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Technical and vocational education and training (TVET) colleges and industry: Strengthening partnership-building practices

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ABSTRACT

Partnerships between technical and vocational education and training (TVET) colleges and industry play an important role in enhancing the quality of TVET education, both in South Africa and globally. Effective college–industry partnerships enable TVET colleges to stay abreast of technological advancements and changing practices, ensuring their relevance in a time of rapid technological, social and economic change. This study was guided by the research question: How can TVET college–industry partnerships be strengthened to benefit students, colleges and industry? The research aimed to identify strategies for initiating and sustaining mutually beneficial partnerships. Using Activity Theory and a responsive evaluation methodology, the study uncovered challenges in building, maintaining and expanding TVET partnerships but also highlighted successful practices and examples of emerging transformative agency among management teams.

KEYWORDS

TVET college; college–industry partnerships; Activity Theory; expansive learning; transformative agency

Introduction: What we know about TVET college–industry partnerships

Partnerships matter in the technical and vocational education and training (TVET) sector and they are key to improving the quality and outcomes of TVET provision in both South Africa (Petersen et al., 2016) and internationally (Beddie & Simon, 2017). Strong partnerships enable TVET colleges to be responsive to new technologies and new practices across occupations and fields and to maintain relevance in a time of rapid technological, social and economic change (Amey & Eddy, 2023). The primary beneficiaries of partnerships are therefore the TVET colleges themselves. Additional beneficiaries include students who are provided with enhanced learning experiences and also the employers, businesses, industries and communities linked to the partnerships. Because partnerships (with employers, industries and communities) play a role in financing, educational provision and employment opportunities in TVET, productive partnerships are commonly understood as having a multiplier effect in improving the quality of TVET, besides leading to social, economic and personal outcomes (Beddie & Simon, 2017).

There has been considerable growth in the number and variety of TVET and industry partnerships in South Africa (Petersen et al., 2016) and these have had benefits for both the TVET colleges and industry partners. Partnerships enhance graduates' employability but can also provide opportunities to generate new knowledge and capabilities which add to the competitive positioning of the stakeholders involved (Grollmann & Rauner, 2007). The aim of this study was to build knowledge about TVET college–industry partnership-building practices for the purposes of enabling colleges to initiate, sustain and expand partnerships that are mutually beneficial. The research question guiding this study is this: How can TVET college–industry partnerships be strengthened to benefit students, colleges and industry?

Review of the literature on partnership management

This review of the literature focuses on managing partnerships for productive collaboration between TVET colleges and industry. Much of the literature on partnerships is international. Therefore, it does not generally take into account the dynamics underpinning partnerships in the South African context. This applies particularly to the 'contradictory and countervailing policies' in the TVET sector (Needham, 2019:83) that have a negative impact on public–private partnerships; it also pertains to the challenges posed by the need for capacity-building and more flexible systems in the TVET sector (Keevy et al., 2021).

Partnerships are co-configurations that require continuous attention as needs change (Amey & Eddy, 2023). To establish a successful partnership, TVET colleges must assess their readiness (Duncan, 2017), clarify their vision, mission and values (Billett & Seddon, 2004), and fulfil industry partners' requirements (Abdullah, 2013). In both South African and international contexts, key indicators of college readiness for partnerships include prior industry linkages (Duncan, 2017), adequate preparation (De Paor, 2018),

and a commitment to aligning college and partner requirements (Sappa & Aprea, 2014). Incentives and government measures can be effective in initiating and sustaining partnerships (Remington, 2018; Keevy et al., 2021).

The most well-known form of college–industry partnership is the dual-education system that is employed in several European countries, most notably in Germany (Taylor, 2009). It is a system that governments in many countries, including the United States, Russia, China and South Africa, are seeking to adopt to improve the ways in which colleges and industries relate to one another (Remington, 2018; Wiemann & Fuchs, 2018). In the dual-education system, periods of theory-based classroom study are alternated with block periods of supervised work experience. Dual-education systems evolved over time and extensive negotiations ‘between employers, unions ... government, and schools over control of training ... and the value of that training in the labour market’ (Taylor, 2009:146). The success of this model has been widely acknowledged but is difficult to replicate as it is ‘dependent on employer engagement’ (Smith et al., 2011:365) and affected by economic conditions (Smith et al., 2011:374).

The successful collaboration between a college and an industry partner depends on the partner’s skills (Sappa & Aprea, 2014; De Paor, 2018; Keevy et al., 2021) and leadership abilities (Remington, 2018; Amey & Eddy, 2023). College staff are expected to play a role in orienting students to the field of practice (Watt-Malcolm & Barabasch, 2010; Mesuwini, Thaba-Nkadimene & Kgomotlokoa, 2021), while industry partners provide the necessary training and supervision (Jansen & Pineda-Herrero, 2019). Support and mentoring are also essential, with dedicated support staff being made available for internships and colleagues. The assessment of student interns is a key aspect of partnerships (Yusop et al., 2023), with industry partners usually possessing the knowledge and skills to assess students’ work practices (Pillay, Watters & Hoff, 2013). Industry certification can also be beneficial to all parties (Suroto & Hung, 2018).

The selection of college and industry representatives is crucial to successful TVET college–industry collaboration (Sappa & Aprea, 2014): these representatives should have expertise and clear policies to guide roles, responsibilities and expectations. They exercise various functions, such as orientation and induction training and supervision, support and mentoring, assessment, certification (Flynn, Pillay & Watters, 2016; Mesuwini et al., 2021) and communication (Polesel et al., 2017). Both college and industry partners have roles to play in preparing students for work (Jansen & Pineda-Herrero, 2019).

