

Education Research in African Contexts

Traditions and New Beginnings
for Knowledge and Impact

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CHAPTER 1

A reflection on collaborative teaching and learning in higher education: The case of the East and South African-German Centre of Excellence for Educational Research Methodologies and Management

Noel Japheth, John K. Chang'ach, Susan Kurgat, Mercy Chemutai Barasa

Introduction

In sub-Saharan Africa, institutions of higher learning are advocating for a paradigm shift in graduate teaching and research, emphasising the need for increased partnerships, support and adherence to international standards (Skupien & Rüffin, 2020; Beaudry et al., 2018). This chapter explores a partnership, facilitated over ten years by the East and South African-German Centre of Excellence for Educational Research Methodologies and Management (CERM-ESA), and which is aligned with collaborative learning principles.

One may ask, 'why should one explore such partnerships?'. The answer is that they set the stage for examining the educational initiatives facilitated by four African and one German higher education institution, namely Moi University, Nelson Mandela University, Uganda Management Institute, University of Dar es Salaam and University of Oldenburg under the umbrella of the CERM-ESA project (2014–2023). These partnerships are examined through the lens of collaborative learning theory with its social constructivist principles of peer learning, reciprocal teaching, shared knowledge and resources, interdependence and group processing. (O'Donnell & Hmelo-Silver, 2013). Through that lens we aim to reflect on the question of whether the CERM-ESA activities that leverage collaborative learning theory to address the teaching and research capacity challenges in sub-Saharan Africa can be successful. By exploring the integration of collaborative learning principles in CERM-ESA teaching and learning designs, one can evaluate their effectiveness in enhancing teaching and research skills, improving research outcomes, and addressing capacity gaps in African higher education institutions. This analysis contributes to a deeper understanding of the role of collaborative learning theory in shaping educational practices and promoting research capacity development in sub-Saharan Africa. Evaluating the outcomes and impact of the activities enables us to judge whether the framework can be further refined by others and adapted to different contexts, contributing to improved research, education and development in the region.

As such, this chapter aims to examine the educational practices and partnerships established by CERM-ESA. Analysing these initiatives allows one to assess the extent to which CERM-ESA's educational programmes, partnerships, and activities facilitate peer interaction, reciprocal teaching, knowledge sharing, and other collaborative work among students and faculty members.

CERM-ESA expected outcomes

The expected outcomes of the CERM-ESA activities encompass a range of benefits, including enhanced teaching and research capacity at the postgraduate level, improved research quality and completion rates among graduate students, the cultivation of a collaborative learning culture in higher education, and increased scholarly interaction and knowledge exchange. These outcomes can be assessed through various means, such as tracking students' success and research outputs, monitoring completion rates, evaluating skills development, and assessing the impact of CERM-ESA activities on research capacity and scholarly interaction.

Aligned with collaborative learning theory, which posits that collaborative learning enhances students' higher-level thinking, oral communication, self-management, and leadership skills (Johnson & Johnson, 1999), CERM-ESA initiatives aim to foster deeper understanding and critical thinking. This is achieved by encouraging participants to actively engage with course material through peer-to-peer and peer-to-educator interactions. Both students and lecturers, who meet in that collaborative space, come from a variety of institutional, national and cultural backgrounds.

In practice, CERM-ESA focuses on several key areas and activities to promote collaborative learning principles. Capacity building workshops and training sessions aim to equip lecturers and supervisors with enhanced supervision skills and innovative didactics. Additionally, jointly developed academic master's and doctoral programmes provide support for students, exposing them to diverse perspectives and research methodologies. Seminars and colloquiums offer platforms for knowledge sharing and discussions between students, alumni and faculty, facilitated mainly by online technologies.

Research schools provide intensive training in research methodologies, while co-supervision and cohort supervision practices involve multiple supervisors from different universities, encouraging diverse perspectives and collaboration among students and academics. Peer mentorship activities further support collaboration and mutual assistance among students through peer-to-peer interactions. Overall, these initiatives align with collaborative learning theory by promoting active engagement, peer interaction, knowledge sharing, reciprocal teaching, communication, and leadership skills within the academic community.

