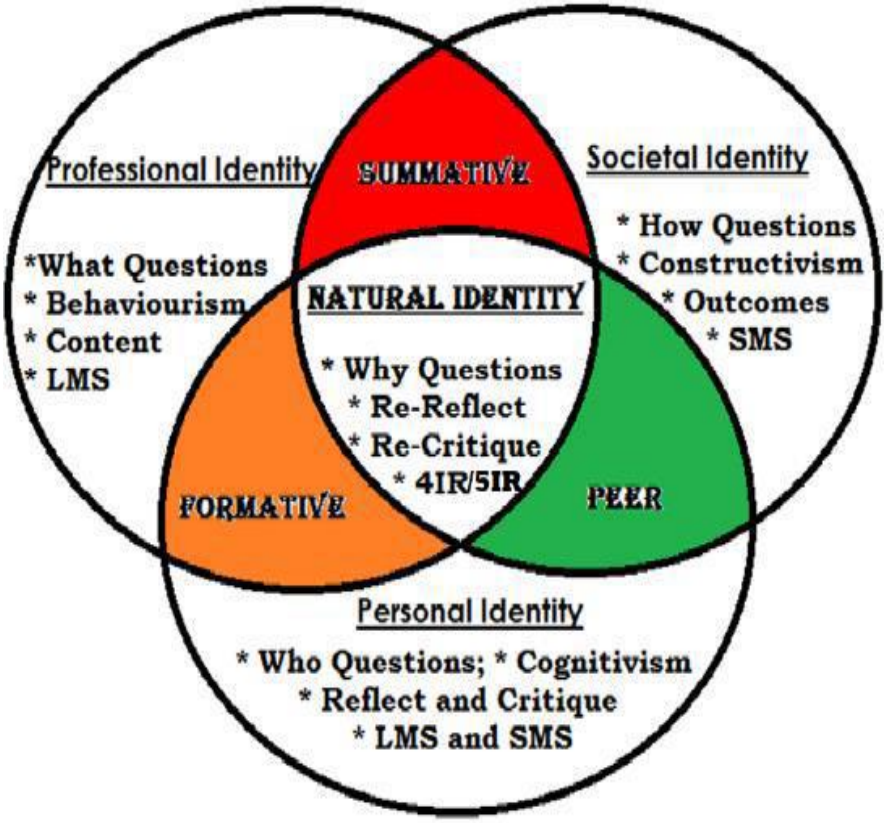

Figure 4: Natural Identity Framework (NIF) adapted from Khoza (2021b: 4)

Research Purpose, Objective and Questions

The purpose of this study is to examine and understand the representation of e-Learning Ideological-ware Resources in COVID-19 Articles. The study uses the following research questions to address the purpose and objective of the study:

A. What are the representations of e-Learning Ideological-ware Resources in COVID-19 Articles?

B. Why are e-Learning ideological-ware resources in COVID-19 articles represented in particular ways?

Research Design and Methodology

A pragmatic paradigm is used to frame this study. The pragmatic paradigm focuses more on practical actions of participants, ideological-ware resources (beliefs) that drive the practical actions, and outcomes or results of the actions. The epistemology is determined by what researchers see as relevant to the situations that must be addressed. Pragmatists believe that there are multiple realities in which every individual has unique interpretations of the realities. This paradigm is important for this study because it supports either the quantitative or qualitative methodological paradigm, or both in one setting; it is conducted to benefit humans based on their natural internal intelligence. The pragmatic paradigm therefore supports any form of sampling.

Purposive with convenience sampling is used to select twenty (20) articles/publications on education/curriculum studies of the 980 articles displayed in Google Scholar on e-Learning or the digitalised curriculum (DC). The publications are examined by means of text analysis. A text analysis is a process of extensive analysing of text in order to understand the representation of a phenomenon. Publication (article) texts were analysed according to either the performance-based DC, the competence-based DC, or the pragmatic DC. This was achieved by reading and analysing the text of the selected 20 publications discussing the representations of DC used in higher education during the COVID-19 revolution. Text analysis allowed the researchers to gain information and understanding of the various DCs.