Partnership-building, with attention being paid to the management and administration of the partnerships, is crucial to the success of collaborations (Huddleston & Laczik, 2018). Early planning (Mesuwini et al., 2021), staff development (Higham & Farnsworth, 2012) and sustainability (Huddleston & Laczik, 2018; Pfeifer & Backes-Gellner, 2018) are key indicators of successful partnership-building. Industry partners should be involved in planning activities, student selection, facility preparation, teacher development (Grollmann

& Rauner, 2007) and teaching materials (Pillay et al., 2013). A clear communication strategy, including TVET and industry contact persons, is essential to maintaining a successful partnership (Polesel et al., 2017). Future planning, such as identifying future partners and expanding networks, can build on existing partnerships (Marock, Hazell & Akoobhai, 2016). Monitoring and evaluation are necessary for assessing the effectiveness of partnerships (Lee, 2010) and for understanding how partnerships might be changing (Tjiptady & Yoto, 2019; Gekara et al., 2020). Extending a partnership as new areas of mutual interest emerge is usually an important issue for effective partnership development (Petersen et al., 2016; Bolli et al., 2018).

The process of setting up and managing partnerships is time-consuming, involving as it does scoping, matching students and facilitating the student–industry match (Armatas & Papadopoulos, 2013). Successful partnerships also undergo expert peer review and strive to understand the different partners’ objectives, constraints and expectations (Makgato & Moila, 2019). In the South African context, productive partnerships would need to include ‘the private sector, communities, industry and labour market experts, civil service organizations and students’ (Keevy et al., 2021:22). The contributions of the partners is to

continuously maintain a responsive and agile TVET system, keep it relevant for the economy, and to make people capable and resilient to tackle current and future challenges in their working and private lives (Keevy et al., 2021:9).

A conceptual model for managing strategic partnerships was developed from the South African and international literature in an attempt to understand the phases of partnership-building and the indicators of successful partnership maintenance, extension and evaluation.

The conceptual model for managing strategic TVET college–industry partnership-building was derived from Rogers, Kent and Lang’s (n.d.) flexible partnership model, which was contextualised for the South African TVET sector. Rogers et al’s model was designed for use with a single partner and for large coalitions for the purpose of guiding partners through the life cycle of successful collaborations.

TABLE 1: A conceptual model for strategic TVET college–industry partnership-building

	TVET college	Common activities	Potential partner
	<i>Goals/priorities</i>	<i>Common goals/priorities</i>	<i>Goals/priorities</i>
Initial self-assessment	1. Vision, mission & values (Needham, 2019; Keevy et al., 2021) 2. Readiness (Duncan, 2017) 3. Skills (De Paor, 2018) 4. Leadership (Remington, 2018)	Shared vision, mission & values Shared interests Complementary skills Joint leaderships Define common projects or tasks	1. Vision, mission & values (Abdullah, 2013) 2. Readiness (Fuchs, 2022) 3. Skills (Sappa & Aprea, 2014) 4. Leadership (Amey & Eddy, 2023)

	TVET college	Common activities			Potential partner
Representative-selection	<i>Roles & responsibilities</i>	<i>Shared contribution</i>			<i>Roles & responsibilities</i>
	5. Orientation (Mesuwini et al., 2021)	Resources			5. Induction (Watt-Malcolm & Barabasch, 2010)
	6. Training (Grollmann & Rauner, 2007)	Stipends			6. Training & supervision (Jansen & Pineda-Herrero, 2019)
	7. Support (Higham & Farnsworth, 2012)	Time			7. Mentoring (Pillay et al., 2013)
Partnership-building	8. Assessment (Yusop et al., 2023)	Staff			8. Assessment (Flynn et al., 2016)
	9. Certification (Abdullah, 2013)	Skills			9. Certification (Suroto & Hung, 2018)
	10. Communication (Polesel et al., 2017)	Expertise			10. Communication (Polesel et al., 2017)
		Advocacy			
Evaluation		<i>Define level</i>			
		National	Collegial	SETA ¹	
		Regional	Advisory	MoA/U ²	
		Local	Formal	Contract	
Partnership-building	<i>Activities</i>	<i>Clarify and define</i>			<i>Activities</i>
	11. Initial planning (Huddleston & Laczik, 2018)	Expectations			11. Initial planning (Pfeifer & Backes-Gellner, 2018)
	12. Teacher continuing professional development (CPD) (Suroto & Hung, 2018)	Accountability			12. Capacity development (Pillay et al., 2013)
	13. Sustaining (Marock et al., 2016)	Division of labour			13. Sustaining (Suroto & Hung, 2018)
Evaluation	14. Future planning (Tjiptady & Yoto 2019)	Communication			14. Future planning (Gekara et al., 2020)
	15. Extending the partnership (Bolli et al., 2018)	Timeline			15. Extending the partnership (Petersen et al., 2016)
		Conflict resolution			
		<i>Define outcomes</i>			
Evaluation	<i>Assess progress</i>	Short-term			
	16. Assess progress (Lee, 2010)	Medium-term			
	17. Assess outcomes (Makgato & Moila, 2019)	Long-term			
	18. Reprioritise, if necessary (Armatas & Papadopoulos, 2013)	Maintenance/evaluation feedback loop			

Adapted from: Rogers, Kent & Lang (nd).