Collaborative learning theory

Collaborative learning theory, as elucidated by Johnson and Johnson (1999), posits that group learning serves as a catalyst for the development of students' higher-level cognitive skills, oral communication abilities, self-management competencies, and leadership qualities. This approach to learning is grounded in the principle that collaborative interactions among peers facilitate deeper understanding and critical thinking.

In the context of higher education, collaborative learning emphasises active engagement with course material through peer-to-peer interactions. By working together in groups, students can exchange ideas, challenge assumptions, and collectively solve problems. This process not only enhances their comprehension of the subject matter but also cultivates essential skills that are valuable beyond the classroom.

Research supports the efficacy of collaborative learning in promoting higher order thinking skills. For example, a study by Slavin (1995) found that students engaged in collaborative learning activities demonstrated greater gains in critical thinking abilities compared to those in traditional instructional settings. This finding underscores the value of peer-to-peer interactions in stimulating intellectual growth and fostering analytical reasoning. Furthermore, De Hei et al. (2020) found that intercultural competence can be enhanced through collaborative group activities in international higher education settings, if the quality of collaboration is perceived as high, meaning that all group members can contribute, which depends on the nature of the task.

Moreover, collaborative learning fosters the development of oral communication skills. Through discussions, debates, and presentations within group settings, students learn to articulate their ideas effectively, listen actively to their peers, and engage in constructive dialogue. These communication skills are essential not only for academic success but also for professional advancement in diverse fields (Aliyu, 2017).

Self-management is another key area of growth facilitated by collaborative learning experiences. Working collaboratively requires students to take responsibility for their contributions to group tasks, manage their time effectively, and coordinate efforts with team members. By assuming these roles, students develop self-discipline, organizational skills, and the ability to work autonomously – a crucial aspect of lifelong learning and professional development (Sharan & Sharan, 2021).

Furthermore, collaborative learning provides a platform for the cultivation of leadership skills. Within group settings, students can take on leadership roles, delegate tasks, and motivate their peers towards common goals. This experience nurtures leadership qualities such as effective communication, decision-making,

conflict resolution, and teamwork – attributes that are highly prized in academic, professional, and social contexts (Johnson et al., 2000).

In summary, collaborative learning theory is said to underscore the transformative potential of group interactions in education by engaging students in peer-to-peer and peer-to-lecturer activities. Collaborative learning fosters deeper understanding, critical thinking, oral communication, self-management, and leadership skills. These skills are said to not only enhance academic performance but also empower students and staff to thrive in an increasingly complex and interconnected world.

Activities

As noted earlier, the expected outcomes of CERM-ESA activities include enhanced teaching and research capacity at postgraduate level, cultivation of a collaborative learning culture in higher education and increased scholarly interaction and knowledge exchange. The activities, all of which have components of collaborative learning, are described below.

Academic programme

CERM-ESA established academic programmes aim at addressing the research capacity gaps in African higher education institutions (Gaillard, 2010). The Master of Education in Research and Doctor of Philosophy in Educational Research and Evaluation programmes were designed collaboratively with academics from Nelson Mandela and Moi Universities, the Universities of Oldenburg and Dar es Salaam, and the Uganda Management Institute. They aim to equip students with advanced research skills, promote collaboration and expose students to diverse perspectives and research methodologies, in an effort to enhance their research capabilities. The CERM-ESA academic programme has been in operation for the full ten years of the project's funding and beyond and is based at Moi University.

Research schools, co-supervision, cohort supervision support, and peer mentorship

In collaboration with partnering institutions, CERM-ESA offers international research schools that aim at providing students with comprehensive training in research methodologies and academic skills. These schools cover a wide range of topics, including theoretical frameworks, data analysis, and research dissemination strategies. Facilitated by experts from various disciplines and countries, the research schools promote collaboration and provide students with valuable international exposure. These research schools have run annually throughout the life of the CERM-ESA project with venues alternating annually between Kenya and South Africa. They include reciprocal teaching sessions where students, alumni and lecturers take turns to facilitate learning, e.g. through group discussions, presenting their research proposals, methodologies or findings and engaging with each other's work.