Inclusion and Exclusion Criteria

This study was a systematic review of literature which explored the representation of ideological-ware resources in DC experiences during the COVID-19 pandemic, within the context of HEIs. All publications selected and included in this study thus involved e-Learning experiences during the COVID-19 pandemic as part of the inclusion criteria. Publications reviewed in this study were all conducted from 2020-2022 which are years within the COVID-19 times. Publications that were published in the previous years were excluded from the review (exclusion criteria). Thus, the systematic literature review publications followed the NIF (professional, societal, personal, and natural identities).

Data Base and Time Frame

One search engine was used to retrieve publications included in the study. We used Google Scholar to retrieve open access journal publications that involved e-Learning experiences. Some 20 journal publications (articles) were purposefully and conveniently selected for the study. The Google Scholar search engine was screened between 15 March and 06 April 2022 to select articles relevant to the study. In identifying relevant literature for the study, key words such as *e-Learning; COVID-19; Curriculum; Ideological-ware* were applied in seeking available literature on Google Scholar.

Validity/ Trustworthiness

Four principles of trustworthiness were taken into consideration to ensure dependability (consistency through the use of direct quotations), transferability (applicability of the study to various contexts), confirmability (elimination of bias through triangulation), and credibility (truth value, including having authors of the analysed publications authenticate the findings). Through a guided method of data analysis, data on ideological-ware resources of DC were interrogated by the researchers to produce themes of the findings. The themes are presented in the next section on findings and discussions. Although these data sources were in the public domain, we communicated with authors of these publications to gain clarity on some of the points, and to address the issue of ethics. Because this study was a syste-

matic review, ethical approval was not required. However, all articles cited in this study were acknowledged in the bibliography.

Findings

Table 1: Publications that Produced the Findings

Author(s) (Year)	**Title of the study**	**Sample size**
Adams, D., K.M. Chua, B. Sumintono & A. Mohamed (2021)	Students' Readiness for E-Learning during the COVID-19 Pandemic in a South-East Asian University: A Rasch Analysis	298 under-graduates and 101 postgraduate students.
Ideological-ware Resource (theory)		
Performance-based The students' level of education determined that undergraduate students were mostly (65%) ready for e-Learning compared to postgraduate students (23%). The findings also showed that male students are more engaged in blended learning activities than female students. As for students' ethnicity, Indian students are more interested in online learning than any other ethnic group.		

Author(s) (Year)	**Title of the study**	**Sample size**
Akcil, U. & M. Bastas (2021)	Examination of University Students' Attitudes on E-Learning during the COVID-19 Pandemic	The sample consisted of 105 people who volunteered to participate in the university research.

	Process and the Relationship of Digital Citizenship. *Contemporary Educational Technology* 13,1: ep291.	However, the distribution of students according to gender is as follows: 24 males and 64 females.
Ideological-ware Resource (theory)		
<u>Performance-based</u> The obtained findings reveal that the e-Learning attitude of students is positive at medium level. Among the reasons may be the unpreparedness for the pandemic. Findings obtained from this study have displayed that students were not prepared for an online learning experience during this pandemic process. Students either feared that they would face too many difficulties while working online, or they believed that academics would not be able to help them sufficiently during the pandemic period.		

Author(s) (Year)	**Title of the study**	**Sample size**
Ananga, P. (2021)	Pedagogical Considerations of E-Learning in Education for Development in the Face of COVID-19. *International Journal of Technology in Education and Science* (IJTES) 4,4: 310 - 321.	This was a literature review study on the concept of pedagogy, the concept of e-learning, and the theories of learning.
Ideological-ware Resource (theory)		

Pragmatic

The findings revealed that pedagogy entails activities that induce changes in the learner. It is also noted that various definitions of the term are given by different authors. The focus is on the learner who is at the centre of the instructional process, while the teacher serves as the director of learning. The selection of pedagogy targets subject matter, needs of learners, learning theories, objectives, instructional methods, the interaction between teacher and students, and students and assessment. Pedagogy therefore is not limited to the method of teaching, as most people assume. Pedagogy moves further to all the activities and resources that enhance learning and ensures that learning takes place.