¹ Sectoral education and training authority

² Memoranda of understanding (MoU) and memoranda of agreement (MoA).

Theoretical framework for studying the management of TVET college–industry partnerships

Activity Theory was chosen as a theoretical framework for this study of TVET college–industry partnerships as it is a system-level theory of practice (Daniels et al., 2010). Third-generation

Activity Theory (Engeström, 2015) explains and provides key concepts for understanding managerial work across multiple activity systems. It was therefore useful for framing college and industry partnerships as interactions across systems involving various subjects (e.g. students, lecturers, industry-based practitioners and policymakers) who or which engage in collaborative activities to achieve desired outcomes (e.g. student development and workforce preparation). Activity Theory can help with identifying the different components of activity systems, including the division of labour, the tools or resources used, the rules and norms governing interactions, and the roles of the various stakeholders.

In this study, Activity Theory provided a deep, systemic understanding of the factors influencing TVET college–industry partnerships – and interconnections. Activity Theory was used to identify ‘contradictions’ or challenges in the system and to formulate more effective strategies for managing partnerships that could ultimately benefit all concerned. TVET college and industry partnerships often rely on various tools and artefacts (e.g. curriculum frameworks, internship programmes and technology platforms) to support collaboration and facilitate learning and skill development. Activity Theory helped to identify and analyse the ways in which different tools, documents and resources (including human resources) mediate interactions between different stakeholders and shape the dynamics of partnership activities.

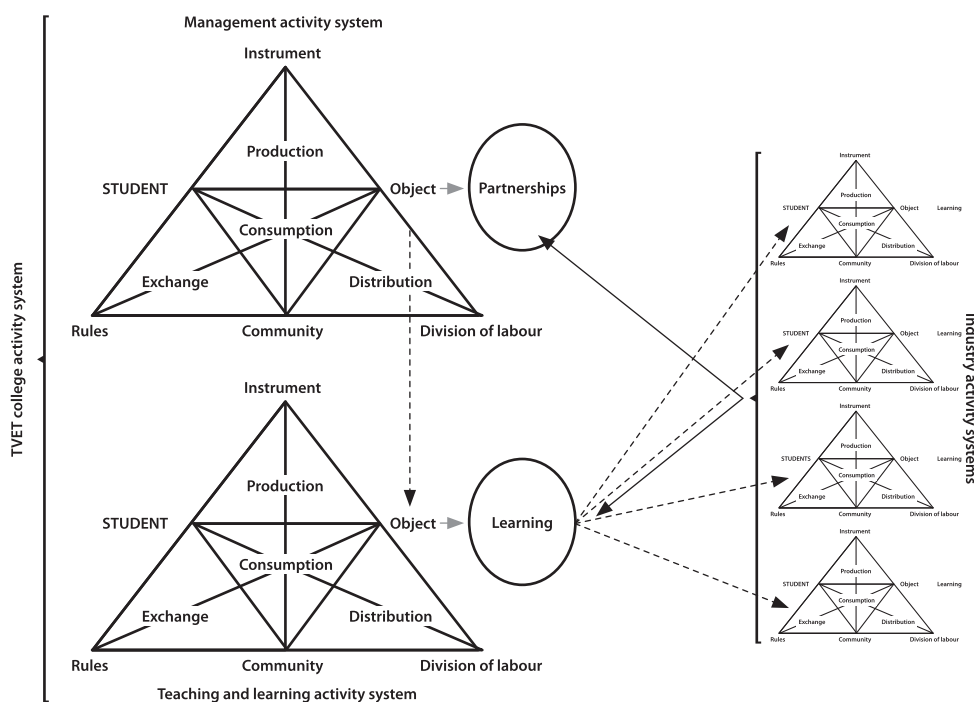


Figure 1: A TVET college–industry partnership activity system

Source: Adapted from Engeström (2009).

Activity Theory emphasises the importance of the historical and cultural context in which activities take place. The framework is therefore useful for considering how historical factors (e.g. policy decisions and economic trends) and cultural norms shape college–industry partnerships, influencing the goals, structures and outcomes. Figure 1 shows how a TVET college on the left-hand side – comprising a management activity system and a teaching and learning activity system – could interact with multiple industry partners. ‘Industry’ is used as a generic term; the potential partners would include business enterprises, banks, hotels, hospitals, clinics, communities, and so on. The industry activity systems on the right-hand side of the diagram represent potential industry partners and workplaces where students might gain work experience and might possibly find employment.

Teaching and learning activity system

In the activity system of a TVET college (bottom left of Figure 1), the subjects are students, whose purpose (or ‘object’) it is to learn. The object of the TVET teaching and learning activity system is the quality of student learning. Lecturers and industry coordinators are located among the ‘instruments’ that mediate the quality of learning. There are other mediational means, such as curricula, facilities, equipment and other resources. For all in the teaching and learning system to work successfully on this object, human and other resources are needed. The lecturers and students work within a TVET culture that has rules and hierarchies of decision-making (rules and divisions of labour, respectively). The rules and divisions of labour may enhance or inhibit students’ and staff members’ ability to work towards the improvement of student learning, particularly that regarding industry experience. The outcome flows from the activity, which, in Figure 1, is represented by dashed lines that show the subject progressing from the learning object to occupy roles as subjects in the industry activity systems. Activity Theory tells us that the outcome – in this case, the employability of students – will improve if the participants do not lose sight of the object (Engeström, 2001), which, in this case, is the provision of high-quality vocational learning. The necessary tools and resources need to be available and appropriate rules and divisions of labour should guide the system. The community of an activity system comprises those entities and individuals that are affected by the system – for instance, the potential industry partners – but who are not directly involved in the work of achieving the object.