The concept of co-supervision, implemented by CERM-ESA, involves assigning multiple supervisors to guide students throughout the research process. This approach fosters international exchange and exposure to diverse research environments, leading to improved research outcomes and reduced completion times for graduate students. Through international collaboration, CERM-ESA aims to move participating academics in Africa towards co-supervision practice, which should result in enhanced research supervision and higher completion rates among students. Co-supervision has been in place since the inception of the project.

CERM-ESA also implements cohort supervision, whereby students work in groups with academics and experts during research schools. This collaborative approach encourages peer learning and knowledge sharing, allowing students to address research challenges collectively. They also have the potential to reduce power dynamics between supervisors and their students, as various perspectives and a range of expertise are included to guide the student in their research journey. By identifying and addressing knowledge gaps, cohort supervision promotes scholarly interaction and research commitment among students.

Finally, CERM-ESA promotes peer mentorship among students, facilitating support and collaboration throughout the graduate research journey and beyond. Peer mentorship activities with active involvement of CERM-ESA's alumni, including mock presentations and peer-to-peer research events, have given students the opportunity to improve their research quality and likelihood of success within the programme. By fostering a supportive academic community, peer mentorship aims at enhancing the overall research experience for CERM-ESA students.

Capacity Building for Lecturers and Supervisors (CABLES) programme

The Capacity Building for Lecturers and Supervisors (CABLES) programme, initiated by CERM-ESA, served as a catalyst for promoting collaborative learning by academics from the DAAD Centres of Excellence in Africa, in other words, key players within sub-Saharan Africa's higher education landscape. The programme focused on strengthening supervision skills, innovative didactics, management of transdisciplinary processes, and research project management, and targeted lecturers and supervisors involved in guiding graduate students, aiming to enhance their capacity in research supervision and management.

The southern African CABLES programme included four African-German Centres of Excellence, namely the Namibian-German Centre of Excellence for Logistics (NUST), the South African-German Centre of Excellence for Development Research (UWC); the South African-German Centre of Excellence for Criminal Justice (UWC); and the East and South African-German Centre of Excellence for Educational Research Methodologies and Management. A total of 21 academics from these Centres of Excellence took part in the programme.

The west African programme run in Accra included 30 participants from the following five African-German Centres of Excellence, namely the West African-German Centre of Excellence for Governance for Sustainable and Integrative Local Development, the West African-German Centre of Excellence for Sustainable Rural Transformation, the Congolese-German Centre of Excellence for Microfinance, the Ghanaian-German Centre of Excellence for Development Studies and included a participant from the Namibian-German Centre of Excellence for Logistics who had missed the southern African workshop. As many of the delegates were from French speaking African countries, on-site interpreters were provided.

The East African programme included 26 academics from all of the East African Centres of Excellence: namely the Tanzanian-German Centre of Excellence for Law in Dar es Salaam, the Kenyan-German Centre of Excellence for Mining, the Centre for Environmental Engineering and Resource Management at Taita Taveta University College in Voi, the Centre of Excellence for ICT in East Africa in Arusha, and East African CERM-ESA partners at Moi University, University of Dar es Salaam (UDSM) and the Uganda Management Institute. This mix aimed at generating a diverse constellation of views which provided a framework for constructive and fruitful engagement over a range of issues that these academics face when supervising and teaching at their home institutions.

The CABLES interventions operated during 2018 and 2019 and were replaced by online cooperation via the DIGI-FACE (digiface.org) platform with the advent of COVID.

Online teaching and learning

The DIGI-FACE project was initiated in late 2019 and it was agreed with the DAAD that the areas covered by the CABLES project be put online as generic modules that can be used by all disciplines in the African Centres of Excellence. These online modules were designed to encourage online cooperation via forums, peer review where applicable, Zoom sessions and shared reflections. The online modules were conceptualised and designed based on the collaborative approach to teaching and learning that had guided the on-site activities. Numerous offerings of these generic online modules by DIGI-FACE and CERM-ESA have furthered the collaboration between members of the Centres of Excellence at African universities.

