RESEARCH ARTICLE:

Curriculum Theorising in the Era of the Fourth Industrial Revolution

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Abstract

Curriculum theorising is a crucial part of curriculum studies in general and the curriculum discourse in particular. This is why theorising is vital in the articulation of solutions to curriculum problems or challenges. In this era of the Fourth industrial revolution where technology is changing the processes of learning, what it means to learn and how best to learn, the solutions of yesteryears would not solve the educational challenges of today, creating the need for further theorisation. What should curriculum theorisers be responding to in this era, how should they be responding to it and what solutions should they proffer to the new challenges being created by the fourth industrial revolution. This paper seeks to explore these issues and theorise possible pathways or starting points from which curriculum theorisers can begin the theorising of curriculum in this era of the fourth industrial revolution.

Keywords: Fourth industrial revolution; curriculum theorising; ChatGPT; artificial intelligence; technological innovations

Introduction

The Fourth Industrial Revolution (4IR) is here and all facets of the society including education is responding to it in different ways. Different nations have come up with policies or strategies detailing how the education system should respond. Nations like Zimbabwe, Germany, Japan, just to name a few all have different concept notes on the direction for education and particularly higher education in this era of the 4IR. Alaloul *et al.* (2020) argue that the fourth industrial revolution centres around digitalisation where everything is interconnected. The internet of things (which has become part of the revolution) in this instance has not only ensured the interconnectivity of things but also the connectivity of man and technology. This digital revolution has created new domains by blurring the lines between the physical, digital and biological entities. The blurring of these lines makes it more complicated particularly for those in the academia since these lines are vital in educational dynamics such as in areas of research, teaching and learning, and community connectivity. Peters (2019) argues that the 4IR is based on 'cyber-physical systems' which brings with it velocity, scope and system impact. This innovative revolution is resulting in the proliferation of historical precedents connecting billions of people through mobile devices that have unprecedented processing power, storage, and unlimited access to knowledge.

This is further magnified by technological breakthroughs in artificial intelligence, robotics, internet of things, autonomous vehicles, 3-D printing, nanotechnology, biotechnology, materials science, energy storage and quantum computing. How these advancements brought about by the 4IR affect curriculum (understood here as all learning experiences students go through in the course of schooling) as a whole and the practice of the same is what curriculum theorisers are yet to fully explore. The spectrum is too wide and the fact that the rest of the society are playing catch up to these advancements makes it even more complicated for those in the academic community who often are very far from these advancements. This paper seeks to explore certain pathways and constructs which seem vital for education in general and curriculum theorising in particular in this era of the 4IR. These pathways have been developed

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from the exploration of literature around the 4IR and curriculum. This paper will therefore explore the following constructs: power relations amongst colleague, knowledge legitimacy and legitimation and learning pathways in the bit to theorise curriculum as pertains to the understanding of 4IR presented in this paper. However, it is worthy of note that focus of this paper is not to explore the theories around these constructs but to explore them as pathways and experiences in the higher education sector affecting curriculum and its experience in this era of the 4IR.

Power Relations amongst Colleagues

Since academics are supposed to be at the centre of knowledge construction and the facilitation of educational experiences, it is vital to explore the power relations amongst them vis-à-vis the current era and how that affects education in general and curriculum in particular. Fomunyam and Teferra (2017) argue that education is inherently political in nature and as result of this, there are power dynamics at play. Most often than not, these dynamics are never equal, making it a complex sphere to operate in. Those with power, (although this power is relative, depending on the institution you find yourself and the overall political orientation of the university) determine directly or indirectly what constitute the curriculum, and by and large how it is experience. This power dynamics is made even more complex by the technological advancements being ushered in by the fourth industrial revolution. As a result of this, two types of power seem to be clashing. On the one hand there is the old academic order, backed by institutional architecture and on the other hand there is 'knowledge' (knowledge of the workings of this revolution and its results is becoming real power or currency which in this case I would refer to as technological power or ware). The academic order in this case is fighting to maintain the statuesque or at least a semblance of the statuesque while those with technological power or ware are fighting for a makeover of the educational sphere.