Author(s) (Year)	**Title of the study**	**Sample size**
Egielewa, P., P.O. Idogho, F.O. Iya-lomhe & G.T. Cirella (2022)	COVID-19 and Digitized Education: Analysis of Online Learning in Nigerian Higher Education. *E-Learning and Digital Media* 19,1: 19 – 35.	The study used a sample size of 1134 Nigerian students in the three types of higher institutions in Nigeria: universities, polytechnics, and colleges of higher education, based on student state residential location.
Ideological-ware Resource (theory)		

Performance-based

The study found that students are not satisfied with virtual learning embarked upon by many higher institutions throughout the country during the COVID-19 lockdown. Students do not want the online learning to continue after the pandemic due to poor internet infrastructure and lack of electricity. Findings also indicated that many online lectures were overly text-based rather than audio-visual, hence 1

in every 10 students did not partake in any form of online lectures during the pandemic.

Author(s) (Year)	**Title of the study**	**Sample size**
Ho, N.T.T., S. Sivapalan, H.H. Pham, L.T.N. Nguyen & H.V. Dinh (2020)	Students' Adoption of E-Learning in Emergency Situation: The Case of a Vietnamese University during COVID-19. *Interactive Technology and Smart Education* 2020: covidwho-967080.	The final survey was sent to 856 undergraduate students across four campuses located in Hanoi, Can Tho, Ho Chi Minh, and Danang
Ideological-ware Resource (theory)		
<u>Performance-based</u> Findings demonstrate that the interaction between lecturers and students, and among students themselves is important during the period of e-learning. Students can seek help from their lecturers and/or classmates whenever they have difficulties in e-Learning. The study further highlighted that difficulty with ICT equipment might be a factor that has an impact on attitudes of students towards using technologies in e-Learning.		

Author(s) (Year)	**Title of the study**	**Sample size**
Mohammed, A., V. Khan, K.N. Mohammed, K. Maysoon & T. Muhammad (2020)	Students' Perception of E-Learning during the COVID-19 Pandemic in India: An Empirical Study. *MDPI* 13,1.	A sample was studied of 184 university students of National Capital Territory (NCT) in Delhi, India; namely, Delhi University, Jamia

		Millia Islamia (Central University), and Guru Gobind Singh Indraprastha University.
Ideological-ware Resource (theory)		
<u>Performance-based</u> The findings of the study reveal students' positive perception towards e-Learning and thus acceptance of this new learning system. Findings have also empirically demonstrated the significance of e-Learning during the time of the COVID-19 crisis. In fact, E-Learning has emerged as a new way of enhancing the learning process, in which social media may further improve the learning output.		

Author(s) (Year)	**Title of the study**	**Sample size**
Lin, Y. & H. Nguyen (2021)	International Students' Perspectives on E-Learning in Higher Education during the COVID-19 Pandemic.	The participant in this study was the researcher (Author 1), an international learner in an Australian university.
Ideological-ware Resource (theory)		
<u>Pragmatic</u> The findings show that, while the participant could engage with the curriculum to some extent, there were signs of disconnection, isolation, and emotional instability associated with the establishment and development of the e-Learning environment.		
Author(s) (Year)	**Title of the study**	**Sample size**

Maatuk, A.M., E.K. Elberkawi, S. Shadi Aljawarneh, H. Rashaideh & Alharbi (2022)	The COVID-19 Pandemic and E-Learning: Challenges and Opportunities from the Perspective of Students and Instructors. *Journal of Computing in Higher Education* 34: 21–38.	The sample included 20 teaching staff and 135 undergraduate students from all departments in the IT Faculty at the University of Benghazi.
Ideological-ware Resource (theory)		
Performance-based The students claim that the introduction of e-Learning is difficult; and that the low-quality of internet services is the largest obstacle to its application. The students demonstrate that there are limitations to e-Learning and that the greatest downside is that it decreases the workload for teaching staff and raises the pressure on students. The teaching staff agree that there are barriers to the introduction of e-Learning and that the high cost of its implementation is one of the main difficulties.		