TVET college management system

The management activity system shown at the top left in Figure 1 has the primary object of developing policies and providing a conducive working environment to enable the teaching and learning system to achieve its object of quality student learning. This is represented by the dotted line linking the management and the teaching and learning objects. The management activity system, in this case, also has an object of partnership-building. The managers in the TVET college who are responsible for the administration and management of TVET–industry partnerships are the subjects of the activity system. These managers might include a deputy principal and a director of partnerships and/or placement and learnership officers.

For the subjects to succeed in executing the mandates, instruments, which might include human and material resources, would be required. The object of the activity system is building TVET college–industry partnerships and the desired outcome is partnerships that are mutually beneficial and sustainable. The division of labour involves dividing roles and responsibilities among those deputy principals who are responsible for partnerships, directors, placement and learnership officers, and workplace mentors. The community comprises both potential industry partners and other stakeholders, while the rules include DHET (Department of Higher Education and Training) policies, TVET college policies and legislation relevant to skills development in South Africa.

Many TVET colleges are undergoing significant transformation under new policy directives (Buthelezi, 2018) and enhancement initiatives (Sithole, 2019) and they are generally becoming more responsive to industry needs (Marock et al., 2016). Many of these initiatives require industry partners to:

- Support colleges in improving their infrastructure to include industry-equivalent training facilities (Lee, 2010);
- Facilitate teacher sabbaticals in industry (Duncan, 2017);
- Offer industry training (Abdullah, 2013);
- Provide industry certification (Suroto & Hung, 2018);
- Accommodate student placements (Sappa & Aprea, 2014);
- Provide industry representatives to co-assess practical subjects (Pillay et al., 2013);
- Facilitate cultural change (Flynn, Pillay & Watters, 2016); and
- Develop leadership in individuals (Badenhorst & Radile, 2018).

This partnership-focused activity system was the focus of this study.

Contradictions

Figure 1 represents the ways in which the TVET college and industry activity systems could interact. In any activity system – and, more particularly, when more than one activity system is involved in attaining a shared (or partly shared) object – there are likely to be contradictions and tensions that would need to be resolved in order to align the two systems (Taylor, 2009). This would be the case in partnership-building and a key aspect of partnership-building work should involve negotiations between the partners that investigate the contested terrain (Watt-Malcolm & Taylor, 2007). There are essentially three types of contradictions: primary, secondary and quaternary:

- Primary contradictions are those that arise in the elements of the activity system. In the case of partnerships, a primary contradiction may arise in subjects if there is insufficient capacity or willingness among the subjects to maintain or sustain a partnership.
- Secondary contradictions are often caused when instruments are inappropriate to, or insufficient for, attaining the object. In the TVET college activity system, there

could be insufficient resources or the absence of a budget for partnership-building activities. Tertiary contradictions could arise between a TVET management activity system and what Engeström (2001) calls ‘its historically evolving trajectory’. This could involve conflicts between the current practices or norms of the activity system and its future developmental path as set out in policy documents. Overcoming this contradiction is challenging as it requires the subjects to embrace new approaches and technologies for the future.

- Quaternary contradictions often arise between multiple activity systems, such as when there are conflicts between the goals, norms or practices of activity systems that are interconnected or interdependent. For activity theorists, such misalignments, challenges and other disturbances ‘hold within them the possibility of the collective propelling themselves forward to search for new ways of doing and achieving what is not yet there’ (Engeström, 2018:14).

Partnerships are always dynamic processes that evolve over time in response to changing external conditions and internal dynamics. Activity Theory offers insights into the ways in which partnerships develop, adapt and transform over time. These insights highlight the role of learning, innovation and collective problem-solving in driving change. Activity Theory therefore provides a valuable lens for the present study.

Boundary-crossing

Whereas Activity Theory predicts that every activity system will include contradictions, it also emphasises the importance of mediation and of resolving contradictions through collaborative and transformative processes. Boundary-crossing is one way in which contradictions can be resolved. Engeström (2009:313) explains it this way: ‘Human beings are involved in multiple activities and have to move between them.’ Boundary-crossing also occurs between ‘collective activity systems and organisations’ (Engeström, 2009:314); it could therefore be viewed as the interactions between at least two distinct activity systems and it could occur in those moments when different activity systems come into contact and influence each other (Engeström, 2015). This could involve individuals, tools or ideas moving between the systems.

Typically, boundary-crossing is needed when one activity system seeks resources or expertise from another activity system. Finding out about the different practices or tools of different activity systems could spark new ideas and lead to improvement and innovation. Consequently, when two or more activity systems collaborate towards a shared goal, as in partnership-building, boundary-crossing is likely to occur (Flynn et al., 2016) and it is therefore likely to play a role in developing and transforming activity systems.