In South Africa, this has constituted part of the cries for decolonisation. Fomunyam (2019) argues that the advent of the Fourth industrial revolution is drastically changing the higher education landscape in particular and education in general and there are many challenges and opportunities. While those with technological ware are looking for ways to seize the moment for transformation and change, some of the academic orders are dealing with or taking the challenges as capital reasons why the desired change cannot happen. This is primarily important because this revolution is changing teaching and learning, research and engagement in ways that most are yet to imagine. The emergence of artificial intelligence products like ChatGPT and Barn has completely changed the way assessment can be understood and enacted. The ability of these two software to write essays on any topic, answer questions, form opinions etc is a signal that changes are required and the inability of most in the academic order to catch up with these advancements, is creating not only a soft power tussle but also alternative dynamics were the one acts like none of these tools exist and the other acts like these innovations are everything. However, these two are the extremes and there are other opinions in-between. The fundamental issue here is that curriculum theorisers are yet to explore these alternative positions and how they are shaping the curriculum discourse. As such part of the mandate of this paper becomes a call for action for all curriculum theorisers to engage these issues changing the curriculum landscape in unprecedented ways.

Fomunyam (2019: 271) argues that "education is central to any society and its effectiveness is reflected in a society's strengths and weaknesses both domestically and abroad…, education is fundamental and is conditioned by a wide range of interrelated elements". It cannot be denied that the world and its marketplace is changing, and graduates must change with it if they are to find employment upon graduation. Without a change in the educational system there wouldn't be a change in the product. Lo (2023: 1) explains that "Artificial intelligence (AI) has developed rapidly in recent years, leading to various applications in different disciplines. AI systems can be trained to simulate the human brain and carry out routine work using large amounts of data. AI applications have also been utilised in education to enhance administrative services and academic support". Such enhancements make work easier for those with technological ware while the academic order who are left behind and this further aggravates the tussle. It would be irresponsible for curriculum theorisers to ignore such innovations in curriculum design vis a vis the tussle between the two stratospheres in the academia. Lo (2023: 1) continues that "one representative example is intelligent tutoring systems (ITS), which can be used to simulate one-to-one personal tutoring. The results of a meta-analysis indicated that ITS generally had a moderately positive effect on the academic achievement of college students. However, the development of ITS can be challenging, as it involves not only content creation and design but also the refinement of

feedback phrasing and dialogue strategies''. These innovations are primarily in the face of the users that is; both students and lecturers and while the one part is ready to engage with it, the other is very much unwilling. Baidoo-Anu and Ansah (2023) posit that despite these amazing potentials, and the nearly undeniable fact that these innovations have come to stay many academics have called for their ban in academic settings and some have started developing software to detect the use of some of these innovations by students in their academic task or by staff in research work. These tensions exist and must be theorised to articulate pathways for the curriculum. While these tussles persist alongside the innovations, this paper posits that both sides are useful in curriculum decision making since the lecturer also experiences the curriculum during the knowledge facilitation/ construction process and since the academic is supposed to be engaged in lifelong learning, ignoring these experiences in the curriculum theorising process would be a capital crime.

Lo (2023: 1-2) contends that "ChatGPT, a recently developed conversational chatbot created by OpenAI, may make it easier for instructors to apply AI in teaching and learning…It has gained attention worldwide for its impressive performance in generating coherent, systematic, and informative responses. In a surprising achievement, ChatGPT passed four separate examinations at the University of Minnesota Law School. Although its scores were not (yet) very good, the results demonstrate that this AI application is capable of earning a university degree''. The ability of this AI to pass university exams having been in existence for less than a year point to its criticality and the role it will play directly or indirectly in education. Educationist must therefore move with the times and start working out ways in which such innovations can advance the course of education because it is bound to play a part. The challenging position here however is that although ChatGPT has over I00 million users worldwide and have had over 10 billion all time visits to its website, 64.53 percent of these users are between the ages of 18 to 34, while a further 17.65 percent is between 35 to 44. As such over 82 percent of users are less than 45 years old (Shewale 2023). Since a majority of those who make up the 'academic order' are often older in age, for to amass or gather such power within the university system one needs experience which comes with age and perhaps academic rigour, there is no sign that this tussle will end anytime soon.