Author(s) (Year)	**Title of the study**	**Sample size**
Maulana, I.T., F. Firdian, S.R. Ningsih, K. Suryani & R.A. Putri (2021)	E-Learning Effective during the COVID-19 Era. *Elementary Education Online* 20,2: 179 – 188.	The sample consists of 54 students from 2 groups of teachers in Indonesia.
Ideological-ware Resource (theory)		
Competence-based The findings demonstrate that the learning media developed for online learning during the COVID-19 pandemic based on student learning		

outcomes, is very effective. E-Learning media developed was proven to improve student learning outcomes, as evidenced by 51 (94.44%) students passing the minimum criteria set in the semester learning plan.

Author(s) (Year)	**Title of the study**	**Sample size**
Muangee, C., S. Kot, N. Meekae-wkunchorn & N. kassakom (2021)	Students' Use Behaviour towards E-Learning Tools during the COVID-19 Pandemic: Case Study of Higher Educational Institutions of Thailand. *International Journal of Evaluation and Research in Education (IJERE)* 10,4: 1166 - 1175.	This study was conducted with 1493 participants at higher educational institutions of Thailand.
Ideological-ware Resource (theory)		
Performance-based The study examined the case through the lens of the unified theory of acceptance and use of technology 2 (UTAUT2). The findings suggest that the performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, learning value, and social distancing of the students measured the behavioural intention and actual use of students' adoption of e-Learning tools.		

Author(s) (Year)	**Title of the study**	**Sample size**
Osei, H.V., K.O. Kwateng & K.A. Boateng (2022)	Integration of Personality Traits, Motivation and	The study consisted of 1306 tertiary education students

	UTAUT 2 to Uunderstand E-Learning Adoption in the Era of the COVID-19 Pandemic. *Education and Information Technologies* 1 - 26.	(undergraduate students) of various tertiary institutions in Ghana. Of these, 1024 responses were used for the analysis.
Ideological-ware Resource (theory)		
Performance-based The findings of the study are that the UTAUT2 model is a useful technology acceptance framework for understanding students' acceptance of e-Learning. Students' perceptions regarding PE and EE varied depending on their individual personality traits. Personality traits were also found to significantly affect behavioural intention to adopt e-Learning systems. The findings from the study also revealed that habit significantly relates to PA, PC, and PR, in determining the dimensions of motivation to use e-Learning systems among tertiary education students.		

Author(s) (Year)	**Title of the study**	**Sample size**
Pustika, R. (2020)	Future English Teachers' Perspectives on the Implementation of E-Learning in the Covid-19 Pandemic Era. *Journal of English Language Teaching and Linguistics* 5,3: 383 - 391.	60 English education study programme students. This research was conducted in Lampung, Indonesia.

Ideological-ware Resource (theory)
Competence-based The findings of this study are that teachers were aware that for them to respond to the first open question, defining the outcome is important. This would make the teaching and learning process meaningful. Teachers believed that the learning process should be useful as well as meaningful to their students, even when the learning process is held virtually. The second question was related to classroom preparation. The respondents to this research agreed that the syllabus should be well constructed, and the teaching media should be well chosen. On the implementation of e-Learning, teachers argued that English teachers in this virtual era should be creative, thus eliminating boredom in their students.

Author(s) (Year)	**Title of the study**	**Sample size**
Radha, R., K. Mahalakshmi, V.S. Kumar & A.R. Saravana-kumar (2020)	E-Learning during Lockdown of the COVID-19 Pandemic: A Global Perspective. *International Journal of Control and Automation* 13,4: 1088 - 1099.	Stratified sampling method has been adopted in this study on 175 students across the world.
Ideological-ware Resource (theory)		
Competence-based The findings revealed the contribution of e-Learning resources or facilities for the students' performance. The study found that views of students on e-Learning are generally positive. There is also a great interest and increasing acceptance of these e-Learning programmes for academic use. However, many students do not want to adopt e-Learning. They prefer face-to-face learning or traditional learning.		