Knotworking

Knotworking is another strategy that could be employed to resolve contradictions within an activity system (Engeström, 2018). It involves engaging in collaborative problem-solving in

order to deal with contradictions that hinder an activity system's effectiveness. Knotworking – a metaphor that brings together the idea of something 'not working' and an image of the interwoven, tangled nature of a knot – brings diverse perspectives and expertise to bear on a contradiction in an activity system. It can, for instance, help the subjects of activity systems to overcome any limitations in the current system. In the case of a primary contradiction, such as a lack of capacity in a subject group, knotworking could involve collaboration with others who possess the necessary expertise; and when conflicting rules create a barrier, knotwork might involve communication and negotiation to find a workable solution.

In knotwork, diverse subjects, tools or even different activity systems are interconnected to achieve the object. It has been pointed out that this collaborative approach is especially useful in situations that require knowledge to be sourced and applied from various domains (Kerosuo, Mäki & Korpela, 2015). Knotwork is therefore a dynamic and evolving process, and successful knotwork usually requires support from outside the activity system to recognise and facilitate the development of these practices. The interconnected and dynamic nature of knotworking allows for speedier adaptation in a context that is undergoing significant change (Engeström, 2009).

Expansive learning

The concept of expansive learning describes the processes of transformative change and development within activity systems (Engeström, 2015). It is distinguished from other forms of learning by its focus on learning in diverse contexts (which are often very different from those of formal schools or universities) and involving diverse groups of people (Engeström, 2015). Expansive learning could be understood as being a creative form of learning in which diverse subjects bring their different perspectives, experiences and knowledge to an object, which enables innovation. It involves 'essentially learning something that does not yet exist' (Engeström, 2015).

The metaphor of expansion depicts the multidirectional movement of the subjects who are engaged in constructing and implementing a new, broader and more complex object for their activity. This type of learning can lead to transformation both 'at the level of individual actions and at the level of the collective activity and its broader context' (Sannino, Engeström & Lemos, 2016:603). It occurs when

individuals and groups confront and resolve contradictions, leading to the restructuring of activity systems and the creation of new forms of practice and knowledge, or the exchange of resources, ideas, and practices, potentially leading to innovation, learning, and improved outcomes (Sannino, et al., 2016).

Transformative agency

Engeström (2015) explains that engagement in expansive learning (including boundary-crossing and knotworking) can foster transformative agency. This involves individuals

and groups transforming their work practices and adapting to changing circumstances through collaborative learning. Engeström (2015) considers expansive learning to be core to transformative agency in wider communities and work settings. Transformative agency is thus a quality of expansive learning; learning expansively requires individuals or groups to break away from a given frame of action and to take the initiative to transform it. The new concepts and practices generated in an expansive learning process ‘carry future-oriented visions loaded with initiative and commitment by the subjects’ (Sannino et al., 2016:603).

Research methodology: Responsive evaluation

Evaluation research is the approach that was selected for the present study as it can both build knowledge and contribute to the improvement of practice in a field (Stake, 2012). In the TVET context, the use of evaluation research findings can support meaningful change towards improved outcomes for colleges, educators and students. The intention behind the use of evaluation research in this study was both to build knowledge about the management of partnerships and to provide a guiding framework that educational managers could use to improve practices.

There are many different approaches to, and types of, evaluation research. It can play a formative role, identifying areas for improvement, or a summative role (Savin-Baden and Major, 2023), judging the effectiveness of a practice or an intervention. However, the approach selected for the present study was ‘responsive evaluation’ (Stake, 2012), an approach that pays particular attention to ‘the needs of those involved in the evaluation’ (Savin-Baden and Major, 2023:277). A responsive evaluation design can include both formative and summative elements. In this study, because partnerships are ongoing and changing, a formative approach was considered appropriate to improving the way TVET college–industry partnerships are managed, taking into account the caveat that there are no simple answers to the typical formative evaluative questions of: What is working? What is not working? In which contexts? With which groups? And how can it be improved?

Defining the merits of existing practices, separating out the parts played by the various factors – such as the geographical location of a college, the availability of industry partners or the needs of the participants – while appraising their value and making recommendations for improvements are complex undertakings in evaluation research, and particularly so in responsive evaluation (Stake, 2012). There are always confounding and complicating effects in each stage of implementing an evaluation. Yet, despite the many complexities in the formative evaluation of management practices, there is a strong need to evaluate both the existing practices and the actual or potential outcomes of improving both new and existing practices and interventions.

Data collection

The data-collection method used for this study was ‘survey interviewing’ (Singleton & Straits, 2012; Fowler, 2014:110), which, as its name suggests, is a hybrid approach that combines a survey or questionnaire with individual or focus-group interviews. The questionnaire typically

contains predetermined questions, which could be both fixed-response options (such as multiple-choice, yes/no, or rating scales) and open-ended questions that enable participants to express opinions or to provide detailed responses (Singleton & Straits, 2012). In this case, the 70 participants were drawn from the management teams at 21 different public colleges. Survey interviewing produces richer data than standard questionnaires for several reasons: it is facilitated by interviewers; questions seeking clarification can be dealt with directly; the participants can be prompted; reflection can be encouraged (Singleton & Straits, 2012:81), while consistent data collection across sites is also more likely (Fowler, 2014:120). Structured interviewing is widely used in research, surveys, market research, public-health studies and the social sciences; it is also useful for collecting quantitative data and for studies ‘where comparability is important’ (Fowler, 2014:115).

Sampling

Purposive sampling was applied in which partnership management teams (deputy principals of partnering institutions, directors and industry liaison officers or placement officers) across the 50 public TVET colleges in South Africa were invited to participate in the partnership survey. The TVET division of DHET assisted with the arrangements that had to be made for the survey focus-group interviews. While not all of the invitees took part in the survey interviews, the actual participants are typical of the partnership management teams that have been established in most public TVET colleges.

