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The Role of the University as Mediator in a Skills Ecosystem Approach to VET

Heila Lotz-Sisitka, George Openjuru and Jacques Zeelen

Introduction

In this chapter, we focus particularly on the mediating role of the university, in close connection with vocational institutions and informal community actors, in developing an inclusive approach to vocational education and training (VET) through an expanded social ecosystem for skills model. Here we draw upon lessons learnt from the Alice and Gulu cases on community-based approaches to establishing an expanded skills ecosystem approach to VET in Africa. The main question guiding this chapter relates to the possible mediating role of the university to enhance a regional expanded ecosystem for supporting quality vocational education that is also relevant to its context, including emergent possibilities to build skills and livelihoods linked to just transitions.

Universities are not VET centres as conventionally understood, but they can contribute to VET in various ways. Most often, universities are identified as contributing to the qualifications and training of VET educators. In this chapter, we take a different angle and consider the role of engaged research and community engagement as two approaches that can contribute to the advancement of an expanded social ecosystem model with positive benefits for VET institutions. Drawing on insights gained in the earlier chapters of this book requires us to take into account several important realities as previously discussed, as well as key ingredients for the development of a regional skills ecosystem of vocational education, as demonstrated by the two cases considered in this chapter.

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Existing realities

First, in terms of existing realities in many rural areas in Sub-Saharan Africa, we need to take account of the legacies of colonial and apartheid policies and marginalizations that have left many people struggling without adequate income in the formal economy. As we have already noted, people tend to rely heavily on the land and natural resources and engage in subsistence farming with little or no value chain development. As we detailed in Chapter 3, coupled to this, people experience environmental degradation, educational exclusion and marginalization. These affect everybody but most especially women and youths in the rural areas. The legacies of apartheid in South Africa and the violent conflict era in Uganda still have a tremendous impact on the lives of people across generations, including on their VET systems (Rampedi, 2003; Angucia, 2010; Angucia and Amone-P'Olak, 2010; Openjuru, 2010; Kraak et al, 2016; Lotz-Sisitka et al, 2016, 2021; Van der Linden et al, 2020).

Working on a renewed approach to VET in Sub-Saharan Africa also implies grounding the approach more adequately in skills development that can advance the huge informal economy, a recurrent argument of this book. South Africa and Uganda differ slightly here as the formal economy is substantially larger in the former, but South Africa has also excluded a focus on development of the informal economy in its formal approach to VET. Fortunately, there is recently an increasing recognition there that something must be done to include more young people in the economy through more proactive and diversified VET systems that also address some of the complex challenges faced by the sector. As we have argued earlier, the challenge will be to find useful connections between the informal, formal and solidarity economies with an awareness of the need for decent work and innovative forms of sustainable value chains that benefit the working, learning and living conditions of the rural population as well as the more formalized economic sectors. All of this must contribute to a move towards just transitions.

Key ingredients

In terms of ingredients for a renewed VET approach, the previous chapters offer an interesting harvest concerning theoretical concepts as well as lived experiences in the four different cases highlighted in this book. We reprise and develop these here because they are critical to our consideration of the university as a mediator within the skills ecosystem.

On the micro level, we refer to the central concept of agency, understanding people's actions not as behaviour but as intentional action of actors in their specific contexts. The concept of agency we have developed is not the

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traditional view of 'rational man' or voluntaristic agency advanced in the neoliberal economy, or a deterministic view of agency that was promoted by apartheid and colonial governments where people were reduced to labourers without volitional will and reflexive living, learning and working choicemaking. Instead, we advance a view of agency that recognizes the possibility for movement and change but that also recognizes structural constraints and historical realities.

We also advance a notion of relational agency (Edwards, 2005) to strengthen collective notions of VET and how VET systems can transform. The notion of relational agency is central to the concept of an expanded skills ecosystem model, and it involves both individual as well as corporate agents (such as universities) and their practices, a point that we will elaborate further later in the chapter.

Another important issue is the reframing of the concept of work and what it means for many young people and communities (see also Chapter 9). In Chapter 7, we discussed the transition from education to work, which showed that for most young people in Africa today, transition is not a straight pathway. It has been called a 'long and winding road' (Powell and McGrath, 2018) and an ongoing 'hustle' (Thieme, 2013; Jordt Jørgensen, 2018), as we saw in Chapter 5. This is not only found in Africa but is increasingly being experienced globally as economies become more precarious under neoliberal policies, and as new technologies produce diversified forms of work, and the popularity of the gig economy gains ground. However, in most African societies, transitions as forms of hustling relate to difficulties in accessing and retaining education and learning opportunities, as well as work and livelihood prospects (Cooper et al, 2021; see also Chapter 7).

