



The Fourth Industrial Revolution, the changing world of work and imperatives of internationalisation in higher education

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We are seeing major disruptions to higher education, and the education system as a whole, not only at home but globally. One of the major contributors to such disruptions is the paradigmatic shift brought about by the Fourth Industrial Revolution (4IR), with massive implications for the world of work, and by extension in higher education through the learner of the future. On an overall level and aligned to paradigmatic shifts established through the third industrial revolution (or the digital revolution as it has become known) is the shift away from an economy premised on labour and resource intensive industries towards a knowledge based economy. The skill sets and capabilities needed have shifted from being role or industry specific to transferable skills and capabilities centred on the four C's: critical thinking, collaboration, communication and creativity (Harari, 2018). These can be further broken down so as to encapsulate a range of capabilities such as problem solving skills, financial literacy, digital literacy, teamwork, marketing and presentation skills, and a range of other skills and capabilities that all talk to the importance of adaptability.

If we look at the South African economy, it has been premised on a very different labour market. This is not only reflected in low-skilled sectors of the job market, but due to the history and politics of isolation and exclusion in South Africa, diversity, flexibility and creativity in the job market, workforce, business or education has not been a feature of economic or societal organisation. More flexible research and development based economies have a huge advantage and so often their education systems are already attuned to such an economy and the societal changes that drives it. Thus an essential part of changing the South African economy relies on fostering new skills and capabilities. Here, the higher education system has a massive role to play - in particular how quickly it can respond to the changes needed. In this regard, internationalisation (in its widest meaning possible) has a huge role to play.

What then is meant by internationalisation in higher education? Knight (2003: 2) has defined internationalisation as "the process of integrating an international, intercultural or global dimension into the purpose, functions or delivery of post-secondary education". There are numerous

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variants to this definition and it is safe to say that it means different things to different people in different contexts¹. However, the definition set out by Knight (ibid) has the advantage of being general enough to capture the essence of what internationalisation means within the context of higher education. The specific tasks of the internationalisation project then can be aligned to this primary definition, provided it is grounded in the realities of the context it is supposed to serve.

Research into the internationalization of higher education needs to be regarded as a relatively new field of study, and one that has only really emerged as a field in its own right in the last two decades (Kehm & Teichler, 2007: 269). It is largely eurocentric and focused on intra-European internationalisation and mobility. With regards to published research in the field, African research is virtually non-existent and the major research journals in the field are dominated by research from, as well as centred on, the Global North (cf. Bedenlier & Kondakci & Zawacki-Richter, 2018). In the context of South Africa, research into the internationalisation of higher education and its benefits and impact on students, staff, curricula, institutions of higher education as well as broader societal developments is still in its infancy. However, with the continuous growth in the number of international students seeking access to South African higher education institutions in the past two decades and the concomitant need for management of the internationalisation process at higher education institutions in the country (cf. Rouhani, 2007), internationalisation has become a priority of government, as well as many institutions of higher education in South Africa. This has occurred within a context in which South Africa is thought of, and touted as, the leader of internationalisation projects in the region (South

African Department of Higher Education, 2017).

Recognising that the end of apartheid, coupled with the reacceptance and return of South Africa to the international community, has triggered a growth in internationalisation projects at South African institutions of higher education, internationalisation has been made a priority area by the Department of Higher Education (Department of Higher Education, 2017: 16-17). Equally, the National Development Plan (2012) sets out a number of goals and targets for the internationalisation of higher education, including the encouragement and development of international exchange partnerships; increase support for postgraduate study at overseas universities; increased opportunities for researcher collaboration and for international partnerships between universities and industry (ibid: 16).

While the draft policy does not explicitly comment on 4IR or link internationalisation to the broader global shift created by 4IR, it is clear that many of the recommendations need to be interpreted and seen in this light. Among other things, the Draft Policy Framework explicitly calls for internationalisation strategies to: improve international communication, cross-cultural learning and global citizenship; improve peace and cooperation, and finding solutions to global challenges such as sustainable development, security, renewable energy and HIV/AIDS; and contribute to an increase in knowledge production, intellectual property and innovation in South Africa (Department of Higher Education, 2017: 16-17). It is difficult to see how such recommendations could be fulfilled if not aligned to broader societal and technological shifts triggered by 4IR. Hence, it falls upon higher education institutions in South Africa to make sure that their strategic planning around 4IR is

aligned to their internationalisation strategies as they are dependent on each other. In particular, and this is also emphasised by the draft policy, internationalisation provides opportunities to take local and indigenous knowledges to the international community (Department of Higher Education, 2017: 16-17). Thus, mutuality and complementarity in knowledge transfer is encouraged (ibid: 21). This is where South Africa and the global South have the chance to be innovative and truly influence discussions around knowledge hierarchies, and continuous legacies of Western hegemonic knowledge systems and the transfer of knowledge. It is not only international mobility and the exchange of students and faculty that is encouraged, but also the incorporation of international and intercultural knowledges and abilities that prepare students professionally, socially and emotionally in an international and multicultural context (ibid: 18). The idea of preparing students for a world of work that is international and multicultural directly links to 4IR, through ideas of flexibility and the ability to work collaboratively. Multiculturalism and multicultural environments and contexts are also linked to increased creativity (cf. Tadmor et. al., 2012; Steven et. al., 2008), including increased creativity among students exposed to studying abroad programmes (cf. Lee et. al., 2012).