Design and methods

As this chapter is based on processes that were not specifically designed as research, a bricolage approach is taken. Phillimore et al. (2016) note that bricolage research treats objects of inquiry as part of a historically situated complex system. The bricolage

literature highlights the importance of diverse knowledge and practical skills. Bricoleurs rely on their own expertise and social networks due to limited resources. Bricolage is seen as inherently innovative, offering a way to cope with complexity and uncertainty by adapting quickly to changing environments (Phillimore et al., 2016).

As such, data are interpreted in ways that build bridges between individuals' concrete experiences and concepts that draw from larger social, historical, economic and political forces. Phillimore et al. state that "While some see bricolage as an opportunity, others view it more as a second-best option, perhaps the kind of process that individuals or firms adopt in the early stages of addressing a challenge" (Phillimore et al., 2016, p. 1).

Kincheloe (2005) applied this concept in educational research, using it to describe the utilization of multiple research methods from scarce resources. In this framework various methodological approaches are combined within a broader theoretical and critical pedagogical context. As Phillimore et al. (2016) note, it may be seen as a 'second best option'; in the case of the ten-year lifespan, it is the only option.

Academic programme

The master's and PhD programmes, offered collaboratively by CERM-ESA partnering institutions, exposed students to diverse perspectives and research methodologies to enhance their research capabilities. At the heart of the collaborative aspect were the annual international research schools, two-week long intensive learning phases that included a visit to one of the partner institutions. Facilitated by experts from various disciplines and countries, the research schools promoted collaboration and provided students with valuable international exposure. This exposure included a range of methodologies, both qualitative and quantitative.

The cooperative aspect was not specifically evaluated for the CERM-ESA academic programme but can be inferred from overall evaluations and first-hand experiences of the authors, supervisors and students.

At the end of each research school, the students submitted their evaluations consisting of 54 closed and three open-ended questions. The questionnaires covered aspects of the perceived knowledge and skills acquisition, the learning environment and interactions with peers, lecturers and supervisors as well as the topics and methods that were included in the programme. Data were generated from a total of 190 participants over a ten-year period.

During the last months of 2023, CERM-ESA carried out a tracer study to find out where its graduates had been placed in terms of their careers, and how they rated CERM-ESA's academic programme from the position of a professional. Data were generated from 50 alumni.

CERM-ESA co-supervision practice

The co-supervision practice started with the first cohort of CERM-ESA master's students and was implemented for all following master's cohorts. The PhD students generally had their supervisors at the host institutions but participated in the cohort supervision model where they received support and guidance from CERM-ESA faculty of all partner institutions.

Of all the collaborative activities within the CERM-ESA project, the co-supervision of master's students turned out to be the most difficult aspect that needed the project leaders' intervention in some cases and the formalisation of duties and expectations in a 'Co-Supervision Agreement'.

CABLES workshops

There were three week-long face-to-face CABLES workshops held, one in South Africa for the southern African DAAD Centre of Excellence (at the Nelson Mandela University), one in Accra, Ghana for west African Centres and one was held in Zanzibar for east African Centres over 2018/2019. The Centres of Excellence nominated their participants. The programme was evaluated at each workshop quantitatively and qualitatively in two questionnaires. The quantitative questionnaire provided indicators of overall levels of satisfaction (part one), agreement on statements about expectations met (part two) and the participants' perceptions as to the level to which the CABLES programme contributed to the expansion of their skills and cooperation (parts three and four). The qualitative questionnaire consisted of twelve open-ended questions on various academic and organizational aspects, such as the most inspiring learning outcomes of the CABLES programme. These questionnaires were completed on the last day of the CABLES workshop. Data were generated from a total of 77 participants.

Online teaching and learning

With the onset of COVID in 2020, and the opportunity to use the DIGI-FACE platform, many of the teaching and learning resources developed via the academic programme, research schools and CABLES workshops were used to provide online courses and resources. Each of the online generic and mini-module evaluations offered had a question, among many others, related to feeling part of a group and collaboration. These standard and structured online evaluation questionnaires using a four-point scale were filled in anonymously by the participants and analysed at the end of each course. The section that pertains specifically to this chapter is the question about feeling a part of the group and enjoying interacting with their peers and the facilitators. The choices were (i) felt part of a group and enjoyed interacting with the other students, (ii) part of a group even though I didn't communicate directly with anyone, (iii) somewhat isolated from the other course participants or (iv) totally isolated from the other course participants.