Table 2: Partnership management teams

	Province/region of TVET college	Management team	Number of team members	Team leader
1	Eastern Cape	Team 1	4	Placement Officer
2	Eastern Cape	Team 2	4	Deputy Principal: Partnerships
3	Eastern Cape	Team 3	4	Learnership Officer
4	Eastern Cape	Team 4	4	Placement Officer
5	Eastern Cape	Team 5	4	Placement Officer
6	Eastern Cape	Team 7	4	Deputy Principal: Partnerships
7	Eastern Cape	Team 8	3	Deputy Principal: Partnerships
8	Eastern Cape	Team 20	3	Placement Officer
9	Free State	Team 10	3	Placement Officer
10	Free State	Team 12	3	Placement Officer
11	Free State	Team 17	3	Learnership Officer
12	Free State	Team 18	3	Deputy Principal: Partnerships
13	Gauteng	Team 14	3	Deputy Principal: Partnerships
14	Gauteng	Team 16	3	College Principal
15.	KwaZulu-Natal	Team 13	3	Learnership Officer

	Province/region of TVET college	Management team	Number of team members	Team leader
16	Limpopo	Team 6	4	College Principal
17	Limpopo	Team 15	3	Placement Officer
18	Mpumalanga	Team 21	3	College Principal
19	Northern Cape	Team 19	3	Placement Officer
20	Western Cape	Team 9	3	Deputy Principal: Partnerships
21	Western Cape	Team 11	3	College Principal

This research was commissioned by the TVET division of DHET as a subproject of a Five-Year TVET Research Programme that focuses on the evaluation of public TVET colleges in South Africa.

Ethical considerations

Ethical clearance for this sub-study was received from a university research ethics committee. All the necessary site permissions were obtained through the TVET Directorate. The survey interview sessions were attended voluntarily and informed consent was provided. The participants were informed that they had the right to terminate their participation in the study at any time without any negative consequences. The key ethical dimensions of the study were informed consent, confidentiality, the protection of personal information, data storage and transparency to enable the transfer of relevant knowledge to all those who could benefit from the findings of this study on the management and administration of college–industry partnerships.

Data analysis

There were three levels of data analysis: the first level identified elements of the activity system evident in the data; the second level explained the contradictions in the activity system, and the third level focused on indicators of boundary-crossing, knotworking, expansive learning and the emergence of transformative agency.

Findings: The TVET partnership management activity system

The findings from the survey interviews are presented below, through the lens of Activity Theory.

Subjects: Dedicated partnership management teams

The subjects were management teams comprising college principals, deputy principals in charge of partnerships, and learnership and placement officers. Each partnership had a project team, sometimes called an ‘implementation team’ (Team 7) that was ‘responsible for the partnership’ (Team 16). The teams had varying levels of experience: Team 3 had ‘been

working with TVET–industry partnerships for about 12 years whereas Team 21 had been working with partners for a year and only ‘10% of their key performance [was] weighted towards this objective’ (Team 21).

Object: Partnerships to serve a wide range of purposes

All of the teams were either seeking or working on partnerships, for many different reasons. Many partnerships were sought for the purpose of providing work-based learning for college students:

Some of the partnerships [falling] under my unit deal with placement of learners for workplace-based experience or for experiential learning, internships; others deal with funding of the placement and also ... psychosocial support (Team 4).

As Team 20 explained, placing students in workplaces required funding, so partnerships also had to be set up for ‘funding purposes – [bursaries], WIL, learnerships, institutional development, etc.’. Some partnerships had as their purpose institutional development in which an industry partner provided a ‘workshop upgrade’ (Team 4) or ‘infrastructural development’ (Team 7). Fewer partnerships were intended for lecturer development – in fact, Team 5 was ‘not aware of any’ partnerships created for this purpose. There were, however, teams working with SETAs and industry partners for the purpose of obtaining industry experience for lecturers (Team 18) and, in one case, providing ‘international exchange’ experiences (Team 7).

Tools for finding and sustaining partnerships

A variety of tools were implemented when seeking and consolidating partnerships. The initiating of partnerships usually happened informally

[b]y contacting industry directly ... using electronic communication, walk-ins; and we also ... held a business breakfast event in which we invited potential partners and current stakeholders (as explained by Team 5).

Team 6 similarly described a ‘face-to-face approach and presentation, breakfast meetings’.

To consolidate a partnership, teams used various means such as: (a) questionnaires to assess the relevance of the partnership; (b) an expression-of-interest letter to the partner; (c) a partnership agreement; and (d) a register of all the partnerships concluded. One team member elaborated that ‘with each MoU or agreement, there are clear deliverables with specified time frames for each deliverable’ (Team 20). Standard partnership contracts had a starting date and an end date, with quarterly reports being used to monitor the progress of partnerships against key deliverables.

Division of labour: Who is responsible for what?

All of the teams agreed that clarification of each partner's role and responsibilities was crucial to the success of a partnership, and that partnerships were functional when there was clarity about these elements:

The roles and responsibilities must be clearly defined in the founding agreement, and at the conclusion of a project, meetings are convened (Team 8).

There might be some flexibility regarding the division of labour, as explained below:

The college is responsible for payment of the stipends while the partners are responsible for the hosting and training of learners. The industry partner provides students with relevant workplace training and development; and, sometimes, the industry partner provides funding for necessary training interventions (Team 3).

