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Practices and strategies for enhancing learning through collaboration between vocational teacher training institutions and workplaces

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Abstract

The study aimed to identify and understand practices and strategies for enhancing learning through collaboration among a master's degree in vocational pedagogy (MVP) program, vocational teacher training institutions (VTIs), and workplaces. Using in-depth semi-structured individual and focus group interviews, data were obtained from administrators, mentors, supervisors, students, teachers, officers/managers of the MVP, two VTIs, and four workplaces from central and eastern parts of Uganda. The data analysis was based on Engeström's cultural-historical activity theory (CHAT) particularly the concept of expansive learning for resolving contradictions within human activity systems. The findings revealed a need for involving actors in timely planning and disseminating the activity plans, increasing duration for collaborative activities as well as involving the students in the tracking of MVP activity record in fostering the institutional capacity to plan and implement collaborative activities. To strengthen the institutional capacity to supervise learning under collaborative activities, findings indicated a need to engaging workplace mentors and facilitators in learning at the MVP as well as joint supervision and collaborative development of supervision guidelines. To foster the communication between partners, the findings revealed a need to institute a collaboration focal person, providing feedback to collaborating actors and government support on a policy encouraging workplaces' involvement in vocational training. Relationship issues revealed a need to initiate collaboration based on a signed memorandum of understanding as well as organising workshops and symposiums to equip and orient actors to MVP work methods and practices. Due to contradicting learning cultures and traditions amongst the activity systems, some of the suggested strategies required renegotiating the system especially the university before being implemented to minimise further challenges.

Keywords: Practices and Strategies, Collaborative Activities, Action Research, Institution-Workplace Collaboration, Activity Systems

Introduction

The importance of teachers and teacher educators in the field of vocational education and training (VET) is widely acknowledged at all levels (Serafini 2018). The competency of VET graduates is to a great extent influenced by the quality of VET teachers and teacher educators (Jia et al. 2014; Ministry of Education and Sports [MoES] 2012). Vocational teachers and teacher educators need to be well qualified and with up-to-date competences (Andersson and Kopsen 2015) as well as keep developing themselves and their practice (Hoekstra and Newton 2017) to meet the growing social needs and changes (Sirk et al. 2016). However, internationally, the delivery of VET is challenged by several factors including increasing skill shortages in certain industries and rapidly changing skill requirements (Pillay et al. 2014). For developing countries like Uganda, a skills shortage is attributed to the use of outdated curriculum, insufficient training resources, and outdated skills by VET teachers and teacher educators that affect the quality of service delivery in producing competent graduates (Arinaitwe 2011; MoES 2019). To respond to this skills shortage, Pillay et al. (2014) observed that countries like Australia are adopting partnerships between training institutions and industry to allow school-work transitions and address labour market demands.

The need for institutional-workplace collaboration (IWC) in matching the skills provision to the needs of enterprises (Arinaitwe and Sannerud 2019; Zinn et al. 2019) is a recurring theme in recent VET developments. Different countries have adopted different strategies and practices in boosting skills development. For instance, countries such as Germany (Gessler 2017), Switzerland and Austria (Muja et al. 2019), and Norway (Nore and Lahn 2014) have adopted dual or apprenticeship systems. These systems are long-term and formal partnerships between schools and industries. Uganda, too, has embraced various forms of IWC centred on activities such as internships and school practice (Kalanda 2012) although these are mostly short-term and informal (Kitagaana 2018).

Although several studies acknowledge the contribution of IWC in skill development (Arinaitwe and Sannerud 2019; Flynn et al. 2016), challenges to these collaborations exist (Ankrah and Al-Tabbaa 2015). These challenges include an absence of workplace mentors (Maxwel 2014) and boundary spanners (Pertuze et al. 2010), limited access to workplace activities (Billet 2001), a lack of clear policies to support collaborations (Guimon 2013), the cultural difference between academia and industries (Mgonja 2017) and inadequate resources (Sjoo and Hellstrom 2019). Due to the aforementioned challenges, Bruneel et al. (2010) indicated that realisation of the benefits of IWC depends on the partners' ability to overcome the numerous constraints.

Despite the existing research on IWC, in many developing countries, applied and academic research on the topic remains unexplored (Anderson and Sanga 2019). Ssebuwufu et al. (2012) reported a lack of data to provide a comprehensive and informed picture of the existing practices and strategies on factors needed to strengthen and promote partnerships with the production sector. As such, this study aims at examining the practices and strategies for enhancing learning through collaboration among a master's degree in vocational pedagogy (which will be referred to as MVP in this paper) offered at Mukinga

University,¹ vocational teacher training institutions (VTIs) and workplaces in Uganda. The question guiding this study was:

What factors can strengthen learning through collaboration among the masters in vocational pedagogy program, vocational teacher training institutions, and workplaces?

The rest of the paper is organised as follows: I start by providing a short review of the related literature and the theoretical framework used in this study, before proceeding with a description of the methodology. I next present the data, analyse and discuss the findings in light of the current literature and from the theoretical position.

Review of related literature

Strategies and practices for enhancing IWC

Several research studies were analysed and the results revealed many strategies and practices that enhance IWC both in developing and developed countries. Relevant literature was retrieved from two databases: the Education Resources Information Center (ERIC) and Educational Source. The key search terms were: collaboration, partnership, learning, teacher, vocational education, university, industry, and best practices and strategies. I focused on peer-reviewed sources from 2000 through 2020 undertaken in the area of VET and higher education. Of the initial 921 hits obtained, 30 were deemed relevant. A manual search through Google search engine results and journal archives was also done. From the reviewed literature, I found that the strategies and practices for enhancing IWC have been categorised differently (Ankrah and Al-Tabbaa 2015; Sjo and Hellstrom 2019; Rybnicek and Konigsgruber 2019) although some of the categories are cross-cutting. In the following section, I build on the existing categories to discuss the strategies and practices to enhancing IWC.