Results

Academic programme and research schools

Since its inception, the academic programme has enrolled more than 100 postgraduate students in multiple cohorts, with a significant portion funded by DAAD and CERM-ESA. The programmes produced 73 graduates (59 master's and 14 PhDs) by December 2023, some of whom demonstrated high-quality research outputs, some winning best master's thesis awards across the humanities. Others secured employment in both county and national governmental and non-governmental organizations in east Africa (14%), others have become lecturers in higher education (16%), have continued with a PhD after their master's degree (16%) or taken school leadership positions (11%). The aforementioned figures are based on CERM-ESA's internal tracer study conducted in 2023. These success indicators, although not being able to be causally tied directly to these programmes over a number of cohorts, suggest the importance of international collaboration and innovative teaching approaches in enhancing research capacity in sub-Saharan Africa, something that was at the core of the development of the academic programme.

When asked in an evaluation questionnaire during the CERM-ESA research schools 'How satisfied were you in terms of working with your peers?', 70% of the students were very satisfied and 30% were satisfied. No negative data were given. When asked 'How satisfied were you with the group work in class?', more than 75% recorded 'very satisfied' and the rest said 'satisfied', with no negative responses recorded.

The following are examples of what the participants wrote when asked what they liked most about the research schools:

"The sessions were interactive."

"The activities were very engaging. it was good sharing my proposal and having guidance."

"I really enjoyed the physical interaction with my peers together with advisors."

"Getting feedback on my proposal and getting a clear focus. I also liked the interaction with the facilitators and peers with regard to conducting credible research."

"The interaction with peers and listening to their research journeys was motivational to me."

"The connection between the facilitators and the students while sharing problems and how it was a conducive environment for students to share their research shortcomings and challenges with their supervisors one on one."

"That students were allowed to share their work with very minimal pressure."

"It is the feedback we received from facilitators and students as well as kind of mentorship from our facilitators and all the organizing team."

“I was really touched by the humanizing pedagogy and how we as teachers should be agents of hope and social change. Anchored on Paulo Freire, Pedagogy of the Oppressed, education should be a means to building a “critical consciousness” that would enable people to create change in their lives. This was practised by our professors and supervisors all through the research school. Thank you for passing on the power and the influence whole heartedly to us the young scholars with the pre-requisite 21st century research skills. The humble nature of CERM-ESA makes me feel am at home.”

“I liked the level of interaction between facilitators and learners, it was excellent.”

“Getting so many different experiences, skills, opinions together.”

“Collaborative approaches to capacity development and digitisation.”

“The interactions amongst the students including meeting students from different countries and the possibility of “getting advice from well-known academic writers and researchers from all over South and North.”

CERM-ESA co-supervision practice

All of the master's and a number of doctoral students were co-supervised by at least two supervisors from different universities within the CERM-ESA programme. The success rate of CERM-ESA scholarship holders was very high in terms of completion rate (nearly 100%), stipulated time frame (80%) and achievements (CERM-ESA students have consistently scored higher on average than other master's graduates at the participating universities).