Young people are also dealing with a complex mix of roles, responsibilities and identities, for instance a combination of being a student, an entrepreneur, an employee and a family head (Jjuuko, 2021), oftentimes simultaneously. Another important issue is that the widespread mindset of considering vocational education as preparing youth just for handwork or a particular type of artisanal skill with limited status in society needs to be overcome. As Sennett formulates it, the head, heart and hand are all central elements of craftsmanship, which 'cuts a far wider swath than skilled manual labour; it serves the computer programmer, the doctor and the artist' (Sennett, 2006: 9).

It is also important to elevate the status of artisanal artistry, agency and craftsmanship in the sphere of the teachers and other educators. Teaching is not just technical or cognitive knowledge and skills transfer but includes, through a dialogue with students, dealing with ethical and normative issues (Blaak, 2021; Jjuuko, 2021). Chapter 6 revealed some of the challenges VET teachers have to navigate, which include the competing demands and expectations of employers, students, the formal and informal curriculum, as

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well as the expectations of funders and government. Thus, shifting teaching practices in a VET system under pressure is a necessary, but not an easy task.

As we noted in Chapter 6, new types of professional development are needed where theory and practice are much more connected, and learning and working are much more integrated, supported by joint ventures between the world of work and the world of education. We need to bring different types of knowledge and ways of acting together, for instance between the teacher at a VET college, the student in her internship period and the experiences of the daily supervisor at the workplace, and we need to consider the realities and politics of young people's lives lived as these shape VET possibilities and experiences (Oinas et al, 2018; Swartz et al, 2021). Another key point mentioned earlier is that in an the expanded ecosystem approach in VET, skills demand analysis and the development of value chains in a specific region should feed curriculum innovation, for instance in the area of digitalization and new technologies, or in the area of specific types of agricultural development that are suited to the agroecological conditions (Jjuuko et al, 2019; Rosenberg et al, 2020; Lotz-Sisitka et al, 2021).

At the regional level, the earlier chapters have shown that a transformed VET sector cannot be built by separate actors in splendid isolation. The need for regional horizontal connectivity between VET institutions, universities, NGOs, business foundations, youth organizations and other societal actors is pivotal. Joint learning networks and communities as found in the Alice and Gulu case study sites and discussed in Chapter 5 are promising examples of that type of connectivity. It is in the formation of learning communities that relational agency (Edwards, 2005) proves to be a useful concept when attempting to understand how people can come together, however fleetingly, to interpret a problem and respond to it. As we discussed in Chapter 5, relational agency focuses more directly on the nature of the relationships that comprise a network of expertise (Edwards, 2005). This means an approach of viewing skills as residing in an individual without the other is simplistic. Learning how to work together in engaging with the world of work is a skill in its own right (Edwards, 2005). Chapter 5 offers a very interesting illustration of the relational value that learning networks can bring to rural vocational practitioners (see also Lotz-Sisitka et al, 2021).

For the understanding of the design of learning communities and the role of networks, the approach of Wenger and colleagues concerning communities of practice is another important conceptual tool (Wenger, 1998; Wenger et al, 2011). This stresses the importance of social learning of people who share a common passion, discover mutual interests and develop a joint practice. Wenger's more recent work aligns more with the learning network concept put forward in the Alice case and with the expanded social ecosystem model as it considers diverse communities of practice learning to advance a practice within and across a wider, networked landscape of practice (Wenger-Trayner

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and Wenger-Trayner, 2020). Here there is also consideration of the value that is created for diverse partners and communities of practice via this wider networked social learning approach. We will return to this issue later in our discussion on universities and their contributions to a social skills ecosystem.

For a transformed VET sector, as earlier discussed, boundary crossing is a key activity to reach innovative connectivity between the world of work and the world of education. The use of field theory is fruitful for a better understanding of this transformation in institutions and boundary crossing between sectors. This theory reflects a relational worldview (Lewin, 1939; Bourdieu, 1977; Friedman, 2011). Social reality is perceived spatially, viewing all actors and sectors as interdependent. Through social interactions, actors give meaning to relationships, and as interactions unfold and get patterns, fields emerge within the social space (see also Blaak, 2021). It is possible to create in partnerships new fields in or outside of your own field (Friedman et al, 2014). These new fields are called 'enclaves' and emerge through a process of differentiating a new field within an existing field, but with its own configuration of positions and different norms and rules of the game, an example being the agroecological learning network that formed in the Alice case as part of the Fort Cox Agriculture and Forestry Agricultural College's (FCAFTI) programme. This seems especially true for the spaces where learning communities are functioning. Where they can operate between different sectors and create democratic space less constrained by organizational hierarchical power structures, enclaves can be innovative learning and working spaces. For instance, the community cafés in Gulu, discussed in Chapter 5, have emerging features of an enclave. This approach could be very helpful to support boundary crossing and the establishment of learning communities in VET given the necessarily transboundary nature of the field. This is also shown in the Alice case and the work of Pesanayi (2019a), who described the boundary crossing processes in establishing VET networks of this type in great detail, both in the Alice case and in South Africa more widely and Zimbabwe. His argument was that such an approach offers relational, conceptual and practical support for multiple agents in the agricultural learning system, including lecturers and students. It also supports former graduates in contexts where the state's role fails to provide necessary support for innovation and change.