Institutional issues—resources

Guimon (2013) argues that availing of resources including funds, infrastructure, and time would facilitate the successful implementation of the IWC. For instance, the availability of money would support the creation of incentive systems and structures for collaboration including industrial liaison and technology transfer office (Sjo and Hellstrom 2019). Also, the availability of resources allows individuals to spend time engaging in boundary-spanning and accumulating collaborative experience (Sjo and Hellstrom 2019) that is vital in developing a shared understanding for initiating and sustaining collaboration (Johnston and Huggins 2016). While the literature emphasizes the importance of resources, Sjo and Hellstrom (2019) observed that it was not clear how these resources should be distributed to achieve the desired effects of supporting IWC.

Watters et al. (2013) argue that the strength of partnerships depends on the time available for actors to commit to the collaboration, that is, time to share feedback and to engage in the training. Jackson, Fleming, and Rowe's (2019) study on enabling the transfer of skills and knowledge across classroom and work contexts conducted in Australia emphasized the need for time to share feedback observing that it promotes reflection which in turn encouraged learners to differentiate learning contexts and the challenges

¹ University name and city have been given a pseudonym to protect their identity.

these may pose. Billet's (2009) study echoed that sharing and drawing out of experiences after practice-based learning facilitates articulation and comparison of the commonalities and distinctiveness in practices.

Regarding time to engage in the training, a previous study (Svensson et al. 2009) revealed the need for workplaces to access and plan training by involving managers, training facilitators, or tutors. According to Svensson et al. (2009), when learning becomes a joint affair where the collaborations benefit both parties, it promotes trust, mutuality, and a common understanding of the partnership. As such, Mikkonen et al. (2017) identified a need for trainers to be allotted sufficient time in the production schedule for training and for supervising collaborative activities. Fjellstrom's (2014) study revealed similar findings but further underlined the significance of timely and guided intervention by the teacher in helping the students to understand the nature of the difficulties they are facing in particular tasks. Furthermore, Billet (2009) observed a need for thorough preparation, sequencing, and identifying of the most appropriate duration of practice experiences in facilitating the integration of practice experiences within higher education.

The strength of partnerships also depends on the geographical location of the training institution including proximity to the industries (Rybnicek and Konigsgruber 2019). Geographical proximity allows for physical fora and platforms for interaction (Sjoo and Hellstrom 2019) as well as facilitates the spread of information faster which may increase the likelihood for collaboration (Muscio 2012). Johnston and Huggins (2016) revealed that industries tend to develop collaborative links with those institutions which are geographically near because the closer the two parties are, the easier it is to moderate uncertainties involved in developing collaborative linkages. Although geographical proximity is relevant, Drejer and Ostergaard (2017) found that its effects on collaboration tend to diminish depending on locality, and as such, it is less for universities located within the cities and in the presence of employee-driven relationships. Besides, Muscio (2012) found that collaborating with distant firms promotes research beyond institutions' local boundaries which positively affects academic work.

Institutional issues—capacity

Several studies show a need to develop what is termed as 'institutional capacity' (Anderson and Sanga 2019; Ankrah and Al-Tabbaa 2015). Institutional capacity is often understood in terms of management and leadership to create an environment and also to start, maintain, support, and sustain partnerships (Sa 2013; Choy, Kemmis and Green 2016). Developing institutional capacity also points to the need to develop organizational culture and structures such as boundary spanners. Several studies reveal a variation in the usage of the term boundary spanners as persons who network within and between partner institutions (Pertuze et al. 2010). Nevertheless, the common connotations include collaboration champion person (Anderson and Sanga 2019), technology transfer officers and industrial liaison officers (Ankrah and Al-Tabbaa 2015), and the contact person (Thune 2010). Pertuze et al. (2010) emphasises that boundary spanners help to establish and maintain efficient communication channels between university researchers and industry. Similarly, Thune (2010) observed that the firm's contact person assists the students in translating and reconciling different demands and areas of competence needed

for carrying out the collaborative research projects. As such, the lack of appropriate contacts with industry poses a connection barrier that leads to communication breakdown which negatively affects collaborative activities (Galan-Muros and Plewa 2016).

Maxwell (2014) identified mentor support as crucial in supporting workplace learning. Billet (2001, 2009) observes that direct guidance by more experienced practitioners facilitates the effective integration of experiences in university and practice settings. Workplace supervisors help students make a connection between what is learned at training institutions and how it is applied at work (Jackson et al. 2019). Rourvrais et al. (2020) study demonstrates how the trio that is, a learner, the supervisor, and the tutor need to work together on setting the missions and learning outcomes for the training. According to Mikkonen et al. (2017) failure by the workplace mentors to commit to guidance could result in insufficient support for learning. Therefore, improving workplace learning requires that workplace mentors are part of a legitimate and established process that workplaces are committed to providing (Mikkonen et al. 2017).

Communication between partners

Several studies highlight the importance of strong communication linkages between partners in promoting IWC (Pertuze et al. 2010; Plewa et al. 2013). Pertuze et al. (2010) observe that strong communication linkages facilitate interaction and the creation of personal relationships amongst the actors which are paramount in achieving the collaboration outcomes and impact. Plewa et al. (2013) argued that ongoing communication allows for continuous positive evaluations of the project by the actors which increases the chance of achieving the project goal. Engaging workplace participation in the curriculum development (Anderson and Sanga 2019) and setting up discussion platforms creates an awareness of the collaboration and thus promotes communication between partners (Mgonja 2017; Pertuze et al. 2010). Collier et al. (2011) suggest that training institutions can also have an open day or session where they invite industry people to come and share about their work practice. According to Jackson et al. (2019) increased industry engagement through guest lectures, field trips, and industry-driven projects provide access to real-life data provided by experienced and established professionals.

Relationships issues

O'Reilly and Cunningham (2017) identified personal relationships as a key enabler for collaboration, especially with small and medium enterprises. O'Reilly and Cunningham (2017) indicate that partners feel safer establishing linkages with people who are familiar to them since such people are accustomed to how they work, their expectations, and interests. Anderson and Sanga (2019) observe that building strong IWCs also calls for mutual trust and commitment of all stakeholders. Building the relationship based on trust implies that the parties share a common ground for communication which facilitates an understanding of learning needs and the construction of a platform for learning activities (Svensson et al. 2009). An understanding of each others' needs and objectives is a basis for finding ways of satisfying them and enabling the actors to keep focused on the benefit of the collaborations (Plewa et al. 2013).