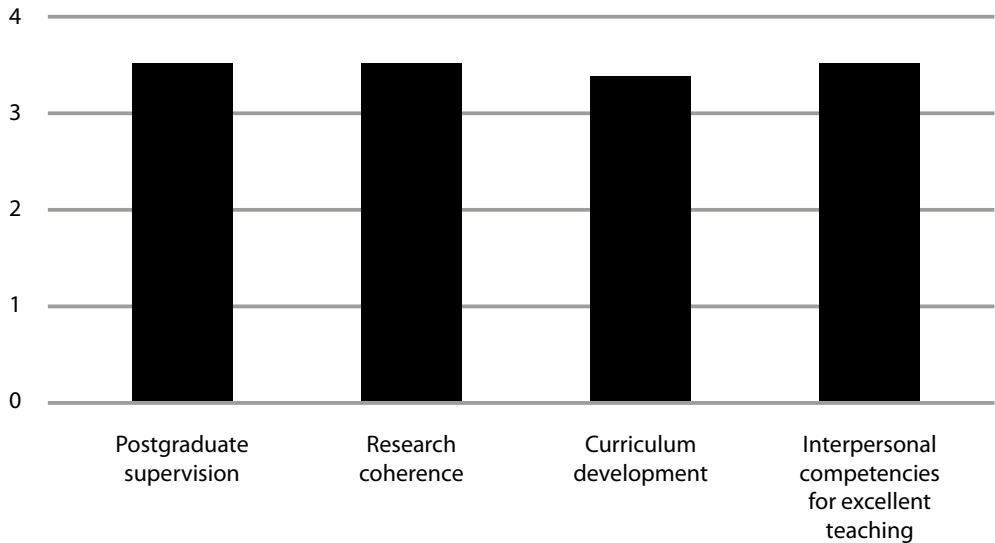
CABLES programme

Some of the results of the evaluations are presented below. As noted above, three aspects relate to the quantitative questionnaire, namely (1) level of satisfaction, (2) overall fulfilment of expectations and (3) extension of skills. The qualitative results are presented in conjunction with the quantitative results, as they complement each other.

In part three and four of the questionnaire, the participants were given several statements which all referred to their extension of skills in the four main topics of the programme, namely postgraduate supervision, research coherence, curriculum development and interpersonal competencies for excellent teaching. Scores again ranged from 1 (strongly disagree) to 4 (strongly agree).

Four variables were created, which summarize the mean scores of the participants' answers to the individual statements. The mean scores of the participants' answers to the different statements were very close to each other, as were the mean scores of the new variables formed from the statements. All four topics received high indicators for the enhancement of the participants' skills with mean values of 3.5 and 3.6.

Figure 1: Representation of the Extension of Skills Indicated by the Participants as a Four-point Scale



There were many and detailed comments from the participants on the four specific topics that also show the satisfaction with the presentations and contents of the programme. Postgraduate supervision and research coherence were frequently mentioned as topics of particular interest and/or usefulness to participants in the CABLES programme sessions. In the area of postgraduate supervision, the ‘supervision models’ used for creating cooperation were positively highlighted by the participants.

When it comes to the most inspiring learning outcomes of the participants, comments about interpersonal skills for excellent teaching are especially common. Participants were grateful for the “pedagogical approaches” which are helpful in “*developing emotional relationships with student[s]*” and noted that they had acquired “[s]kills and knowledge [for] making a difference in the lives of students through interpersonal engagement with them”. One participant wrote: “*You have impacted me to take into account the human aspect of supervision – we are first human and then we are supervising the student.*” Another important aspect noted by the participants in this area was the “*ways of reducing the power imbalance.*”

Individual written comments included, among many others:

“All sessions were motivating captivating and professional and rigorously prepared”.

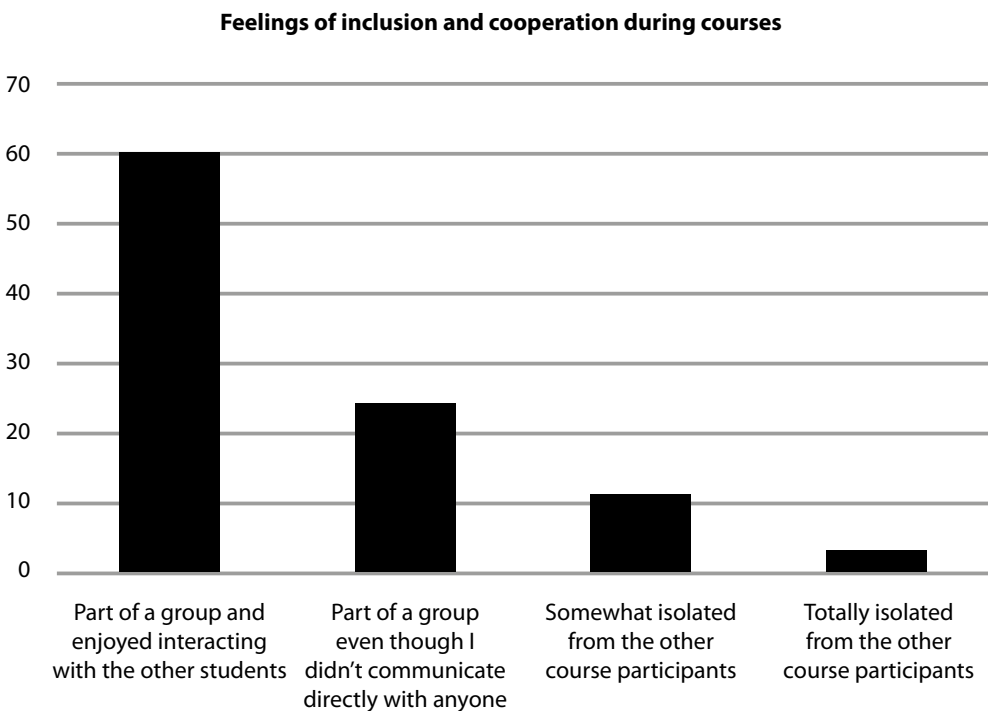
“I find all of the sessions extremely useful to my work”, and