On the macro level, we discussed in earlier chapters the central role of facilitating verticalities, referring to policy and funding institutions that determine the realities in the current VET, for instance concerning curriculum reforms and financing. Unfortunately, facilitating verticalities most often means a top-down approach, typically informed and pushed by external organizations such as the World Bank and other international donor organizations and NGOs or government policy and structurally directed governance praxis (see Chapter 2). As noted in Chapter 6, curriculum

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reforms are mostly externally driven and fail to take seriously regional demands for VET or the experiences and expertise from local educators, businesspeople, youth organizations, universities or other societal actors. This means that they are often more vertical than facilitating.

In searching for more realistic alternatives, the development of a social ecosystem for skills approach in VET will only have a chance if the relevant social actors and stakeholders become much more involved in policy formulation and policy implementation. However, this will require that they hold capability to avoid being 'sucked in' to the existing style of reform and policy structuring. Instead of top-down or bottom-up processes, we need a more dialectically related approach to mobilizing facilitating verticalities and bringing them into engagement with horizontal connectivities that link learning, living and work experiences in more realistic ways. In the expanded social ecosystem model, universities have a potentially interesting mediating role with powers to mobilize facilitating verticalities in ways that more closely connect with, and therefore also support, horizontally collaborative VET partners and local economies and value chains being developed in regional contexts. This is accentuated if they can form strong partnerships with VET colleges, which are core learning institutions with the specific mandate of providing VET in localized contexts.

Main questions of this chapter

This brings us to the main questions for this chapter. How can a university contribute in a regional context to the development of a skills ecosystem in terms of strengthening horizontal connectivity between stakeholders and institutions, as well as supporting a transformative two-way vertical facilitation of relevant bodies for VET, for instance involving local and national government departments? To be more specific in relation to our interests in this book: what could be the role for a university in an expanded skills ecosystem model, in terms of conducting (practice-oriented) research; enhancing lifelong learning types of professionalization for educators in VET; cocreating learning communities for joint knowledge production; contributing to regional value chain development; supporting just transitions; and bridging gaps between formal, nonformal and informal institutions and networks? And how does this 'locate' itself in the mandates of the university in Africa (and elsewhere) today? As stated by Bourke, this is a tension-laden, and at times contradictory, question:

> The decisive tension is that universities around the world are being encouraged by governments to assume greater responsibility for economic development and to translate knowledge into products and

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> services for the market – whilst at the same time being tasked to work with communities in alleviating the social and economic excesses of the market. (Bourke, 2013: 499)

We will discuss the university's mediating roles and experiences in Alice and Gulu later in the chapter. But first there is a need to probe what kind of university concept could be appropriate to facilitate these types of new partnerships with community actors, given the tension outlined by Bourke (2013). The northern orthodoxy has shifted increasingly from seeing a university as an ivory tower to a notion of a corporate knowledge institution contributing to a knowledge economy. However, is this suitable to deal with the coconstruction of local sustainable development and associated economies? This question is especially relevant with reference to the contemporary demand for bridging political economies and political ecology as environmental degradation impacts on local economies, especially agriculture. The model of a community-engaged university, as being advanced in some spheres internationally and in South Africa and Uganda, may offer a more viable framing of universities in the contexts that we consider in this book. As Green, South African Council of Higher Education chief executive officer, has noted, 'this means that we must unbecome what we are currently to become what we need to be' (USAf, 2021).

Engaged research and the community-engaged university

Besides the roles of teaching and community outreach, universities in Sub-Saharan Africa see an important community-oriented role for research, which has been prominently described in many of their mission statements. For instance, the mission statement of the University of Limpopo in South Africa reads: 'A world class African university, which responds to education, research and community engagement needs through partnerships and knowledge generation – continuing a long tradition of empowerment.' The University of Dar Es Salaam in Tanzania puts it thus: 'The unrelenting pursuit of scholarly and strategic research, education, training and public service directed at attainment of equitable and sustainable socioeconomic development of Tanzania and the rest of Africa' (see Zeelen, 2012).

At a policy level, this is referred to as a 'scholarship of engagement' (HEQC/CHESP, 2006; Cooper, 2011) and in some circles as 'transdisciplinary scholarship' (Lang et al, 2012). In this spirit, we have been concerned not just to describe and analyse existing developments in the four cases, but also to contribute by means of practice-oriented research and community engagement to transformative change of the VET sector in the service of wider just transitions.