Previous research (Taylor 2007) has shown that strong IWCs also call for mechanisms of support, coordination, and cooperation by the trio partite namely the government,

company, and training institutions. However, Kitagaana (2018) observes that this aspect is weak in Uganda due to a lack of a government policy on IWC. Flynn et al. (2016) observe that partnerships between the training institutions and industry can be clarified and formalized in a memorandum of understanding.

Government support

Research findings (Anderson and Sanga 2019; Guimon 2013; Sa 2013) also underline the significance of government support in promoting IWC. The government can support IWC by instituting a national policy to address IWC and participating in outreach activities (Guimon 2013) as well as providing incentives and structures to motivate industries and institution researchers (Ankrah and Al-Tabbaa 2015). Funding of university research and projects, developing of infrastructure, and providing scholarships (Anderson and Sanga 2019) are some of the other ways the government can support collaborations.

From the above literature, I found that several strategies and practices have to be in place for successful implementation of IWC and that these strategies present closely related effects irrespective of the level of education, that is, VET or higher education. However, previous research studies have mainly focused on a broad analysis of IWC in general VET and higher education. I observe that little is still known about how these strategies and practices would facilitate learning through the collaboration for vocational teacher educators which is the purpose of this study. Employing CHAT concepts, I bring forth the knowledge of how interacting activity systems at three levels; VET, workplace, and higher education can collaborate to support the learning of vocational teacher educators.

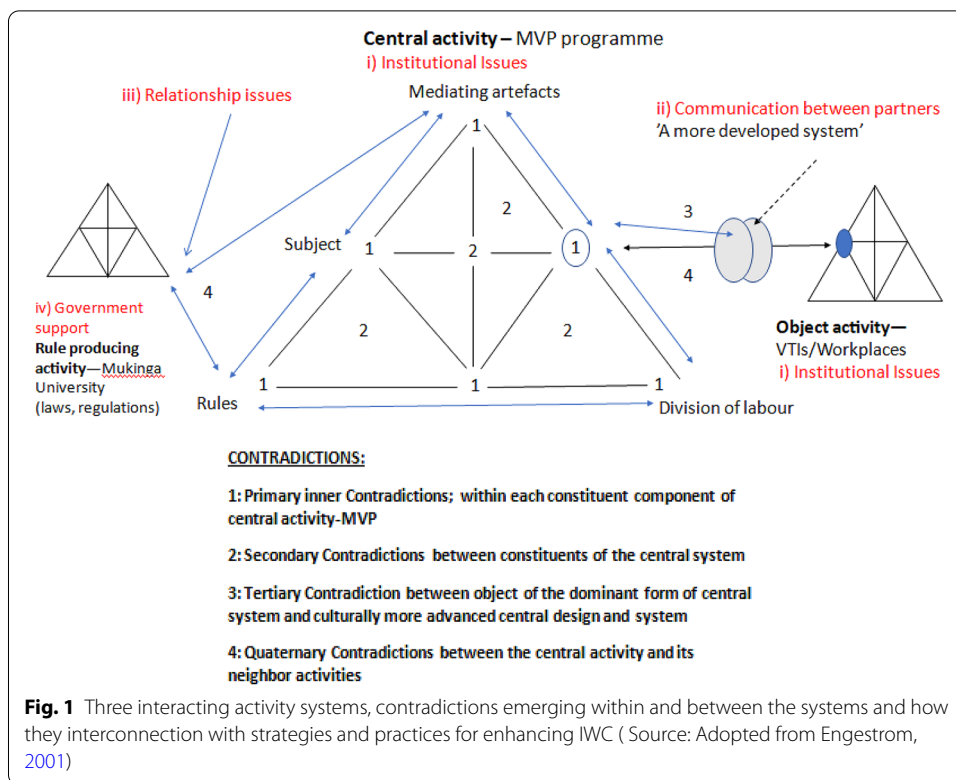
Theoretical framework

Resolving contradictions within a human activity system

The study aimed to identify and understand the practices and strategies for enhancing learning through collaboration among the MVP, VTIs, and workplaces. I draw on perspectives from Engeström's (1987, 2001, 2011, 2015, 2016) cultural-historical activity theory (CHAT), particularly the concept of expansive learning for resolving contradictions within a human activity system, to gain insight into the study. CHAT focuses on complex interrelations among the subject, the object, and a community of two or more interacting activity systems (Engeström 2001). In this article, I focus on the interrelationship between three activity systems: an MVP programme, workplaces (i.e., organisations and industries), and VTIs as shown in Fig. 1. When two or more activity systems interact, they generate a shared object, which in this case is participation in collaborative activities; they also develop new patterns of activity as well as tensions and contradictions (Engeström 2001, 2015). The contradictions need to be identified and resolved to ensure system stability (Engeström 2000; Engeström and Sannino 2011). In CHAT, the collective learning process for resolving the contradictions is referred to as expansive learning (Engeström and Sannino 2010) and formative intervention (Engeström 2011).

Expansive learning

According to Engeström (2007), expansive learning is 'the process by which a work organisation resolves its internal contradictions in order to construct qualitatively new



ways of working’ (p. 23) (see also Engestrom 2015, 2016). Under expansive learning, the learners take specific learning actions to analyze the inner contradictions of their activity system, design and implement a new model that expands the activity system object and thereby opening up new possibilities for action and development (Engestrom 1987, 2001).

Expansive learning is built on the principle of double stimulation (Saninno 2015). According to Engestrom (2011), double stimulation is interpreted to mean ‘a way to enhance performance in specific tasks of learning and problem solving’ (p. 611). In double stimulation, the first stimulus is the trigger problem to be solved while the second stimulus is the phase of implementing the interventions in practice to generate a new concept (Engestrom 2011; Sannino et al. 2016). For this study, the first stimuli were the pressing challenges encountered during the implementation of collaborative activities. In trying to cope with the challenges, I engaged the participants through individual interviews and focus group discussions to identify and suggest possible strategies and practices for resolving the challenges encountered in implementing collaborative activities. These strategies and practices were the second stimuli with the help of which the actors could transform the problematic situation, although these were never concretised in practice which poses weakness in using this strategy.

From the literature review, four categories of strategies and practices were common in enhancing IWC. These strategies and their interconnection with the three activity systems are shown in Fig. 1.