Author(s) (Year)	**Title of the study**	**Sample size**
Sakkir, G., S. Dollah & J. Ahmad (2020)	Favorite E-Learning Media in Pandemic COVID-19 Era. *Jurnal Studi Guru Dan Pembelajaran* 3,3: 480 - 485	20 undergraduate students from the English Education Department of the 2019/ 2020 academic year (Universitas Muhammadiyah Sidenreng Rappang, Indonesia)
Ideological-ware Resource (theory)		
Competence-based The results show that students still prefer to study on campus directly, rather than learning from home with various modern e-Learning media. The results show that the lecturers are competent with some of the technologies. However, students have a positive perception of learning English based on e-Learning media during the Covid-19 pandemic.		

Author(s) (Year)	**Title of the study**	**Sample size**
Saleem, M., S. Kamarudin, H.M. Shoaib & A. Nasar (2021)	Influence of Augmented Reality App on Intention towards E-Learning amidst COVID-19 Pandemic. *Interactive Learning Environments* 1 - 15.	133 Public sector university students in Pakistan
Ideological-ware Resource (theory)		

Performance-based The study findings indicated that university students' attitudes and perceived behavioural control influence intention towards e-Learning via the augmented reality app. However, subjective norms showed a non-significant influence on students' intention towards e-Learning. The adoption of augmented reality apps in e-Learning should be viewed from a rational perspective. The unique feature of augmented reality interactive technology is virtual objects' appearance in the physical world, which influences users' physiology in understanding.

Author(s) (Year)	**Title of the study**	**Sample size**
Mohd Satar, N.S., A.H. Morshidi & O. Dastane (2020)	Success Factors for E-Learning Satisfaction during COVID-19 Pandemic Lockdown. *Inernational Journal of Advanced Trends in Computer Science and Engineering.*	470 students from Malaysian universities comprised the study sample.
Ideological-ware Resource (theory)		
Competence-based All three selected factors demonstrated a significant impact on e-Learning satisfaction. ITCX has the most dominant positive significance impact, followed by ITPN. ITPC has demonstrated a significant but negative impact on e-Learning satisfaction. The findings suggest the importance of monitoring ITPC in order to reduce its negative impact on e-Learning satisfaction. Higher education institutions and online learning platform providers can focus on enhancing user perception of usability, ease of use, and behavioural control aspects.		

Author(s) (Year)	**Title of the study**	**Sample size**

Saxena, C., H. Baber & P. Kumar (2021)	Examining the Moderating Effect of Perceived Benefits of Maintaining Social Distance on E-Learning Quality during the COVID-19 Pandemic. *Journal of Educational Technology Systems* 49,4:532 - 554.	435 undergraduate and graduate students of management at a university in India.

Ideological-ware Resource (theory)

Performance-based

Most of the institutes, including schools and higher education, have shifted towards online learning. Online learning is the best alternative available for continuing education. However, affordability, that is, ability to purchase electronic gadgets such as laptops, mobile, and to pay for data, inter alia, and availability of features such as internet connection and requisite infrastructure, is a matter of discussion among educators and policymakers. The shift towards online education having been sudden and somewhat forced, the quality of learning must be maintained and not compromised.

Author(s) (Year)	**Title of the study**	**Sample size**
Shahzad, A., R. Hassan, A.Y. Aremu, A. Hussain & R.N. Lodhi (2021)	Effects of COVID-19 on E-Learning in Higher Education Institution Students: The Group Comparison between Male and Female. *Quality & Quantity* 55,3: 805 - 826.	280 students, of which 212 are undergraduates (75.7%), and 68 post-graduates at a Malaysian university.

Ideological-ware Resource (theory)
Performance-based In the female students' model, both e-service quality and information quality are supported by system use and user satisfaction. Similarly, system quality has a positive relationship with user satisfaction; and user satisfaction has a positive relationship with e-Learning portals. On the other hand, in male students, four (4) variables are significant. More precisely, information quality and system quality have a direct relationship with user satisfaction.