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The teams in Alice and Gulu drew on cultural historical activity theory (CHAT) forms of expansive learning (Engeström, 2001; Engeström and Sannino, 2010; Engeström et al, 2014) and participatory action research (PAR) (McTaggart, 1991) shaped by Freirean-inspired dialogical approaches (Freire, 1970). Both approaches were particularly interesting to use because of their alignment with the concept of a mediating role for universities in advancing an expanded skills ecosystem through relational agency and collaboration on a landscape of practice with VET and other community and state actors. PAR favours developing the connection between knowledge production and social change by creating partnerships between researchers, practitioners and a variety of client stakeholders (Reason and Bradbury, 2008; Boog et al, 2008). This methodology brings together different kinds of knowledge (including indigenous) and experience from different types of stakeholders by means of opening conversational space for an intensive dialogue oriented towards creating practical solutions for existing social and educative problems (Angucia et al, 2010; Tukundane, 2014; Tukundane and Zeelen, 2015; Blaak, 2021; Jjuuko, 2021). CHAT gives attention to mediating processes and learning within and across interacting activity systems that share an object of activity such as improvement of local economies, livelihood and work opportunities through VET (Engeström, 2001).

Applied to the stimulating role for the university in the advancement of VET, these perspectives helped us move away from looking just at skills in an atomistic way, considering instead the regional use of skills in a specific location and the contexts within which skills are being demanded. This is a move away from the dominant VET approach that assumes that once skills are available then the economy will grow. However, on the contrary, under the expanded ecosystem concept, it is increasingly becoming apparent that it is the reverse that occurs, with the local economy driving skills demand (Payne, 2007). An ecosystem approach to VET, therefore, means vocational skills training driven by the current and potential skills demand in a geographical region or sector. This means that if universities are to play a mediating role in the advancement of a skills ecosystem approach, then they would need to be involved in research that is orientated towards advancing the local economy and its value chains, while also advancing the possibilities for a just transition, interpreted as inclusive sustainable development in particular regional contexts. This must be done in ways that take the local social-economic and social-ecological conditions and histories into account and that seek to move beyond current impasses in development as experienced in local or regional contexts, which may include forms of locked in 'path dependence' (such as reliance on industrial models of agriculture where they are often inaccessible to the majority).

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Alice: Experiences with the role of two universities

In the case of Alice, two universities have been engaged with the advancement of the expanded social ecosystem model, namely the University of Fort Hare and Rhodes University. These two universities were both engaged in working with the Local Economic Development (LED) office of the Raymond Mhlaba Municipality. Both were working in support of advancing the local economy and supporting the inclusion of local communities in advancing the local economy and seeking out environmentally sustainable alternatives to unsustainable or ecological and socially degenerative praxis. Interestingly, the two universities, working mainly out of two different faculties (Agriculture at Fort Hare and Education at Rhodes), were able to support the development of a social ecosystem for skills in different ways. Their core local partner was FCAFTI. It was the three learning institutions, together with the LED office, that led the expansion and development of an expanded skills ecosystem that was able to cross boundaries between formal and informal VET programmes and processes.

The possibility for these cooperations to expand the VET skills ecosystem in the context of the local economy and environment was initiated by small-scale farmers, who were aiming to expand their production with the support of the LED office, but who found themselves struggling with water for their crops, as we have outlined in earlier chapters. They raised this concern with the LED office, and via relational agency connections between the LED office, Fort Cox and the universities, a meeting was held in which both universities joined the agricultural institute, the LED office and a number of farmers to consider this problem together. Out of this, it was decided to form a learning network, the Imvothu Bubomi Learning Network (see previous chapters), that would involve the farmers, the agricultural college and the universities in seeking out solutions to this problem.

From here, several expansive learning 'change laboratory' research workshops were hosted by Rhodes University following CHAT methodology, in which a formative intervention team (Engeström et al, 2014) of researchers coengaged with people's matter of concern (or object of activity) and helped to surface contradictions within and across their activity systems (Pesanayi, 2019a and b). This catalysed a dialectical learning process in which multiple stakeholders could work together to resolve challenges that were confronting them in their activity. In this case, the initial challenge that was identified for resolution was the challenge of water for food and advancing the local economic opportunities of the farmers. Rhodes University, as mediating contributor in the expanded skills ecosystem model, was able to mobilize resources from a national organization, the Water Research Commission, to support an extended social learning and curriculum innovation programme

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focusing initially on water harvesting and conservation in the agricultural training institute. Later, this was expanded to agroecological activity support as farmers continued to draw on the network and draw in resources to support their learning and practices via the learning network. The activity expanded further to support LED system development and socially acceptable digital learning practices (see Chapter 5).