Contradictions are historically accumulating structural tensions within and between activity systems (Engestrom 2001, 2011) as shown in Fig. 1 above. Contradictions are a

source of disturbances and multi-voicedness, which create system instability (Engestrom 2000, 2001). Engestrom (2001) argues that multi-voicedness occurs when participants, artefacts, and rules in an activity system carry layers and strands of history, as Daniels et al. (2007) also observes. Daniels observed that multi-voicedness occurs when individual actors bring in individual histories from their social positions, which affects the division of labour in an activity system and is thus a source of instability (Daniels et al. 2007). For example, in the MVP programme, an emphasis is on vocational pedagogy, a learner-centred approach to learning (Mjelde and Daly 2012) that employing a different approach may lead to multi-voicedness that causes systemic contradictions. There is a need for boundary objects that harmonise with one or more activity systems in resolving these contradictions. For instance, several research studies (Ankrah and Al-Tabbaa 2015; Choy et al. 2016) have shown that improving institutional capacity, government support, and communication between the different activity systems would improve their capacity to collaborate.

Contradictions give rise to transformation in the object and motive of the activity that acts as sources of change and development (Daniels et al. 2007). Also, contradictions constantly generate disturbances which open up opportunities that call for innovative solutions that can transform the system (Engestrom 1987, 2011). As the actors engage in questioning the existing practice, analyzing the contradictions in it, and thereby model and implement new actions; new forms of activity emerge in the process of obtaining solutions to the contradictions in form of breakthroughs (Engestrom 2015). Therefore, systemic contradictions are viewed as obstacles as well as potential energizers of change and development (Engestrom 2015). However, Leont'ev (1978) observed that for contradictions to become actual driving forces of expansive learning; there is a need to identify an emerging new object and turn it into a motive.

The identification of contradictions in an activity system helps practitioners and administrators to focus their efforts on the root causes of the problems. Such collaborative analysis and modelling is a crucial precondition for the creation of a shared vision for the expansive solution of the contradiction (Engestrom 2000). The process of questioning the existing practice while collaboratively working to model new practice and implementing a new model depicts the notion of a double bind (Engestrom 2001, 2016; Engestrom and Sannino 2010). The notion of a double bind was evident in action research projects, where actors collaborated to solve challenging situations in their work practices. Employing CHAT concepts, particularly expansive learning, multi-voicedness, and the notion of a double bind, will facilitate identification and understanding of the practices and strategies for enhancing learning through collaboration among the MVP, VTIs, and workplaces.

Methodology

Research design, context, and sample

I employed a case study research design (Bryman 2016; Creswell 2013; Yin 2014) with multiple units of analysis in addressing the research question. The MVP program at Mukinga University in Uganda was the main case while two VTIs and four workplaces (organisation and industries) became the embedded sites of the study. The institutions

and workplaces were sampled from the central and eastern regions of Uganda and had participated in MVP collaborative activities for at least three years.

The MVP programme included in this study is an initiative aimed at strengthening collaboration between Mukinga University in Uganda, VTIs and industries, to integrate academic and workplace learning. The MVP programme is a two-year, full-time course where the general objective is to offer content covering pedagogical principles, practices, and issues related to VET. As a result, some workplace activities such as field expeditions and action research projects (herein regarded as collaborative activities) were initiated in the MVP program to support the “back-and-forth” learning in workplaces. In the context of this paper, “back-and-forth” learning refers to a collaborative process where the students move between learning in the training institutions and the workplace.

The MVP students conduct action research in a workplace and/or VTI, where the goal was to improve existing practice. A total of 59 students from three cohorts undertook four- months-long action research projects with the participation of actors from their workplaces/VTIs. The MVP second cohort students who are vocational teacher educators were considered for this study. Action research project activities include collaboratively identifying the problem, action planning, taking action, evaluating the consequence of the actions, and identifying the learning outcomes. The mentors, action research supervisors, and the project administrators supported the implementation of the projects. Although several learning opportunities stemming from collaborative activities have been identified (Arinaitwe and Sannerud 2019), contradictions in the implementation of these collaborative activities also emerged (Arinaitwe, Mifsud, Kato and Sannerud, Submitted). These contradictions were the problematic situations that became the first stimuli trigger upon which actors based to suggest the strategies and practices for improving the implementation of the collaborative activities.

A purposive sampling (Patton 2015; Tavakol and Sandars 2014) of the case and the embedded sites of the study was used. Tavakol and Sandars (2014) support the use of purposive sampling in obtaining information-rich cases with the particular experience necessary in providing a detailed picture of the questions under study. Purposive sampling was utilized in selecting 19 participants for the study in the following categories: 13 participants within the MVP programme (mentors, students, action research project supervisors, and administrators); one administrator each from the two VTIs where the action research projects were implemented; and one manager/officer from each of the four workplaces.

Data collection and analysis

Semi-structured in-depth interviews (Tavakol and Sandars 2014) of about 30–70 min with all the participants were conducted. Patton (2015) suggested the use of semi-structured, in-depth interviews to elicit rich information about people’s experiences, opinions, and knowledge of the issue under investigation. The interview guides that were used comprised both semi-structured and open-ended questions (Bartlett and Vavrus 2017). The combined strategy was preferred due to its ability to increase the interviewer’s flexibility in probing and in determining when to explore certain subjects in greater depth or even pose new questions that were not originally anticipated in the interview guide (Patton 2002).

Silverman (2013) supports the use of focus groups in obtaining focused ideas from a small group of people who share particular characteristics. I invited key informants for focus group discussions. We formed two groups each consisting of 7–8 heterogeneous members. The groups exchanged ideas on ways of overcoming the challenges that were encountered during the implementation of collaborative activities, and the generated ideas were shared in a plenary session of all the participants. The ideas agreed upon by the focus groups became a part of the primary data presented for this study.