Author(s) (Year)	**Title of the study**	**Sample size**
Singh, M., S.O. Adebayo, M. Saini & J. Singh (2021)	Indian Government E-Learning Initiatives in Response to the COVID-19 Crisis: A Case Study on Online Learning in the Indian Higher Education System. *Education and Information Technologies* 26, 6: 7569 -7607.	A total of 403 responses was collected from students; 49 responses came from teachers and 354 from students.
Ideological-ware Resource (theory)		
Performance-based Online learning has become a vital part of education, especially as resulting from the Coronavirus outbreak. With such a vast education system in the country, it is obviously challenging for online learning methods to meet the requirements of the education sector. The present study is exploring various online learning and education initiatives taken by the Indian government during the COVID-19 pandemic. The outcomes are satisfactory − most of the respondents favour online		

learning. Students find these initiatives an appreciable step towards maintaining the continuity of their studies during the era of COVID-19. Although a wide range of users took online learning as a vital and necessary asset for education, they do not prefer it as a future replacement of offline classes for certain reasons, including limitations and other issues.

Author(s) (Year)	**Title of the study**	**Sample size**
Turnbull, D., R. Chugh & J. Luck (2021)	Transitioning to E-Learning during the COVID-19 Pandemic: How have Higher Education Institutions Responded to the Challenge? *Education and Information Technologies 26*,5: 6401 - 6419.	The databases used in this review were sourced from the following search engines: EBSCO (35 databases), Gale (28 databases), Informit (33 databases), and Proquest (40 databases). Only English language peer- reviewed journal articles based on the COVID-19 pandemic-related issues were included.
Ideological-ware Resource (theory)		
<u>Pragmatic</u> Moodle was the main platform for conducting asynchronous learning activities in studies that examined the use of online tools in specific courses and programmes. However, Moodle was never used by itself as the only weapon in the teacher's online arsenal. Moodle was often supplemented with video-conferencing tools such as Zoom in the studying		

of online pedagogy courses. During the pandemic period under review, Facebook was the most popular SMS exploited in the transition to online learning.

The data in Table 1 generated findings used to evaluate the principles of the NIF. These principles became the themes for the study. Three themes in this study present the findings. The themes are performance-based for 'what' professional identity, competence-based for 'how' societal identity, and pragmatic for 'who' personal identity. Findings from the publications are presented and recontextualised within relevant literature on each theme.

Performance-based for 'What' Professional Identity

Twelve of the twenty sampled publications (1, 2, 4, 5, 6, 8, 10, 11, 15, 17, 18, & 19) on the ideological-ware resources/ theories of DC/ e-Learning report that the 2020/ 2021 academic calendar was saved through the performance-based DC that promoted equality. HEIs taught and supported students, providing them with equal one-size-fits-all technological support. The assumption was that when students are taught by the same teachers using the same resources and same content, they produce the same high performance. However, the findings from these publications suggest that the equality system came with many challenges. Some of the challenges involved assorted levels of computer literacy amongst undergraduate and postgraduate students (Adams *et al.* 2022), poor internet infrastructure with lack of electricity (Egielewa *et al*. 2022), and students' fear of the unknown, such as having to use a DC (Akcil & Bastas 2020). Students were not sure that the support from academics would be sufficient for them to pass their courses, especially when some have electricity or computer challenges.

What seemed to be the strengths of performance-based DC were the use of ideological-ware resources such as the Unified Theory of Acceptance and Use of Technology (UTAUT) (Muangmee *et al*. 2021), Technological Pedagogical Content Knowledge (TPACK), and others that developed positive perceptions of staff and students (Osei *et al*. 2022). The responses from HEIs that used specific DC theories indicated that theories were able to help students with quality information. Such developed positive attitudes in students, especially undergraduate students (Shahzad *et al*. 2021). Through their principles, theories are able to address the 'what' questions of a

performance-based DC, such as on content, objectives, resources, assessment and others. However, even after the application of the theories, students did not achieve the same performance. Therefore, the factor has not yet been established which most enables students to achieve the same high performance within both the performance-based (professional identity) and competence-based (societal identity) DC.