To strengthen initial interactions and relational agency building in the learning network, Rhodes University offered a training-of-trainers' course that facilitated the development of an applied social learning approach to advancing farmers' water for food practices (Lotz-Sisitka et al, 2016, 2021). The University of Fort Hare's agricultural faculty agreed to support some of the water for food practices through their research and were also working with the LED office on researching and seeking out solutions for advancing the rural economy. This started an extensive process of ongoing engaged research where researchers from Rhodes and Fort Cox supported the expansion of the learning network's horizontal connectivities with various processes and tools such as learning materials, a website, radio programming, social media tools and ongoing training processes, with the most recent being establishment of an electronic resource centre in the area that is being run by a group of youth in a local agricultural cooperative (Lotz-Sisitka et al, 2021; and Chapter 5). Fort Cox played a leading role throughout in terms of local meetings, radio programming, curriculum and social learning activities leadership, while the universities worked together closely in support of their local leadership role in the skills ecosystem.

Via their role as mediating support partner, Rhodes University was again able to mobilize resources from the United Nations Environment Programme to support other tools development, such as a market transformation mobile phone application that indirectly supported market connections (Durr, 2020). Moreover, efforts were made to bring other national stakeholders such as the Spar retail chain into contact with the LED office to advance the concept of a regional hub for farmers' produce to extend the market and value chain in the area.

Not all the initiatives worked as well as planned. For instance, the Spar retail chain–LED office link up process did not lead to the anticipated regional hub, despite extensive research done by the university and the Fort Cox and farmers' association partners to support this (Durr, 2020). This pointed to the importance of the link between research and local policy and economic system support for the actual establishment of new value propositions in the skills ecosystem, not all of which can be done by the university. In this case, it was a decision by Spar head office (a verticality that was not ultimately facilitating) that led to the regional hub not being established, as the Spar group decided to establish regional hubs in other (presumably more profitable) areas.

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Gulu: Experiences of a young university

It is important to note that the foundation of Gulu University was intended to address the challenges of the postwar situation after a conflict lasting from 1980 to 2006 (see Alava, 2018, for a description of the impact of this situation on young people). As part of its restoration strategy, in 2003, the Ugandan government established the university, which focused first on agriculture as a way of promoting quick recovery in the region. Thus, community engagement and transformation has been a high priority from the university's beginnings.

Community university engagement has been a guiding approach for the university, an intentional relationship development between the university and its larger community (Boyer, 1996). Gulu University's primary focus is to work with the community for their own improvement and the betterment of their daily social and economic lives. In terms of the focus of this book, this translates to a commitment to play a mediating role in developing a regional skills ecosystem.

The university works with external partners on several fronts. For example, it collaborates with the government's Operation Wealth Creation in efforts to improve household incomes. One noteworthy activity here was the mango juice extraction from the local fruit during peak season. This demonstrated the industrial value of local mangoes, found in all homesteads, to counter the existing situation in which many are left to rot in the absence of markets. In this activity, communities gather the mangoes, which are paid for by and transported to the university for processing into mango pulp. This is then sold back to the community to improve their household nutrition, as well as to the food industry and hotels.

Gulu University is working with refugees to improve their agricultural practice and with vocational educational institutions to improve their curriculum development and delivery. It is well known for the promotion of traditional Acholi medicinal practice, welcoming traditional medicinal practitioners to do research on the efficacy of their health remedies in its laboratories in collaboration with research pharmacists. In 2021, they were working together on looking for herbal remedies for dealing with COVID-19. In addition, students work on several projects on improvement of community nutrition to address the problem of malnutrition in the community by using nutritionally improved millet, sesame and soy composite. They also work together with local communities in the development of new products and improving the marketing of existing ones.

The VET Africa 4.0 project provided an opportunity to build on this socially engaged mission and culture of the university and the experiences in the specific field of VET, supporting the existing network around the university's UNESCO Chair in Lifelong Learning, Youth and Work. This

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is building specialists in participatory research methodologies, as well as theoretical and practical concepts in lifelong learning, vocational education and career guidance. In recent years, intensive partnerships have been established between more than a dozen universities, VET institutes, NGOs, businesses and community organizations to enhance the capabilities of and opportunities for the youth to develop meaningful learning and working career trajectories. Several doctoral studies have been completed contributing to innovations in lifelong learning and vocational education (see for instance, Angucia, 2010; Tukundane, 2014; Jjuuko, 2021). Moreover, ideas have been developed to bring vocational programmes more prominently into higher education. Overall, Gulu University strives to become a more skills-oriented university of greater relevance for the communities in Gulu and the Acholi region (Openjuru, 2020).