Sallam (2023) adding to this, argues that despite its amazing capabilities and success, ChatGPT has created a myriad of challenges and threats to education. While the 'academic order' see these challenges as a reason to keep such AI at arm's length, the technological ware or power see it as opportunities for further innovation and refinement making the tussle an unending one. Lo (2023: 2) add that "with its ability to provide specific answers to user questions, it can be used to complete written assignments and examinations on behalf of students, leading to concerns about AI-assisted cheating''. As a result of these some institutions have considered an outright ban (Dibble 2023) of the software on campus. Mhlanga (2023) in his review article argue that academics had concerns about the use of ChatGPT on campus and expressed worries that students may outsource their work to ChatGPT because of its ability to rapidly generate acceptable answers. The fourth industrial revolution does bring with it amazing innovations but the application of these innovations in the academia is far from smooth. Oke and Fernandes (2020) believe that there is a great need for changes in teaching and learning, if graduates are to fit in the new economy being created by the revolution. However, if those in the academia cannot make these innovations work for the improvement of the academic experience, then there is bound to be failure and sooner or later this would be seen in the quality of graduates vis-à-vis the job market. Curriculum theorisers have the responsibility of engaging the subject (curriculum) and find pathways for the inclusion of these innovations in the curriculum as well as the tussle that exist while taking into consideration the future direction of the society. The existence of these innovations cannot be denied, studying them be it to know or understand why it cannot be used or why it should be used, should be an integral part of the academic work and particularly, the work of the theoriser as the forerunner in all things curriculum.

Knowledge Legitimacy and Legitimation

One of the fundamental questions for curriculum scholars around knowledge has always been about its legitimacy and whose knowledge it is. This question has further been complicated by generative pre-trained transformers (GPT) software which use large language models to generate humanlike responses. Some examples included scribe AI, Scispace Copilot, compose AI, Wiseone, Engage AI, Voila AI, Godmode, Tome.app, Chatbase, Fireflies AI, and Perplexity.ai. The number of these AI tools are growing by the day and as they do, they raise questions about the

legitimacy of knowledge construction and the processes of legitimation. Mhlanga (2023) and Sallam (2023) agreeing with these concerns call for the ethical and responsible use of these AI products to ensure their benefits are optimised while its drawbacks are minimised. While these sound like a good plan, what constitutes ethical and responsible are questions yet to be answered. How should curriculum guide the knowledge construction process and how should this knowledge be tested (the process of legitimation) and what should constitute legitimate knowledge are questions theorisers must engage in these times. Rafsanjani and Nabizadeh (2023) argue that artificial intelligence is playing a vital role in automation, and properly connects the physical and digital worlds in a variety of domains in science, technology, and engineering. This automation which is also encroaching into the higher education landscape including the creative arts are raising questions about the legitimacy of the knowledge supposedly constructed by students and secondly the processes of legitimation. How do we assess what is being taught especially since assessment is an integral part of the teaching and learning? These AI which generates instant answers can be used in class during continuous assessment as well as for other assessments task be it inside or outside the classroom. How then do we answer the question of legitimacy and how would we know if students are the true participants in the knowledge construction process and if they are building or developing the right capital. These are urgent questions which theorisers must engage to provide direction for the discipline of curriculum a whole.

Rudolph, Tan and Tan (2023) posit that AI applications provide unique and exceptional potential for improving student support activities and the scaffolding of student learning in ways that can be uniquely personal for the student and yet help them acclimatise with the experiences of other students. Furthermore, intelligent tutoring systems (ITS) offer opportunities for the transformation of education as they make for personal instruction. These AI technologies possess capabilities that empower them to record and interpret the characteristics of students and their state of mind in real-time, resulting in personalised adaptive learning. These adaptive technologies are proving vital and effective and at the same time challenging because the student get provided all the answers and fails to fully participate in the knowledge construction process. Popenici and Kerr (2017: 11-12) add that "the rise of AI makes it impossible to ignore a serious debate about its future role in teaching and learning in higher education and what type of choices universities will make with regards to this issue. The fast pace of technology innovation…, implies that teaching in higher education requires a reconsideration of teachers' role and pedagogies. The rise of techlords and the quasi-monopoly of few tech giants also come with questions regarding the importance of privacy and the possibility of a dystopian future. These issues deserve a special attention as universities should include this set of risks when thinking about a sustainable future". These issues raised by Popenici and Kerr are yet to be engaged by curriculum theorisers which explains the confusion and questions about knowledge legitimation and legitimacy. Rather than ignore these innovations because of the challenges they pose, curriculum theorisers must start theorising about them as they might relate to all aspects of education and the place or value, they can offer in the process of curriculum delivery and how legitimate knowledge can be constructed.