Through thematic analysis (Bryman 2016), themes were identified based on pre-existing categories from the reviewed literature and CHAT. These categories were institutional capacity, communication between partners, and relationship issues. The data from the transcripts was organised under these categories in a Microsoft Word table. Tabulating the data made it easier to explore the codes, examine their interrelationships and cluster them under these categories. The data analysis was mainly dependent on the theoretical propositions (Swanborn 2010) provided in CHAT backed by those from the reviewed literature. Ethics approval was obtained from the Norwegian Centre for Research and Data (NSD) and the Uganda National Council of Science and Technology (UNCST). The permit to conduct research and consent were sought and obtained from the VTIs, workplaces, and respondents, respectively.

Reliability and validity

For reliability purposes, the pretesting of research tools to ascertain the appropriateness of the interview questions (Boeije 2010) was done before the final data collection and the results were used to modify some aspects of the guides. All the interviews were audio-recorded and transcribed line by line, along with field notes. To address concerns of validity, triangulation was employed by accessing and comparing data collected through individual interviews and focus groups (Creswell 2013; Silverman 2013). Also, to validate the respondents' responses, the transcribed data was taken back to the respondents to confirm the credibility of the information.

Results and discussion

Implementing the collaborative activities by the MVP programme was faced with several challenges manifesting as contradictions at different phases of MVP work processes. These contradictions became the first stimuli that triggered the respondents in identifying and understanding the practices and strategies for enhancing learning through collaboration among the MVP, VTIs, and workplaces. The findings are organised under the three main themes: Institutional issues, communication between partners, and relationship issues as emerging from the literature and in light of the present findings.

Fostering institutional capacity to plan and implement collaborative activities

In the planning and implementation phase, trigger problems were the conflicts and dilemmas linked to short time frames for executing collaborative activities and unsynchronised activity plans for the different activity systems. Interview findings from individual and focus group discussions (FGDs) indicated the need to harmonise the different actors' activity plans to improve institutional capacity by the actors to plan and implement collaborative activities. FGD2 suggested that:

The MVP staff needs to prepare their activity plan early for instance one month before the semester start and share it with the students and the collaborating actors [VTIs and workplaces] for harmonisation with their plans to avoid a collision of events. (FGD2)

A second strategy was suggested by a male junior mentor that ‘...MVP programme needs to engage the collaborating actors in the planning of collaborative activities for easy integration with their plans’ (Mentor3). Thirdly, a workplace officer (Officer2) and focus group (FGD2) indicated a need for MVP students’ involvement: ‘MVP students need to engage in tracking the activity record of accomplished and unaccomplished events so that an early reminder is sent to the mentors and facilitators of collaborative activities for timely execution of planned activities’ (Officer2).

The findings indicated the need for early planning and dissemination of the activity plans, engaging collaborating actors in planning collaborative activities as well as the MVP students’ involvement in the tracking of activity records in ensuring timely execution of planned activities. Svensson et al. (2009) previously identified a need to increase the ability of the workplaces staffs to access and plan training. Svensson et al. (2009) further argue that when learning becomes a joint affair where the collaborations benefit both parties, it promotes trust, mutuality, and a common understanding of the partnership. Engaging collaborating actors in planning collaborative activities at the MVP does not only motivate them to incorporate these activities within their activity plans but also keeps them furnished with the objectives and work methods of the programme. I note that knowledge of the programme activities could aid decisions regarding time to participate which creates a sense of ownership and accountability of the process for increased trust and transparency. The actors’ willingness to be involved at different stages of implementing collaborative activities, when interpreted through CHAT perspective, depicts the notion of the double bind. From this perspective, the actors involved in questioning the existing practice and collaboratively work on a new model and implement it in practices (Engestrom 2001, 2016). For this study, the actors’ collaborative endeavours in modelling new practices are seen as a means of minimising a collision of events to ensure timely and coordinated implementation of collaborative activities. However, increasing actors’ participation may not guarantee system stability if other aspects such as a timely release of funds to facilitate the activities are not strengthened.

Regarding the planning and implementation phase, another trigger challenge was the short time frames limiting the implementation of collaborative activities. Interview findings from individual and focus group discussions (FGDs) indicated the need to increase the duration of collaborative activities. In this regard, junior mentors (Mentor3 and Mentor4) suggested an increase of the field expedition duration to two days. Mentor4 indicated that ‘one day would be for data collection and another day for follow-up on the findings’. Increasing the field expedition duration to two days was echoed in the focus group discussion (FGD) and by the MVP students. However, FGD2 cited a financial implication that:

Increasing the field expedition duration could be constrained by funds to facilitate accommodation/transport for two visits. However, the MVP can partner with nearby accessible VTIs and workplaces. Also, increasing the field duration would

allow for extra field days in case there is a need for follow-up (FGD2).

Turning to the AR projects, the project administrator³ suggested as follows:

[...] We need to commence the projects in the early stages of the course so that the course work is carried out alongside the fieldwork. Action research requires a lot of time to obtain results which is being compromised by the later start time (Project administrator³).

Increasing the field expedition duration and commencing action research projects earlier were suggested by the respondents as remedies to the short duration of collaborative activities.

Billet's (2009) study previously identified the need for thorough preparation, sequencing, and identification of the most appropriate duration of practice experiences to facilitate their integration within higher education. To improve the planning and implementation of collaborative activities, this study finding continues to emphasise the need for activity reschedules. For instance, increasing field expeditions' duration and commencing the action research early are hoped to allow for sufficient time for in-depth field studies. However, altering collaborative activities duration raised concerns of finances and interference with other MVP programme and university activities associated with them as likely sources of conflicts between Mukinga University and the MVP programme. For instance, altering course units slotted in a particular semester on the MVP programme document would imply a shift in other associated events such as the allocation and funding of supervisors. Also, restructuring the programme could imply a curriculum review which indeed is a lengthy and costly process and not attainable in the short term. The controversies surrounding the change in the duration of the collaborative activities linked to financial and curriculum structures are a source of contradictions reflecting multi-voicedness. According to Engestrom (2001), multi-voicedness occurs when artefacts and rules in an activity system carry layers and strands of history that become a source of trouble and innovation, demanding actions negotiation. Consequently, a change in artefacts such as curriculum and funds would require a renegotiation of the university structures before being implemented, thus, they are a likely source of systemic contradictions and instability.