Examples of research activities in the VET Africa 4.0 project

To give more insight into the mediating role of the university towards a regional skills ecosystem, the following research experiences made in Gulu are relevant. In a first round of network mapping, researchers explored relationships and networks with key stakeholders, including vocational institutes, NGOs, private sector, local government and informal practitioners. It quickly became evident that the VET field in the Acholi region is disparate and chaotic. Deeper investigations, however, revealed rich networks of learning among youth in the informal spaces, as elaborated in Chapter 5. From the outset, a clear need and desire was identified for more explicit relationships and greater cooperation among stakeholders in the region. Thus, developing some enclaves of practice became a core objective of the research process, inspired by the PAR approach. Early cross-case sharing with the Alice team regarding the Amanzi for Food experience provided the Gulu researchers with a roadmap to follow. The similarities in the regional contexts of rural, agricultural-dependent areas facing particular environmental and socioeconomic challenges provided a natural synergy between the cases. Modelling, therefore, on a carefully developed community of practice in Alice led to engagement in planting the seeds for an emerging network of working, living and learning for young people.

Following two rounds of interviews and focus groups that helped to develop an understanding of the broad social ecosystem for skills in the region, a series of research engagement activities were started aimed at bringing interested people together in communities of practice to test and share potentially new practices in the vocational field. These were based on the emergent needs and challenges that were identified in the earlier rounds of research. In Chapter 5, the PAR component of the youth network and the ensuing lifelong learning cafés and radio programmes were discussed. These

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platforms gave the youth a forum to raise their concerns about the challenges they face and opened up a series of discussions among youth of diverse backgrounds as well as between youth and youth livelihood programme developers, including cultural leaders, NGOs and the private sector. This culminated in youth pointing out that they were misrepresented in a process whereby non-youth made decisions for them about their lives, involving them in non-agentic ways, with most resources going towards bureaucratic processes rather than reaching the youth themselves. They also challenged the fallacious stigma about skills and livelihood development with a multitude of examples of youth coming together despite limited formal education. This series of discussions brought out links between creative arts, environmental care, cooperation and social impact. It also initiated a pilot 'environmental innovation and prototyping in VET' programme where youth entrepreneurs outside of the formal system were invited to work with the private sector and Gulu University representatives to develop entrepreneurial solutions to environmental problems in the region.

Another emergent network that is worth considering here was initiated as a result of research in the formal sphere that revealed that many graduates from VET were not well prepared for real life work, and that there was a lack of resources for students to get much needed hands-on practice. This was especially apparent when it came to larger equipment such as modern cars and tractors. Therefore, it was decided to engage in a pilot virtual reality programme. Directors of several larger (public and private) VET institutes, Gulu University representatives, NGO staff, students and informal instructors decided together on a pilot programme to test the use of virtual reality in tractor driving and repair. Over a series of meetings, this small group of stakeholders developed a programme, filmed and tested it, and hosted several roundtable reflective discussions on the practical application.

At its Hoima satellite campus, Gulu University is promoting aquaculture, a new economic activity for the region yet premised on the indigenous knowledge system of fishing in rivers and lakes. The community training emphasizes practical skills development for predominantly fishing communities. It starts with an explanation of the concept of cage fish farming in the classroom to the community interest group members who will later start building the cages. Bamboo poles and nylon strings are used to construct very simple, square cages that are then mounted on floating Jerry cans. The groups then make nets, following their existing practices. These nets are then attached to the cages, which are then put in the lake and anchored by sandbags. Once ready, the cages are stocked with young fish. This is contributing both to livelihoods and nutrition in the Albertine Region.

Last but not least, the mediating role of the University became visible in the UNESCO chair conference 'Towards meaningful education and decent work for the youth in Eastern and Southern Africa', held in April

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2021. The conference focused on discussing partnerships, democratization and sustainability of approaches and interventions in vocational education. All relevant stakeholders were present such as staff of universities and VET providers, development agencies, youth groups, NGOs, government departments, employers' organizations, farmers and businesspeople from the region and beyond. The overall goal of the conference was to learn from each other and to enhance collective knowledge production, innovations and practical actions to promote meaningful education and decent work for youth. It turned out to be a very lively conference that enhanced existing partnerships and stimulated new enclaves of communities of practice in the region.

Discussion and insights gained

Expanded ecosystem development via relational agency

From the preceding discussion, and in reference to the expanded skills ecosystem framing, we note that considerable impact was achieved in expanding the skills ecosystems via relational partnerships with VET institutions and networks (formal and informal) to engage with and help to address local sustainable development issues. The cases discussed in this chapter show that universities have significant resources to share, especially in terms of their human capacity and knowledge coconstruction roles (education and research). They also show that universities have capacity to mobilize facilitating verticalities (for instance, policy and potential innovation funding streams) and to bring these into contact with and into a process of coresourcing horizontal connectivities. Importantly, this is not a top-down imposition of interventions, but rather a relational expansion outwards from the local context to draw in influential partners, funding, knowledge resources and potential development partners that can help with expanding the local economy as well as the knowledge and learning system. By means of these horizontal connectivities, enclaves can be developed where innovative learning processes get a chance.