Whatever arrangements are made, 'the purpose of the relationship is working towards shared goals through a division of labour that all have agreed upon' (Team 19).

Community of potential partners

The community of potential and actual industry partners included those from fields such as insurance, banking, telecommunications, the retail trade, agriculture, engineering, the automotive trade, tourism and hospitality, human resources (HR), construction, non-governmental organisations (NGOs) and non-profit organisations (NPOs), as well as universities, national and regional government departments and local municipalities. A wide range of sectoral education and training authorities (SETAs) were named: AGRISSETA, BANKSETA, CATHSSETA, CETA, CHIETA, ETDPSSETA, FASSET, FOODBEV, INSETA, LGSETA, MERSETA, MICTSETA, PSETA, SERVICESSETA and WRSETA. The SETAs mainly provided the funding and stipends for students engaged in work-based learning, but they also supported other partnership-related activities.

Rules: Partnership governance

Partnerships were regulated in accordance with several official 'rules' that emanated both from the DHET and from the partners, as Team 3 explained in detail:

TVET institutions are mandated, amongst other things, to provide training interventions in ... the form of learnerships, apprenticeships, internships, and skills programmes. The aforesaid interventions necessitate that the TVET institutions forge partnerships with ... industry. Appointments were made with key personnel of ... industry to discuss the need for the partnerships, and a

memorandum of agreement/memorandum of understanding and a service-level agreement were signed depending on the type of partnership.

Outcome: 'Mutual benefits for both entities'

Most teams commented positively on the outcomes of partnership-building, which, in some cases, had been 'very effective but with a few challenges' (Team 13). Some partnerships had existed for many years. Team 10, for example, had 'effective industry partnerships, with some partnerships which had been established in 2013'. For some teams, effective partnerships were those that were 'still going' (Team 15) or that provided 'student and lecturer placement' (Team 6). An example of a partnership that had progressed 'quite excellently' enabled 'some college learners [to] receive employment' (Team 5). In effective partnerships, as one team member commented, there were 'mutual benefits for both entities' (Team 14). Therefore, to varying extents, the college–industry partnerships had worked. As one team member said: 'On a scale of 10 in terms of effectiveness I will give it an 8' (Team 12).

Discussion: From challenges to emerging transformative agency

Although attitudes were largely positive towards partnerships, the teams had also experienced challenges, which are described below in terms of contradictions in the partnership-building activity system.

Contradictions: Identifying the challenges

Primary contradictions in the TVET activity system occurred in the form of inadequate resources for sustainable partnerships. As might be expected, secondary contradictions arose from the severe shortage of resources and created conflict as a result of the inability of the available resources to support the object of partnership-building. For example, there was inadequate 'funding for WIL and work placement opportunities for students requiring WIL' (Team 19); or there were 'delays with SETA payment of stipends and limited funds' (Team 5); or simply a lack of 'reliable funding' (Team 13) more generally. One team explained that a successful partnership had placed students 'every year' but could only 'keep going ... when the college received funding' (Team 15). Similar views were expressed by other teams, such as the comment that partnerships were 'very effective when hosting students [but] stipends are the issue' (Team 10). The lack of resources had an impact on almost all the elements of the activity system. For example, the partners were 'hesitant to take interns if there [are] no stipends available for students. This also causes transport challenges' (Team 10).

Primary contradictions are contradictions that arise within the elements of the activity system. With reference to partnerships, a primary contradiction may arise within subjects if there is insufficient capacity or willingness amongst the subjects to maintain or sustain a partnership. Secondary contradictions are often caused when instruments are not appropriate or are insufficient, for the attainment of the object. In the TVET college activity system, there

could be insufficient resources or the absence of a budget for partnership-building activities. Tertiary contradictions could arise between a TVET management activity system and what Engeström (2001) calls 'its historically evolving trajectory'. This could involve conflicts between the current practices or norms of the activity system and its future developmental path as set out in policy documents. Overcoming this contradiction is challenging, as it requires subjects to embrace new approaches and technologies for the future. Quaternary contradictions often arise between multiple activity systems, such as when there are conflicts between the goals, norms or practices of activity systems that are interconnected or interdependent. For activity theorists such misalignments, challenges and other disturbances 'hold within them the possibility of the collective propelling themselves forward to search for new ways of doing and achieving what is not yet there' (Engeström, 2018:14).

Tertiary contradictions typically occur when an activity system is expected to incorporate practices and technologies that arise from other activity systems, such as using the 'German Model' (Team 18) in a South African TVET context or introducing the idea of 'students becoming entrepreneurs' into a system that had previously focused on 'employment opportunities' (Team 18). Tertiary contradictions are challenging because they usually involve major changes to the system. One team member felt that 'industries may initiate projects with initial outcomes set to be too high and not considering successive plans' (Team 13). Such tertiary contradictions are common when subjects collaborate across activity systems that have different expectations or use different technologies.

Also typical in collaborations are quaternary contradictions, such as the lack of cooperation between (potential) partners, which was experienced by teams as 'some industries not being open to the TVET college sector' (Team 18) or 'companies not responding positively to requests, hence the limited number' (Team 8). One team stated: 'We would love to partner with the nearby mines, but mines are reluctant, citing issues of security, etc.' (Team 6).