There is need for adaptation on the path of higher education practitioners in the face of these new developments, but curriculum theorising must articulate pathways for this adaptation. Supporting this, McMurtrie (2023: 1) opines that "one of the earliest and most prevalent concerns about using ChatGPT has been that it threatens the essay as an assessment method. For a start, some instructors are worried that students will outsource their written assignments to ChatGPT as it can generate passable prose in seconds without triggering any plagiarism detector. Such concerns, however, may arise from the resistance of instructors to adapt to the change in assessment methods since written assignments are often criticised for being dull and ineffective in assessing students' learning. The need for adaptation is obvious, the call for adaptation is loud and clear but pathways for adaptation are not very clear especially in Africa where classrooms are often overcrowded, and written assessments or assignments seen as the most obvious assessment tool since it would be nearly impossible to conduct oral assessment based on the number of students. Rudolph, Tan and Tan (2023: 353) adding to this argue that "in general, when disruptive education technologies enter the classroom, the practice of teaching and learning is often subject to a few challenges. Education practitioners and policymakers are always responsible for managing the situation. When these challenges are not addressed, inadequate pedagogical practices may be exposed.... In this regard, it is imperative for teachers to transform challenges into opportunities and adapt to changes as they arise". Lecturers must therefore investigate the realities created by AI and how to tap into them for a more effective teaching and learning experience. How can GPT software be incorporated into the teaching and learning experience? What new approaches can we use to assess students for better

effectiveness? Knowledge legitimacy and the processes of legitimation which would make for new practices in education and produce graduates who can fit into the new marketplace being created by these technologies. Oral or class presentations, multimedia assessment task, standardised testing, peer evaluation, self-evaluation and customised assessment practices appear to be approaches which might be considered by lecturers as they strive to deal with the tussle between the 'academic order' and the technological ware or power. New understandings about what it means to know and the processes of knowing also need to be reconsidered. Furthermore, the ways in which what the student knows is validated needs to be reconsidered because written assignments won't cut it. Since knowledge is evolving daily, the processes of knowing need to evolve with it. For example, teaching approaches, learning materials and the curriculum as product and process require review to create room for these changes. The pedagogy of old cannot produce graduates who would fit effectively in the new. Alternative pedagogies are needed to establish legitimacy and the processes of legitimation of new knowledge which is being co-constructed in line with the changes being made and the direction the society is going.

Learning is a complex endeavour and takes many pathways for different people as they engage in the process of education. Learning pathways centres on the fundamental assumptions of sociocultural theories that use social and cultural activities which students engage in both on and off campus towards shared goals. Context dependent learning trajectories appear to be vital in the understanding of variations in learning over time. Diwan *et al.* (2023) postulate that AI-based approaches can automatically generate learning content and add the auto-generated learning content to the learning pathways at appropriate positions and there are multiple characteristics that should be considered as far as these pathways are concerned. The first of these is the relation to identities, and their relational, affective, and motivational components. The second borders on the cultural practices and routines, socially constructed by self and others over multiple instances and protracted time periods. The last deals with the enactments of privilege and marginalization that occur in relation to structural constraints and supports which are experienced by learners in their families, peer relations, and institutions. These characteristics point to the recalibration that is required for teaching and learning in this era of the fourth industrial revolution which curriculum theorisers are yet to engage with. Nasir *et al.* (2020: 197) argue that "there are two specific constructs most closely relate to our notion of learning pathways. The first one is ..."learning careers" which emphasizes understanding people's ways of orienting themselves to learning settings, and how these orientations or dispositions change over time". When learning approaches and pedagogies of learning fail to take into consideration changes in the lives of the key recipients of such processes, as well as the society in which they live, there is bound to be lack of effectiveness. Nasir *et al.* (2020: 197) continue that "accounts of learning rarely take note of the broader social, cultural, and economic contexts within which people construct these learning careers, rendering these accounts unable to explain the complexities of how learning careers unfold". Learning approaches and pedagogies need to broaden the conversation about learning to take into consideration external structural factors and discourses that shape students' perceptions of learning and schooling and its role in their lives. A unit of analysis needs to be included for educational resources and activities that are critical for understanding learning and learning pathways.