As we pointed out in Chapter 4, the social ecosystem model is a conceptual framework that points to a more complex configuration of actors involved in VET and the need to bring facilitating verticalities (such as policy and national funding streams) into relationship with the horizontal connectivities and relations necessary to support VET in real world settings. In this chapter, we have shown that learning institutions, universities and vocational institutions in partnership are important mediators in the expanded social ecosystem for skills. By definition, in an ecosystem there must be interconnectedness and interaction between the different existences in that location.

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Our case studies also show that this has allowed the development of human capability for productive purposes, but also for social and social-ecological transformation purposes. The expanded skills ecosystem manifested as a regional social-ecological formation that was generated by, and held together in, a world of interconnectedness between people working, learning and living together (Grainger and Spours, 2018). In both cases, there was also a clear responsiveness to skills demands, which emerged from community livelihood construction and economic development needs, as well as inclusive sustainable development needs such as water harvesting and conservation for food production. This offers a perspective that skills demand is not just 'industry driven' but by multiple concerns that arise at the interface of living and working with implications for learning. This points to the need for a broader understanding of how skills demand influences skills development in skills ecosystem research. In more traditional versions of the skills ecosystem model, the main focus has been on skills alignment with local industry (Windsor and Alcorso, 2008), which, as we argue across this book, is inadequate for the vocational learning needs in Africa, where not all work is provided in and through industry. However, this is also of wider significance globally.

If an ontological perspective grounds our conception of work (see McGrath, 2012; Lotz-Sisitka and Ramsarup, 2020; and Chapter 9), the notion of 'demand' shifts from being market driven only to include social justice and livelihoods-driven notions of 'demand', which includes work for the household (care economy), and work for the common good (ecological and social wellbeing economy), in addition to work for the state and market (public management and formal economies) (see Chapter 1). This has significant implications for VET if reconceptualized with the UNESCO (International Commission on the Futures of Education, 2021) notion of 'education *as* a common good' *for* the common good in view. It ushers in a new social contract for VET institutions, as proposed by the International Commission.

We have also shown that the insights into the emergence of an expanded skills ecosystem in the two case study contexts are enhanced by the concept of relational agency, which forcefully presents the social nature of skills development and utilization, as well as the social-ecological dynamics of skills demand and utilization. We note too that Wedekind (2016) has argued for relational agency and collegiality as mechanism for this within public VET institutions themselves where hierarchies in social relations tend to dominate, as they have historically also done between universities and vocational providers due mainly to social stigma and the reproduction of elites by universities. Relational agency broadens from individual action or agency and brings in the element of social action in a regional social ecosystem for skills. It challenges established hierarchical relations and allows

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for the production of 'common knowledge' that integrates across disciplines and hierarchies. This concept of relational agency (Edwards, 2005; Burkitt, 2016) is well demonstrated in our earlier descriptions. As shown by the cases, relational agency is a capacity to work with others to expand the object that one is working on and trying to transform by recognizing and accessing the resources that others bring to bear as they interpret and respond to the transforming object. Relational agency focuses more directly on the nature of the relationships that comprise a network of expertise (Edwards, 2005). In our cases, we have shown the way in which universities can form part of the relational network in coconstruction of an expanded social ecosystem for skills approach for VET, supported by CHAT and PAR methodologies. This does not mean that universities need to become VET providers, but rather that they work relationally with VET providers and other actors in the local economic and social-ecological contexts to advance sustainable development and respond to associated skills demands. In other words, they can fulfil a role of 'scholarship of engagement'.

This approach brings a new dynamic and orientation to skills acquisition or VET in terms of not only how to work, but also learning how to work together in engaging with the world of work (Edwards, 2005). This process is supported by PAR, but also through dialogical and enquiry-based pedagogical methods of group work or social learning. During such learning processes, students' agency and its emergence in relation to context and questions of the day is a significant outcome (Lehtonen, 2015). We saw this in the Alice case where students became active agents in supporting farmers in the local agroecological system through their engagement in codesigned productive demonstration site activity. The same is evident via the expansive learning orientation of CHAT, which advances relational agency around shared objects of activity in multi-actor settings (Engeström, 2001) and supports transformative agency (Pesanayi, 2019a).