Competence-based for 'How' Societal Identity

Findings from the five of the twenty publications as shown in Table 1 (9, 12, 13, 14, & 16) revealed that the LMSss used by HEI DCs during the COVID-19 revolution enhanced achievement of learning outcomes (Maulana *et al*. 2021; Pustika 2020). Learning outcomes were achieved through equitable forms of social media sites (SMSs) in which students informally helped one another. SMSs were introduced to promote equity in that students challenged by LMSs, could use them, and even invite their friends to learn with them despite friends not being part of their courses or HEIs. Although students enjoyed e-Learning, they prefer to be on campus for face-to-face interaction with their friends (Radha *et al*. 2020). Positive perceptions of students were developed by their satisfaction, through acceptance of what they were able to use in terms of developing working groups of friends (Mohd Satar *et al*. 2020). Some working groups were established through various forms of LMS, such as Moodle and others. When students worked in groups with others they were able to imitate their fellow students; and they observed how learning outcomes were achieved. Working groups help students to address the 'how' questions of their learning (Mabuza & Khoza 2021). However, even though staff and students became aware of having achieved the learning outcomes, the students were unable simultaneously to achieve the learning outcomes at all levels as well as to understand their personal identities that drive personal justice. Personal justice combines the strengths of the performance-based and competence-based DC (Mpungose & Khoza 2022).

Pragmatic for 'Who' Personal Identity

The findings of three of the twenty publications (3, 7, & 20) indicate that COVID-19 caught HEIs off guard. HEIs were unable to create spaces for

staff and students to self-reflect and critique their experiences in order to improve their actions; there was no time for this. However, LMSs such as Moodle, Blackboard, and others were used because these LMSs do allow spaces for reflection by students (Turnbull *et al*. 2021). The findings further show that, while the students could engage with the curriculum to some extent, there were signs of disconnection, isolation, and emotional instability associated with the establishment and development of the e-learning environment requiring self-reflection (Lin & Nguyen 2021). Self-reflection and critique help academics and students to understand pedagogies. The selection of pedagogy targets subject matter, needs of learners, learning theories, aims, instructional methods, the interaction between academics and students, and between students and assessment (Ananga 2020). This suggests the importance of personal justice which is capable of interrogating underlying course content (actions), outcomes (consequences), and ideological-ware resources (theories) in establishing actions that are closer to objective reality (Morgan 2014; Prakash *et al*. 2021). Objective realities (natural identities) are actions that can assist humans to produce identical performance or outcomes, as intended. To date, none of the ideological-ware resources is capable of revealing objective realities of educational action (Fields *et al*. 2018; Khoza 2021a).

Discussions

The findings confirm that most higher education institutions (HEIs) were able to complete the 2020/2021 academic year/calendar through use of the digitalised curriculum (DC) or e-Learning. The DC was underpinned by ideological-ware resources (theories) of the performance-based and/or competence-based digitalised curriculum (DC). Ideological-ware resources for a performance-based curriculum are driven by the notion of professional identities. Prescribed course content produces clear instructions to be used in mastering the course content. This is in order to change student behaviour (behaviourism) and for students to pass the course (Sokhulu 2021). In this identity, it is believed that, when students follow the prescribed content and instructions, they can all pass their courses with high achievement or marks because they are given equal support (equality). During the COVID-19 revolution, most HEIs used various forms of learning management systems (LMSs); such systems presented prescribed content, activities and resources

to be used by staff and students to save the 2020/2021 academic year (Makumane 2021b; Mashinini 2020; Turnbull *et al*. 2021).

However, the promotion of equality for students of various unique backgrounds and needs, was a cause of concern. This was especially so in developing countries where the majority of students come from historically disadvantaged or under-resourced areas. For example, the University of KwaZulu-Natal (UKZN) in South Africa registers over 78% of their students from under-resourced areas (Khoza 2021b). Although the UKZN supported their students with data bundles from communication companies (MTN, Vodacom, Cell C, and Telkom), the students were affected by other home challenges such as lack of computers, water, electricity power load-shedding, overcrowded families, and others. The National University of Lesotho (NUL) in Lesotho had similar experiences in which students had to pay rent for houses close to the NUL in order to work closer to the NUL fence; thus to connect to the NUL WiFi (Makafane & Chere-Masopha 2021; Mashinini 2020). HEIs had to allow various forms of social media site (SMS) as part of supporting their students (Turnbull *et al*. 2021).