The changes in educational technology in particular and educational infrastructure in general necessitates the creation or at the least engagement on alternative learning pathways and how this can be used to change or alter what it means to learn and how what is learned can be assessed. With answers to basic questions readily available online, true test of understanding become extremely difficult, making it tragic for lecturers who have the responsibility of engaging in this task. How then do lecturers alter the learning pathways and create new or alternative ones for those in the classroom that would necessitate and facilitate the teaching and learning processes at a pace that every student would be well versed with or fully comfortable with? Looking at the characteristics articulated above, these pathways must be identity oriented, relational, affective and motivational if the students concerned are going to engage with it. The construction or reconstruction of such pathways will constitute part of the teaching and learning process itself as lecturers strive to make meaning with their students of what it means to learn in this new era. The motivational and affective components would help deal with defects in identity and the creation of new identity for both students and lecturers since both are participants in the teaching and learning process and because lecturers as well as students are expected to be lifelong learners. Since affective pedagogy deals with a ways of teaching aimed at sparking a particular emotional state, in the mind and a resultant action through the body (Fomunyam 2022), it follows that alternative learning pathways must engage affectivity especially since it deals with motivation and is relatable. This is

vital since the resulting action is or would be a product of relation and this would be based on identity whether current or future. These practices cannot be once off engagements since a protracted period is required not only to form but also for students to become used to and adapt or adopt certain learning pathways. These pathways which must be enshrined in their cultural capital to be accepted must be socially constructed by the students in conjunction with others (students and lecturers) for it to be useful in the teaching and learning process since the act of learning borders on the co-construction of knowledge. These pathways must also take into consideration the structural failings and shortcomings of the institutions and environments in which they find themselves as well as the privileges or marginalisation that support or constrain the art of learning in their stratosphere.

Therefore, learning pathways that consider the changing environment and the resources readily available or at the disposal of both the students and the lecturers must be theorised about extensively and alternative pathways provided that would create room for successful manoeuvrer in these ever-changing times as well as being able to make use of the unprecedented resources available.

Conclusion

Curriculum theorising in this era of the fourth industrial revolution needs to take on multiple approaches. The three curriculum theorising approaches articulated by Fomunyam (2021) is quite vital here as it creates room to explore the challenges from multiple perspectives. If curriculum theorisers engage from the contextual, responsive and theoretical theorising standpoints, this era in which we are now living would be understood from different perspectives. For example, the arguments made by the 'academic order' about the statuesque and why it needs not change needs to be understood from both a contextual and responsive perspective and a theoretical solution found for it. This is because the root of the tussle is contextual in nature and borders on issues of responsiveness. The context must be considered, as well as the questions raised about responsiveness if such argument is to be defeated, and engagements in the light of the times we currently live in foregrounded. On the other hand, the arguments articulated by technological power or ware must also be theorised from these alternative approaches for purposes of strengthening student engagement (Fomunyam 2020) and making education more worthwhile. While we cannot completely deny or abandon the times we are in, we must engage it with caution and these three approaches would provide the necessary caution needed. This theorising is important and vital for the improvement of the educational experience as well as the academic endeavour. Such theorising would also articulate possible solutions and pathways for knowledge legitimacy as well as the process of legitimation. It would reconfigure what it means to know as well as how the knowing happens and the process of assessing the known. The innovations of this age require new constructs and understandings of knowledge, what it means to know and how we assess what we know and the solutions to this can only be achieved through curriculum theorising. Lastly, this theorising would become the pathway for the creation or reconfiguration of learning pathways that would produce graduates that meet the demands of the job market. Since learning pathways are an integral part of the curriculum, its reconfiguration or the configuration of alternative learning pathways that make for responsiveness can only be achieved through curriculum theorising.

References

Alaloul, W. S., Liew, M. S., Zawawi, N. A. W. A. and Kennedy, I. B. 2020. Industrial Revolution 4.0 in the Construction Industry: Challenges and Opportunities for Stakeholders. *Ain Shams Engineering Journal,* 11(1): 225-230.

Baidoo-Anu, D. and Ansah, L. O. 2023. Education in the Era of Generative Artificial Intelligence (AI): Understanding the Potential Benefits of ChatGPT in Promoting Teaching and Learning. *Journal of AI*, 7(1): 52-62.