Innovation systems and social movement building, role of community actors and universities

The case study findings also show that the expanded social ecosystem for skills concept is closely aligned with innovation systems development, which entails that new products/processes/services or new technologies be brought into social use through the activities or interactions between the actors and network of organizations, institutions and policies needed to bring those ideas, products, processes and services or technologies on to the market or into sustainable development use (such as rainwater-harvesting technologies). It is therefore about a network of institutions in all sectors for the production, diffusion and use of new and economically and socially useful knowledge and informs the policy framework within which the innovation process can take

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place. It highlights the interconnectedness of the knowledge/technology-creating institutions (Post-Harvest Innovation Learning Alliance, nd). Our cases, which differ from much mainstream innovation literature, show the need to embed and support situated innovations through expansive learning in learning networks and enclaves conceptualized as a relational dynamic between actors in an expanded skills ecosystem. This brings dynamism and situational relevance to the innovation process logic and makes the innovation concept a learning-centred concept and not a top-down impositional concept. As Whitley (2001) argues, educational and training institutions, public and private sector or not-for-profit NGOs all need to be involved. As shown, this is more accurately a process of social movement building rather than a technology of innovation diffusion.

Community engagement in theory and practice

As indicated, the role of the university in providing mediating support in the establishment of expanded social ecosystems for skills also supports recent emphasis on community engagement as a core role and pillar of higher education. The relational agency deployed among the partners in the expanded social ecosystems described in our cases show universities practising community engagement. By being a key role player in the expanded ecosystem, the university is not an 'outsider' that is 'developing the community', as can be found in some examples of community engagement practice, but rather a key contributor to the local economy, community and skills system, without losing its role as knowledge producer and educator with contributions to make at national and international levels. In fact, these contributions can be brought home into the local skills ecosystem as was the case in Alice where the university was able to mobilize national and international resources (financial, social, partnerships, technology and so on) to advance the expanded ecosystem, while developing both academic research and community activity at the same time. Like work on the advancement of the expanded skills ecosystem concept, community engagement in universities often involves partnerships and coalitions that help mobilize resources and influence systems, change relationships among partners, and serve as catalysts for changing policies, programmes and practices.

We found this to be the case in our research. In the Alice case, the students involved in the programme and the programme as a whole won awards for community engagement as a form of 'scholarship of engagement', showing that the role of the university in advancing skills ecosystems and skills ecosystem research praxis offers strong contributions to the community engagement and scholarship of engagement role and practice in universities. Indeed, it integrates teaching, research and community engagement and does not separate these functions out in the university, as is often the case.

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Conclusion and agenda for the coming years

Our intention in this chapter was to focus on the role of formal learning institutions in the formation of the expanded skills ecosystem approach to VET and skills for sustainable development. We focused particularly on the university, as the university has a key partnering role to play in skills ecosystem development work. We have shown how three universities, working together with VET learning institutions (formal and informal) in two case study sites (Alice and Gulu), were able to mobilize significant capacity, resources and new approaches (innovations) as well as contribute to social movement building through an approach that values and develops relational agency. This also centres university contributions to community via an engaged approach to teaching, research and local sustainable development praxis, reflecting a 'scholarship of engagement'. We have indicated the key role that universities can play, especially in helping to make verticalities more facilitating through bringing resources from national and international platforms into the local economy and skills development setting, but also to mobilize new knowledge resources and approaches to local development that can open up new VET learning opportunities. In our research, we have also shown that there is a need to reframe the notion of demand in an expanded social ecosystem for skills approach to be inclusive of productivity in the traditional industrial sense, but also of productivity and demand for social and social-ecological systems knowledge and praxis for livelihoods advancement, that is, the bringing together of work, learning and living. There is a need for further research and development of LED opportunities by university partners working with other LED partners, and for deeper and more substantive engagement with the facilitating verticalities, especially when their facilitating role fails local economies and learning processes. Universities are well placed to take up such research in interdisciplinary teams. As shown in this chapter, this aligns well with innovations system development, community engagement and engaged research, as well as knowledge sharing and coproduction roles of universities who take a scholarship of engagement seriously. This orientation also repositions universities as contributors to social movement building for sustainable development in the expanded skills ecosystem model, reducing their historical isolation from local communities.

Across the book, the concept of boundary crossing (see also Pesanayi, 2019a) has come to the fore for advancing VET in Africa if we are to meet the demand for meaningful VET that is available in both formal and more informal VET learning settings. Universities should not see themselves as divorced from the VET landscape, but rather as active contributors in partnership with VET institutions (formal and informal) to sustainable skills ecosystems. Interestingly, as this chapter was being finalized, UNESCO and the Southern African Development Community were hosting a 'Futures

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of Education' meeting to discuss exactly this: how VET institutions and universities can work more cohesively in support of local and regional development priorities while also fulfilling their respective mandates. A similar challenge for a restructuring of university–VET relations was voiced in the UNESCO report on Futures of Education (see Chapters 1 and 9). Engaging within the expanded social ecosystem approach as articulated across this book repositions universities not as VET institutions themselves, but as vital contributors to the emergence of a viable and relevant VET landscape in Africa, which includes emerging learning networks, learning communities and enclaves of innovation, directed at just transitions and inclusive sustainable development that embrace the links between and coconstruction of new ways of learning, working and living necessary for viable futures for Africa's young people and future generations.

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