However, the findings revealed a need for the MVP programme to locate and engage nearby and accessible partners from the VTIs and workplaces in the collaborative activities. It can be argued that collaborating with nearby and accessible partners would reduce running costs such as transport associated with collaborating with distant partners. The current finding aligns with Johnston and Huggins (2016) who indicate that institutions tend to develop collaborations with those industries which are geographically near so as to easily moderate uncertainties involved in developing collaborative linkages.

Fostering institutional capacity to supervise learning under collaborative activities

In the supervision of learning phase, dilemmas and critical conflicts arose from the absence of workplace mentors and the actors' lack of a common understanding of the objectives and work methods of the MVP collaborative activities. The focus group FGD1 members advocated for the engagement of workplace mentors to oversee the

implementation of action research projects by the MVP students at their workplaces. Similarly, the project administrator indicated that:

The MVP is considering introducing the component of workplace mentors in the reviewed program [...] who will support action research supervision and participate in facilitating learning at the programme. But currently, we only invite workplaces to facilitate particular aspects of the course. (Project administrator3)

Engaging workplace facilitators in the learning at the MVP was a commendable practice identified by the MVP project administrators, mentors, students, and workplace officers. A male MVP student indicated that workplace facilitators teach by relating with real work practices while a workplace officer (Officer2) observed that facilitating the MVP students keeps them abreast of the programme's activities and updated with their work.

Previous research (Maxwell 2014) identified mentor support as a crucial aspect in facilitating workplace learning. Jackson et al. (2019) indicated that workplace supervisors help students make a connection between what is learned at training institutions and how it is applied at work. The findings of this study continue to reflect a need for MVP to engage workplace mentors in supporting the students in applying the concepts attained at the university while implementing action research projects in their workplaces. It can be argued that workplace mentors bring with them diverse experiences and expertise and have in-depth knowledge of workplace culture and traditions that are fundamental in guiding learners, thus, their role should not be underrated. However, it seemed to have been Mukinga University's culture to allocate university professors as project supervisors with no consideration of workplace mentors as was required in action research. Despite mentoring being a part of MVP learning processes, the programme could not manage to convince the university to recruit workplace mentors. As Leont'ev (1978) posited, contradictions only become a source of innovation if identified and turned into a motive. In this case, there was an emerging contradiction in form of innovation for the MVP to incorporate workplace mentors that remained unexplored in supporting action learning.

The study respondents concurred that engaging workplace facilitators in the learning at the MVP was a commendable practice. I note that engaging the workplace staff to facilitate MVP students supports the mutual benefit of learning from each other. As emphasised by the findings, while the MVP students benefit from the real work experiences possessed by the workplace staff, these staffs gain deeper experiences of their practices while researching to teach. In connection to this finding, increased industry engagement through guest lecturers and speakers (Jackson et al. 2019) have previously been linked to the provision of access to real-life data provided by experienced and established professionals. Anderson and Sanga (2019) emphasised that engaging workplace practitioners in educational institution's training increases awareness of collaboration. As such, Mikkonen et al. (2017) identified the need for workplace mentors to be a part of a legitimate and established process that workplaces are committed to providing. Consequently, the MVP programme needs to tap into the idea of introducing workplace mentorship to support learning from collaborative activities.

Another source of dilemmas in the supervision of collaborative activities was linked to delayed and contradictory supervision feedback to MVP students' work. With due regard, the MVP students, mentors, and FGD1 members identified a need for joint supervision by mentors and action research supervisors. An action research supervisor (Supervisor1) observed that team supervision would lead to clarification on guidance provided to students. A workplace officer (Officer1) emphasized that 'action research supervisors/mentors need to first reach a mutual understanding before engaging the students to avoid disagreements.'

The findings emphasized a need for joint supervision by mentors and action research supervisors in minimising contradictory supervision feedback. The respondents emphasised a need to reconcile feedback from different people before sharing it with the students. A previous study (Billet 2009) has indicated that sharing and drawing out of experiences after practice-based learning facilitates articulation and comparison of the commonalities and distinctiveness. I note that during the feedback reconciliation process, the MVP staff would self-reflect, share and harmonise their views before sharing them with the students. Consequently, disagreements and misconceptions arising from the students' misinterpretation of the information provided by different supervisors would be minimised. However, minimising delayed feedback also points to the need for the MVP staff to dedicate time for reading and sharing the feedback, which time seemed limited as the majority of the staff are outsourced. And yet, Fjellstrom's (2014) study emphasised that early and guided intervention by the teacher helps the students in understanding the nature of the difficulties they are facing in particular tasks. It is paramount that MVP sources or even recruits full-time staff that will accord the mentoring and supervision process the due time and attention they deserve in reducing the delayed feedback to MVP students' work.

It can be noted that the MVP programme as opposed to other university programs had adopted a learner-centred approach and action research in its instructional delivery strategies. These are new practices, and yet, MVP programme continually recruited its subjects as mentors, facilitators, and project supervisors who were accustomed to teacher-centred strategies and conventional research practices commonly employed at Mukinga University. These subjects brought with them different cultures and traditions that contradicted those at the MVP. From a CHAT perspective, this is interpreted as multi-voicedness (Engestrom and Sannino 2011); in which different actors bring in histories from their different contexts. According to Daniels et al. (2007), multi-voicedness affects the division of labour in an activity system, causing instability. To minimise multi-voicedness effects, the MVP programme needs to train its new subjects and refresh old ones to keep them abreast with their learning culture and work methods.

Fostering communication between partners

Double binds and dilemmas linked to an absence of a collaboration focal person, a lack of feedback to actors, and absence of government policy posed communication barriers between partners that limited participation in collaborative activities. These problematic situations triggered Focus group FGD1 to suggest a need to institute a collaboration focal person as described in the following excerpt:

There is a need to institute a collaboration focal person at the workplaces who will

link between the collaborating actors. MVP liaises with him for any upcoming activity and he coordinates the execution of activities. The focal person is different from the workplace mentor (FDG1).