Dibble, M. 2023. Schools Ban ChatGPT Amid Fears of Artificial Intelligence-Assisted Cheating. Available: https://www.voanews.com/a/schools-ban-chatgpt-amid-fears-of-artificial-intelligence-assisted-cheating/6949800.html (Accessed 22 November 2023).

Diwan, C., Srinivasa, S., Suri, G., Agarwal, S. and Ram, P. 2023. AI-Based Learning Content Generation and Learning Pathway Augmentation to Increase Learner Engagement. *Computers and Education: Artificial Intelligence*, 4: 1-18.

Fomunyam, K. G. 2019. Education and the Fourth Industrial Revolution: Challenges and Possibilities for Engineering Education. *International Journal of Mechanical Engineering and Technology*, 10(8): 271-284.

Fomunyam, K. G. 2020. Student Engagement as Pathway for Deterritorialising Curriculum Internationalisation in Higher Education. *Universal Journal of Educational Research,* 8(6): 2727-2736.

Fomunyam, K. G. 2021. Theorising Alternative Pathways for Curriculum Theorising in Africa. *Universal Journal of Educational Research,* 9(4): 720-726.

Fomunyam, K. G. 2022. Affective and Embodied Pedagogy as Pathways to Equity in Curriculum and Responsiveness. *Alternation,* 39: 260-280.

Fomunyam, K. G. and Teferra, D. 2017. Curriculum Responsiveness within the Context of Decolonisation in South African Higher Education. *Perspectives in Education,* 35(2): 196-207.

Lo, C. K. 2023. What Is the Impact of ChatGPT on Education? A Rapid Review of the Literature. *Education Sciences*, 13(4): 1-15.

McMurtrie, B. 2023. Teaching: Will ChatGPT Change the Way You Teach? The Chronicle of Higher Education Available: https://www.chronicle.com/newsletter/teaching/2023-01-05 (Accessed 20 November 2023).

Mhlanga, D. 2023. Open AI in Education, the Responsible and Ethical Use of ChatGPT towards Lifelong Learning. Available: http://dx.doi.org/10.2139/ssrn.4354422 (Accessed 24 November 2023).

Nasir, N. S., de Royston, M. M., Barron, B., Bell, P., Roy Pea, Stevens, R. and Goldman, S. 2020. Learning Pathways: How Learning is Culturally Organized. In: Nasir, N. S., Lee, C., Pea, R. and de Royston, M. M. eds. *Handbook of the Cultural Foundations of Learning.* New York: Routledge, 195-211.

Oke, A. and Fernandes, F. A. P. 2020. Innovations in Teaching and Learning: Exploring the Perceptions of the Education Sector on the 4th Industrial Revolution (4IR). *Journal of Open Innovation: Technology, Market, and Complexity*, 6(2): 31.

Peters, M. A. 2019. Technological Unemployment: Educating for the Fourth Industrial Revolution. In: Peters, M. A. ed. *The Chinese Dream: Educating the Future.* New York: Routledge, 99-107.

Popenici, S. A. and Kerr, S. 2017. Exploring the Impact of Artificial Intelligence on Teaching and Learning in Higher Education. *Research and Practice in Technology Enhanced Learning,* 12(1): 1-13.

Rafsanjani, H. N. and Nabizadeh, A. H. 2023. Towards Human-Centered Artificial Intelligence (AI) in Architecture, Engineering, and Construction (AEC) Industry. *Computers in Human Behavior Reports*, 11: 100319.

Rudolph, J., Tan, S. and Tan, S. 2023. ChatGPT: Bullshit Spewer or the End of Traditional Assessments in Higher Education? *Journal of Applied Learning and Teaching,* 6(1): 342-363.

Sallam, M. 2023. ChatGPT Utility in Healthcare Education, Research, and Practice: Systematic Review on the Promising Perspectives and Valid Concerns. *Healthcare,* 11(6): 1-20.

Shewale, R. 2023. ChatGPT Statistics — Users, Revenue and Trends. Available: https://www.demandsage.com/chatgpt-statistics/#:~:text=ChatGPT%20Statistics%202023%3A%20Our%20Top,by%20the%20end%20of%202023. (Accessed 26 November 2023).