SMSs are mostly driven by competence-based curriculum ideological-ware resources (theories). Here staff and students create their own social groups to be used in the achievement of course learning outcomes (Makafane & Chere-Masopha 2021; Mpungose & Khoza 2021). It is believed that SMSs provide an equitable space that accommodates students who may have challenges with HEI LMSs. Competence-based curriculum ideological-ware resources produce societal identity. Students use everyday knowledge to construct what they use in the achievement of learning outcomes (Hoadley 2018; Khoza & Biyela 2020). The main belief in this societal identity is that students do well if they are allowed to work in groups in order to share their societal values as part of their learning. However, if students create or enter groups who struggle to construct knowledge allowing achievement of course learning outcomes, the students may fail their courses. Therefore, although the findings reveal that HEIs saved their academic year through professional and societal identity, there was no clear evidence or guarantee that students were able to find and understand their individual/ personal identities, other than passing their qualifications and understanding people around them.

Awareness of personal identity (justice) is a permanent resource for human joy (Chopra 2015). Humans reflect and critique their experiences in

order to make informed decisions on their future actions. Human actions are generated from experiences and stored in the mind; such consists of the unconscious (body system that controls all body functions), the subconscious (permanent memory that stores every experience since conception), and the conscious (reasoning, thinking and intellectual process) (Khoza 2021b; Prakash *et al*. 2021). In other words, stored actions help staff and students to write their life stories (narratives).

Students join HEIs with their life stories and perform well when they are given the opportunity to reflect on and critique what they have learnt based on their life narratives. Although the life stories or narratives are useful for human survival, they may not represent objective reality; they may represent user interface (Fields *et al*. 2018). Even during the COVID-19 revolution, the university continued to promote the importance of user interface for human survival. For example, most HEIs used Zoom Conferencing Technology (ZCT) for educating and meetings, without necessarily understanding its programming codes or the owner (Eric Yuan) of the software. HEIs were able to use the ZCT because they reflected on their stories of using other forms of software and other life activities as their useful user interface. According to Prakash *et al*. (2021), this suggests that staff and students were able subconsciously to apply the user interface, thus controlling the objective reality. In other words, the staff and students believed in what they did not know for their survival (ZCT created by Eric Yuan) and used what they knew to create user interfaces to be used by others for survival.

This further suggests that reflective and critiquing spaces should be created in any higher education platform such as LMS, SMS, and others, in order to allow students to base their learning on their life narratives (personal identities). When students base their learning on their life narratives, learning become their second nature, students using such to naturally learn their courses (natural identity). In turn, after repeated reflection and critique, students become aware that their life narratives are simply user interfaces for learning even if they do not represent the objective reality of what they learn. Only those whose life narratives (used as user interface) are closer to the objective reality of what they learn will do well in mastering the content of their courses, achieving high marks. A natural identity is driven by re-reflection and re-critique processes indicating that students are aware of their personal (justice) and natural (objective reality) identities. Their identities

are the main ingredients of learning in the Fourth or Fifth Industrial Revolutions (4/5IRs) demanded by the COVID-19 (Khoza 2021a; Schwab 2016).

Conclusion and Implications

The COVID-19 pandemic seems to have extended the 4IR to the 5IR. Unlike COVID-19 or 5IR, the 4IR came with artificial intelligence, the Internet of Things, robotic technology, and more, for those who needed it. The COVID-19/5IR compelled most HEIs to move about five or ten years ahead of global digitalisation. In other words, a full implementation of a digitalised curriculum (DC) by almost all HEIs worldwide was not expected in the years 2020 or 2021. However, reflection or re-reflection on, and critique or re-critique of one's experiences allow one to understand one's personal and natural identities. These identities are still based on the user interface of which staff and students are aware. Therefore, professional (performance-based curriculum − equality) and societal (competence-based curriculum − equity) identities as the HEI user interface should be based on staff and students' personal (justice) and natural (objective reality) identities, in order to improve the HEI throughput rate.

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