The above quote illustrates that instituting a collaboration focal person would foster communication between partners. It can be argued that linking between distant partners requires a person to coordinate, mobilize people and resources as well as to disseminate information; that calls for a collaboration focal person. This finding resonates with previous studies (Thune 2010; Sjøo and Hellstrom 2019) who found that a contact person/boundary spanner is a vital link in establishing and maintaining efficient communication channels between university and industry; without whom there would be a communication breakdown. Thune (2010) further emphasized that the firm's contact person assists the students in translating and reconciling different demands and areas of competence needed for carrying out the collaborative research projects. It follows from this study's findings that the absence of a collaboration focal person could have been the cause of uncoordinated events and subjects which delayed execution of the planned activities and thus constrained the achievement of the set objectives. According to Engestrom (1987; 2011) contradictions not only generate disturbances but also open up opportunities that call for innovative solutions. Consequently, incorporating a collaboration focal person in ensuring timely and coordinated events within and between the activity systems seems an innovative venture that the MVP programme could pursue in enhancing communication between actors.

The respondents from the workplaces and VTIs concurred with the idea of providing feedback on data obtained from their organisations. An institute administrator and an MVP student suggested the following:

After the field expedition visits, we compile the reports, students come up with different views, ideas, and suggestions that would enable the workplaces to improve, but this information is shelved and never shared with the actors. We need to share this information (Male Student).

You [MVP] need to develop a template where you capture good practices, weaknesses, and suggestions for improvement during your field studies and share them with us. This can be a form of publicity that will improve public awareness of the MVP activities (VTI administrator1).

From the above excerpts, it is evident that failure to provide feedback on collaborative activities to actors raised serious concerns from workplaces and MVP students alike. The failure to share feedback with the actors implied a one-way communication and yet to qualify as collaboration the actors in the collaborative activities need to work together toward a common objective for mutual benefit. Even though Engestrom (2000) emphasised that creating a shared vision for the expansive solution of the contradiction calls for collaborative analysis and modelling, the present finding contradicts this. Failure to share feedback with collaborating actors undermines the collaborative efforts necessary to create and sustain the collaborations. Moreover, a recent study (Jackson et al. 2019) revealed that collaborative learning with opportunities for feedback promotes reflection which encourages learners to differentiate learning contexts and the challenges these may pose. The current finding continues to advocate for two-way communication with

clear avenues for sharing information and feedback in ensuring sustained and encouraging future collaborative linkages. Otherwise, the current linkages reflect that these collaborations seem to have mainly benefited the MVP students' learning rather than the workplaces and VTIs. This invites questions about how successful and sustainable such collaborations are if they only serve the interest of the initiator.

Another strategy in stimulating communication between partners was envisaged through government support reflecting a need to institute a policy framework compelling the workplaces' involvement in VET programmes as suggested by a workplace officer (Officer3):

...the government has to be supportive with policies [...] that compel other organizations to participate in training. The majority of industries are just after production and profits and yet need experienced workers, leaving the training of interns to a few industries.

The idea of government support was echoed in the second vocational pedagogy symposium, where members observed a need to lobby for policy system support from the government that mandates the existence of official collaboration between the VTIs and the workplaces.

Notably, the absence of government policy on IWC has previously been cited as a limitation to participation in collaboration (Mgonja 2017). In this regard, Anderson and Sanga (2019) identified a need to institute a national policy on collaboration whereas Ankrah and Al-Tabbaa, (2015) emphasised a need to provide incentives and structures to motivate industries and institutions to participate in IWC. From the current study finding, it is evident that without a policy on IWC, accessing and sustaining interested partners remains a challenge. In the absence of policies, industries may not feel obliged to participate, and those that do may not be committed to the collaboration. Despite their limited participation, the need for experienced workers by the industries was evident in the finding. Besides, the persistent limited industrial participation continues to hamper the educational institutions' capabilities to produce well-equipped graduates who can compete in the world of work. As such, employing these graduates necessitates the expenditure of extra induction and orientation costs by industries. This finding when interpreting through a CHAT analytical lens indicates that contradictions continue to present accumulated structural tensions within and between activity systems that if unresolved may cause system instability (Engestrom 2001, 2011). Efforts are therefore needed to encourage industry participation in the training of competent VET graduates through the government instituting relevant policies and other incentive structures.

Interpersonal relationships for increased participation in collaborative activities

In a second vocational pedagogy symposium organised by the MVP in 2017 entitled strengthening collaboration with the world of work to improve VET in Uganda, members pointed to a need to initiate collaboration based on a signed memorandum of understanding. This aspect of signing a memorandum of understanding between collaborating actors was echoed during individual interviews and focus group discussions:

A Memorandum of understanding between the university and us [industry] is important. We need to agree on how we shall all benefit from the collaboration. For

example, we allow your students to research with us, but you also provide our staff with capacity development in short modular training (Workplace Officer3)

Workplace officer3 identified a need for a memorandum of understanding clarifying how the actors in collaborative activities will benefit from the collaborations.

A strong finding in the study was the significance of initiating collaboration based on a signed memorandum of understanding where terms on mutual benefits from the collaboration are stipulated. Flynn et al. (2016) previously emphasised the need for partnerships between the training institutions and industry to be clarified and formalized in a memorandum of understanding. It can be argued that a memorandum of understanding is vital in unveiling the terms and conditions of the partnership where each party understands their expectations, benefits, costs, and contributions. According to Plewa et al. (2013), an understanding of each others' needs and objectives is a basis to finding ways of satisfying them and to enable the actors to keep focused on the benefit of the collaborations. Furthermore, Choy et al. (2016) emphasised that when each partner recognizes the mutual benefits and cost and becomes aware of how to pursue the goals, it increases trust. This study finding aligns with previous study findings by emphasising that as the actors collaboratively engage in defining the targets and goals for the collaboration and laying them down in a memorandum of understanding would create trust and a shared vision for the partnership. The finding corroborates Engestrom's (2000) view that collaborative analysis and modelling is an essential condition in creating a shared vision for the expansive solution of a contradiction. In this case, generating the terms of references and laying them down in a memorandum of understanding would not only ensure a shared vision for mutual benefit to the actors but also formalises the relationships for increased transparency.