“It made me reflect on my own way of supervising and being a scholar”.

Online teaching and learning

The evaluations that were part of each course offered online not only revealed that there was high overall satisfaction with the courses in terms of both their general usefulness and general satisfaction. The participants’ anonymous online evaluation responses were very positive with over 80% agreeing or strongly agreeing that they found the courses useful and that they were satisfied with the courses and the way that they were presented. A similar pattern was found in terms of the participants feeling a part of the group and enjoying interacting with their peers and the facilitators. The first 100 questionnaire responses are shown in Figure 2. The positive responses to feelings of cooperation and inclusion remained a theme overall in all other evaluations made in terms of online courses.

Figure 2: Evaluation Responses to Feelings of Inclusion and cooperation (n=100)



Discussion

The bricolage of results, anecdotes and feelings recorded above suggest that the issue of cooperation was of major importance to the CERM-ESA project. Some may feel that the bricolage approach used in this chapter may be weak, and this criticism is accepted by the authors. Nevertheless, their experience with the project over ten years leads them to believe that the finding is as accurate as it can be under the

circumstances and that it is important to note that CERM-ESA's holistic approach does appear to promote collaborative learning theory within sub-Saharan Africa's higher education context.

Similarly, academic programmes like the Master of Education in Research and Doctor of Philosophy in Educational Research and Evaluation, offered in collaboration with Moi University and other institutions, has promoted interdisciplinary collaboration and peer learning (Gaillard, 2010). These programmes have exposed students to diverse research methodologies, enhancing their higher-level thinking and oral communication skills.

The Capacity Building for Lecturers and Supervisors (CABLES) programme, initiated by the Centre of Excellence for Educational Research Methodologies and Management (CERM-ESA), addresses the critical need to enhance research capacity among academic staff in sub-Saharan Africa (Owusu et al., 2014). By providing workshops and training sessions, CABLES equips participants with advanced supervision skills, fostering a collaborative learning environment through peer-to-peer interactions and knowledge exchange (Petrie et al., 2015; Ali et al., 2017; Amde et al., 2014).

Regular seminars, colloquiums, and international research schools organized by CERM-ESA provide platforms for students and faculty members to share research findings and engage in scholarly discussions (Madsen & Adriansen, 2020; Barasa & Omulando, 2018). Leveraging online technologies facilitated peer-to-peer learning and resolution of research challenges, fostering a collaborative learning environment.

Implementation of co-supervision practices and cohort supervision approaches within CERM-ESA programmes also enhanced collaborative learning experiences (Ramadhan et al., 2023; Paul et al., 2014). By assigning multiple supervisors and fostering peer mentorship activities, students benefitted from international exchange and diverse research environments, promoting knowledge sharing and research commitment.

In conclusion, CERM-ESA's holistic approach appears to have promoted collaborative learning theory within sub-Saharan Africa's higher education context, and fostered a culture of collaboration, knowledge exchange and peer support (Singh, 2015; Barrett et al., 2011; Kindiki et al., 2019). By advancing research capacity and academic excellence it can be said that CERM-ESA has contributed to addressing challenges in graduate education and enhanced research outcomes in the region via collaborative teaching and learning.

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