While many industries were able to partner with colleges and provided 'good support' for the 'placement of learners for work-based experience and to run projects together', others were found to be 'very difficult' or not supportive (Team 17). One team member described such conflict as 'a lack of communication with some partners and unwillingness to work with colleges' (Team 18). Some of the quaternary contradictions could be ascribed to factors beyond the subjects' control, such as 'companies closing because of COVID-19 and lack of projects' (Team 6). In the South African context, the historical location of some colleges disadvantaged them in their attempts at partnership-building, such as a college being 'in a semi-urban area, which means the majority of the host employers are not found within this area' (Team 2) or a college 'is situated in a semi-rural area where there is a lack of well-capacitated industry partners and, as a result, industry partners are likely not to cover all areas that must be covered in the training' (Team 4). Some quaternary contradictions could be caused by conflicting values or priorities, which is suggested by subjects' descriptions of industry partners as 'difficult' (Team 17) or not 'open' (Team 18), or there being 'poor participation of mentors' (Team 15). One team expressed the view that a conflict of values

existed between the college and industry, claiming that ‘many industries only participate when clear financial gain can be promoted’ (Team 13).

Boundary-crossing: ‘Dovetailing with partners’

Boundary-crossing is an indicator of problem-solving when multiple activity systems are involved in attaining an object. In this case, the differences between the interests and values of colleges and industry have to do with their different objects. The industry partners were focused on production and services, while the colleges were focused on students’ education. This is essentially a theory–practice divide which both partners need to understand before it can be bridged. For example, the ‘security’ issue expressed by the mining company could be negotiated if each partner found out more about the other’s needs and concerns. Visits to industry partners might initiate boundary-crossing activities to resolve some of these challenges. Teams explained that ‘the college provides the industry partner with students to get exposure to how the industry works for a particular period’ (Team 5). Another team reflected that ‘the partnerships provide services that the college cannot offer’ (Team 7), such as the practical component of the qualification; and, in some cases, ‘they sponsor college activities such as graduation and the issuing of performance awards to the best graduating top ten Financial Management students as an example’ (Team 5). Raising awareness of the value of partnerships could help partners to collaborate at a deeper level. One team used the metaphor of ‘dovetailing with partners’ (Team 5), which perfectly expresses the spirit of boundary-crossing: each partner needs to intrude somewhat into the territory of the other to strengthen their connection, as in a dovetail joint.

Knotworking: ‘Nourishing’ the partnership

Knotworking occurred when the management teams worked together to overcome any barriers to partnership-building. One strategy was to ‘share information’ (Team 11); as a participant explained: ‘Once the partnership is established, then we constantly keep communicating and nourishing the partnership and also deal with issues as and when they arise’ (Team 12).

Expansive learning: A ‘bigger scope of partnership’

A key indicator of expansive learning is when subjects begin to think beyond the constraints of their own activity system. So, if local placements for TVET lecturers were not available, then one might provide ‘international experiences’ instead (Team 7). Or when student placements were not available, one might request industry partners to engage in ‘guest lecturing’ (Team 6). Those engaged in expansive learning seemed to see new vistas opening, as expressed by Team 20: ‘Fine for now, but there is ... room for improvement and development to a bigger scope of partnership.’ Another team expressed the need for ‘many more partnerships to make the colleges more effective’ (Team 17). Yet another team member wanted to ‘expand’ the partnerships to ‘[help] the institution to get more industry partners and placement of students to the industry for workplace exposure’ (Team 3). Another envisaged an ‘extension of the partnership scope

specifically for the [rural college's] provision of resources such as equipment and buildings' (Team 20). Expansive learning entails engaging in transformative practice.

Emerging transformative agency: 'We can still do more'

Transformative agency is the desired outcome of collective problem-solving through expansive learning. For example, many teams expressed the view that TVET curricula do 'not meet industry needs' (Team 16), but only some participants took action to overcome this problem. One manager asked industry partners to 'review the college curriculum to respond to the needs of the market' (Team 2). Another included the 'DHET and industry engagement when curricula are developed' (Team 16), while another requested the 'involvement of business and industry in curriculum development' (Team 21). These are examples of emerging transformative agency in which managers recognise their ability to innovate and improve for mutual benefit. This is a start, but as one team put it, 'yes, but we can do more' (Team 19).

Conclusion: Towards enhanced partnership-building

The aim of the present study was to provide an empirical basis for initiating and sustaining partnerships that are mutually beneficial for colleges and industries. Using the lens of Activity Theory and the responsive evaluation methodology, the study responded to the research question: How can TVET college–industry partnerships be strengthened to benefit students, colleges and industry? The TVET managers and teams involved in partnership-building were surveyed and interviewed about their practices. In the study, the concepts provided by Activity Theory, such as 'activity system', 'contradictions', 'boundary-crossing', 'knotworking' and 'expansive learning' (Engeström, 2009; Engeström, 2015) were used to analyse the practices described by the teams and to understand their potential for effective partnership-building. By dealing with the research question in this way, the study has contributed to knowledge in the field of TVET college–industry partnership management and administration. It has also contributed to partnership-building practice. The study has shown how management teams could effectively engage in collaborative processes of expansive learning through boundary-crossing and knotworking, even without formally understanding these terms or processes. These intuitive processes enabled partnership management teams, in many cases, to improve the experiences of students, colleges, colleagues and industry partners. In some cases, there were signs of emerging transformative agency as managers set about innovating and changing existing practices. We can only imagine the impact on colleges if more management teams were to engage in such potentially transformative practices.

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