Lastly, organising workshops and symposiums on collaborative activities, as was done by the programme, was identified as a commendable practice of the MVP by mentors, students, action research supervisors, and focus groups. FGD1 identified a need to organise regular meetings and workshops for the MVP and workplace staff on various issues about the implementation of the collaborative activities as indicated below:

Mentors and supervisors need to be trained on mentorship and action research supervision. MVP can organise regular meetings for their staff to share their experiences for an enriched and harmonised supervision process. You can also organise workshops for all actors to orient them on the MVP work methods and practices. (Focus group FGD1)

Secondly, a female MVP student indicated a need for full-time mentors. She pointed out that: '[...] the project needs to recruit full-time mentors who will dedicate time and effort on our work'. Similarly, a male student emphasised that: 'The mentors and supervisors also need to be well trained and facilitated with ICT services—so that they can provide both face-to-face and online track changes feedback to our work to avoid delays' (MVP male student).

The above quotations illustrate that recruiting full-time mentors and training them on mentorship, action research supervision, ICT use in supervision, and availing them with ICT facilities would bridge the gaps in the supervision of learning under collaborative activities. Obtaining full-time mentors implies that the workload by the current mentors

would lessen, thereby availing adequate time to support and guide the students' learning. I observe that providing timely and constructive criticism requires that mentors have adequate time to engage in reading the students' work and sharing their feedback—time that is currently limited due to heavy workloads. Although online supervision would speed up the provision of feedback, as a new practice, it requires proper infrastructure and training. Although contradictions give rise to transformation in the object and motive of the activity that acts as sources of change and development (Daniels et al. 2007), Engestrom (2000) argues that contradictions are also likely a source of disturbances that create system instability. Rather than being an innovation, introducing a new artefact, that is, ICT online supervision could be a likely source of contradiction when supervisors and mentors lack ICT tools and skills in employing such artefacts. Therefore, it is essential that MVP recruits full-time staff, trains and provides them with the necessary ICT resources before introducing online supervision as a means of improving supervision of learning under collaborative activities.

Furthermore, MVP engaging its actors through workshops and symposiums was a commendable practice in supporting learning by interaction and sharing experiences. The active engagement of actors in different phases of implementing collaborative activities allows for interpersonal interaction, increases awareness and the publicity of the activities, and also facilitates the sharing of good practices that could stimulate improvements. Previous research (Pertuze et al. 2010) indicate that institution-workplace interactions promote project awareness while Ankrah and Al-Tabbaa (2015) underlined the significance of interpersonal interactions and sharing how the collaboration will benefit the partners in fostering collaboration. MVP should ensure that the present avenues that promote interactions are maintained while the new strategies suggested by this study adopted for the sustainability of the existing collaborations or even encouraging new collaborations.

Limitations and study implication

Previous research studies have mainly been limited to a broad analysis of IWC in VET generally (Flynn et al. 2016; Taylor 2006) and higher education (Rybnicek and Konigsgruber 2019), with a little emphasis on how these collaborations can support learning especially for vocational teacher educators. This study contributes knowledge on the practices and strategies that enhance learning through collaboration between vocation teacher training institutions and workplaces. With this study, I bring forth an understanding of how collaborative activities can be planned and implemented, how learning under these activities can be supervised and how to increase participation in these activities.

I note some shortcomings with the study approach. Identifying practices and strategies for enhancing learning through collaboration would call for studying various cases undertaking IWC. However, the present study consisted of an embedded case study with multiple units of analysis. The MVP programme, as the main case, is the only institution of higher learning in Uganda employing the 'back and forth' learning model from training institutions to workplaces despite other forms of collaborations integrated into VET training. Therefore, this study lacks comparison in a local context. As such, this approach may raise important concerns regarding generalisation of the findings

although the findings are relevant for VET practitioners, policymakers, and industrialists who wish to undertake similar collaborative ventures.

Concerning the theoretical framework, the CHAT approach provides an interesting framework for analyzing collaboration between activity systems particularly the concept of contradictions within and between activity systems. However, expansive learning as employed in resolving the contradictions within and between activity systems seem to fully realised their relevancy when the interventions are implemented in practice to generate an expanded new object (Engestrom 2011; Sannino et al. 2016), which was not the case with this study. The present study confined itself to identifying the possible strategies and practices for enhancing learning through collaboration between the MVP, VTIs, and workplaces that were never implemented in practice.

Conclusion

The study aimed to identify and understand practices and strategies for enhancing learning through collaboration among a master's degree in vocational pedagogy (MVP) program, VTIs, and workplaces. The findings indicated that harmonising the different actors' activity plans, engaging collaborating actors in the planning of collaborative activities, the MVP students' involvement in the tracking record of activities, increasing the field expedition duration, and commencing action research projects early would improve the institutional capacity to plan and implement collaborative activities. Similarly, engaging with workplace mentors and facilitators in learning at the MVP, joint supervision by mentors and action research supervisors, collaborative development of supervision guidelines would strengthen the institutional capacity to supervise learning under collaborative activities. To improve the communication between partners, instituting a collaboration focal person, providing feedback to collaborating actors, and government support by instituting a policy framework encouraging workplaces' involvement in VET programmes were the identified strategies and practices. Relationship issues revealed a need to initiate collaboration based on a signed memorandum of understanding as well as organising workshops and symposiums to equip and orient actors to MVP work methods and practices, to train MVP staff on mentorship, action research supervision, and ICT use in supervision.

The context within which MVP had to function revealed several contradictions linked to diverging cultures and traditions amongst the three collaborating activity systems. Consequently, not all the identified strategies and practices for enhancing learning through collaboration between the educational institutions and workplaces could directly be incorporated in the central system—MVP work methods and practices. This calls for a need to renegotiate the MVP system's structures and possibly engage in curriculum reviews to fully realise the study findings in practice. Otherwise, in trying to resolve the existing contradictions in the implementation of collaborative activities, more systemic contradictions would arise. Future projects undertaking IWC could consider how best to work within the given context before introducing new ideas. Further research should study how and whether these strategies and practices if implemented in practice could enhance learning through collaboration between VTIs and workplaces.

Abbreviations

VET: Vocational education and training; MVP: Masters in vocational pedagogy; VTIs: Vocational teacher training institutions; IWC: Institution-workplace collaboration.

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Authors' contributions

The researcher committed to conducting field study, gathered and analysed the data, wrote and reviewed the manuscript.

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Availability of data and materials

The datasets used and analysed during the current study are available from the corresponding author on request.

Declaration**Competing interests**

The author declares no competing interest.

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