How then can IR4 and internationalisation be linked and concretised within higher education?

4IR and internationalisation as interlinked processes

Fostering creative talent

Higher education within 4IR is dependent on, as Xing and Marwala (2017: 13) point out, the ability to cultivate innovative talent. In this regard and as emphasised earlier, South Africa has not had an education system that has fostered innovative and creative thinkers. As

Xing and Marwala (ibid) argue “Most developing or under-developed countries lack innovative talent” and as such higher education “...should not only focus on training knowledge-based skilled person, but have a good look at cultivating innovative talent, especially high-level scientists and technologists. These scientists must be trained in an interdisciplinary environment where technologists should understand humanities

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and social science and vice versa.” This is highly dependent on the creation of flexibility in degree structures and offerings within higher education. While processes are in motion, at least at some institutions such as my own at the University of Johannesburg, to address this and to develop more flexibility in offerings (including breaking down some of the boundaries between disciplines), this is far from the case at many educational institutions in South Africa.

To achieve this, it will be important to forge partnerships and linkages both domestically and internationally to offer more flexible and versatile degree programmes and professional qualifications (Xing and Marwala 2017: 15). These can come in a range of forms, and can entail anything from student exchanges and the completion of degrees abroad to the sharing of degree offerings where student become graduates of a joint institution (ibid). Whatever the arrangements going forward, much of our university teaching will rely on the usage of technology to deliver high quality education and, as Xing and Marwala (ibid) propose, there is also scope for blended degree offerings where local and foreign education providers deliver programmes through e-learning, online learning and/or on-site learning.

Creativity in the disciplines and degrees

In addition we need to look at international degrees and how overseas institutions have developed degrees better suited to meet the demands of 4IR and the changing world of work. The question we need to ask ourselves in relation to higher education, and maybe more specifically in relation to academic disciplines, is: ‘how creative is my discipline?’, ‘what is the scope for innovation?’ and ‘does it open up for, and is it open to, interdisciplinary discussions, collaborations and epistemologies?’.

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Invest in Research and Development

Encouraging innovation and fostering innovative talent is directly linked to research and development. Xing and Marwala (2017: 14) emphasise that investments in new technological advancements are often ranked as the most important driving force. This will require resources and to achieve this, international business collaborations and partnerships will play a crucial role. While much of the focus of internationalisation projects has been centred on research collaborations between academic institutions across the globe, this will need to be expanded into the private sector. Universities, with regards to 4IR, will need to undertake projects aimed at international collaboration between higher education institutions and the private sector, through shared research and development, projects aimed at fostering and developing innovation and entrepreneurship, and the hosting of student projects and internships for example in the private sector.

International cooperation around harnessing the potential and opportunities that 4IR opens up for innovative and collaborative research are endless and necessary in terms of addressing the problems of our times and to work towards finding common solutions. Global problems around poverty, health and the environment can be researched in the context of internationalisation and 4IR. Internationalisation here therefore means equality in partnerships and in the ways in which solutions are sought that are of true mutuality and global relevance.

Guard against overreliance of technology

In such efforts we must also, however, as Yang and Cheng (2018: 58) argue, guard against an overreliance on strong technocratic or technophilic discourses emanating from elite industrial and academic voices, being directed primarily at the policymakers and the elites. Instead we must centre “the ‘on the ground’ experiences and subjectivities of the more disadvantaged and marginalized”. If we take internationalisation to mean the advancement and fostering of diversity, multiculturalism and global citizenship, diversity in the broadest sense must be our focus. In the context of South Africa, we must be mindful of working in the interest of human development and to ensure ethics and accountability.

Ensure local and regional beneficiary outcomes

Equally, we must not forget the regional dimensions to the internationalization of higher education. Imperatives that strengthen African scholarship and the need to counter “Euro-American economic and epistemic hegemonies” (Zezeza, 2012:20) are crucial. As Zezeza (ibid) reminds us: “The position of Africa as an object of study and as a centre of knowledge production remains precarious in the international division of intellectual labour”. And with research expenditures and productivity across Africa below world standards (bar centres such as Egypt, South Africa and Nigeria who together are responsible for about 80% of all African research outputs) internationalisation must also mean regionalisation or making sure that our internationalisation efforts truly benefit our own society and that of sub-Saharan Africa in the first place (see Dzvimbo and Molo, 2013). In this regard, collaborations and partnership with institutions and organisations such as the EU, AU, BRICS and SADC are going to be crucial, along with private partnerships.

In conclusion, as much as the university of the future relies on a higher degree of internationalisation in higher education, the opposite also applies and 4IR opens up for increased opportunities for international collaboration. In light of South Africa’s history of exclusionary and isolationist politics, the imperatives of restructuring higher education to meet the demands of 4IR are

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closely linked to the internationalisation project, where both are central to broader transformation agendas within higher education and useful for addressing inequities. ■

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1 For a good outline of differing meanings and efforts related to the internationalisation project in higher education see Knight (2004).