Developing the capacity of education local leaders for sustaining professional learning communities in Rwanda

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ABSTRACT

Constructing school leaders as autonomous professionals through management and leadership training constitutes the first step to releasing their potential to improve school quality. Despite major gains by the Ministry of education in Rwanda, particularly training and recruitment of teachers and introduction of a coordination system to ensure professional development and management of teachers, the education sector is still challenged to ensure that (head) teachers have the capacity to lead and deliver the new competence based curriculum in schools. In this paper, we explore how a partnership established in 2014 between governmental and nongovernmental institutions led to the development and implementation of certified Continuous Professional Development (CPD) programs for the Rwandan education sector and present some preliminary findings. We apply the Kirkpatrick evaluation of training framework to present the different results that the CPD programs have brought about at the learning and behaviour change level. Data were composed of different monitoring and evaluation outputs and training assessments that have been produced by the program so far including focus group discussions and pre- and post-surveys on knowledge, attitudes and practices. The partnership has enabled Leaders in Education including Sector education officers, head (deputy) teachers, school based mentors and tutors from teacher training colleges to acquire new competencies for leading school as well as managing and implementing CPD activities at the sector and school levels. Furthermore, the initiated partnership which started with primary schools in 6 districts has grown and expanded to other partnerships with new development partners to upscale the program at secondary school level in 14 districts. This led us to suggest that the same initiatives could be replicated by other partners to enhance professional development of leaders in education in Rwanda or any other country.

1. General introduction

According to UNESCO (2015), the equity gap in education is exacerbated by the shortage and uneven distribution of professionally trained teachers, especially in disadvantaged areas. Target 4.c (MOI) of the SDG 4 is therefore aimed at substantially increasing the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and Small Island developing States by 2030. It further states that teachers are one of the fundamental conditions for guaranteeing quality education and therefore there is a need to empower and adequately recruit, remunerate and motivate professionally qualified teachers and educators, and support them within a well-resourced, efficient and effectively governed system (UNESCO, 2015). Equally, the Agenda 2063 has set Education and skills revolution as a key catalyst for the Africa we want, with emphasis on building knowledge, human capital, capabilities and skills to drive innovations and for the African century, among others (African Union Commission, 2015). Empirical studies (e.g., Manasia, Ianos, & Chicioreanu, 2020) argue that developing teacher professionalism as a strategic direction is a way to improve the quality of teaching and to improve teachers' perceptions of professional status, job satisfaction, and self-efficacy, contributing to a sustainable education.

In Rwanda, both the long-term and short-term development strategies including the recent National Strategy for Transformation whose key objectives are to be reached between 2017 and 2024 have put Education at the center of the country's long-term development aspirations. Priority area 4 of the strategy covers the strengthening of access to quality education including increasing and improving access to quality and inclusive education for all and increasing completion rates especially in primary and secondary education. Success for this strategic plan is dependent on the competencies of teachers for the effective delivery of the desired outcomes. It is undoubtable that pre-service teacher education is rarely sufficient to provide all knowledge and skills necessary to successful teaching and students learning; a significant portion of teacher education can be acquired only on the job. This calls therefore for strengthening Continuous Professional Development (CPD) and management of teachers for the enhancement of quality learning outcomes relevant to the aspirations of the Government of Rwanda to transform to a knowledge-based economy.

The new Competence Based Curriculum for pre-primary to upper secondary education seeks to contribute to major reforms in teaching and learning (REB, 2015). It promotes learner centered education but this can only be achieved if teachers have the required competencies to deliver the curriculum. Part of the curriculum framework is capacity building for teachers including continuous professional development for head teachers in school leadership, school management and school improvement planning and for teachers in coaching and mentoring. Accordingly, teachers and new teachers should receive an orientation to the curriculum as part of their induction in addition to mentoring and coaching at the school level. The Ministry of Education has developed a School Based Mentorship Framework to guide the implementation of CPD activities. However, this has not been effective due to lack of competencies by the head teachers and teachers, as well as Tutors from Teacher Training Colleges mandated to supervise schools on the induction of new teachers. Neither have the previous ad hoc trainings in mentorship and coaching as well as school leadership to effectively contribute to the acquisition of the desired competencies. Moreover, investing in CPD of teachers and administrators which includes school leadership, school management and planning, induction of new teachers, coaching and mentoring activities at the school level is essential.

Our understanding of Continuous Professional Development (CPD), building on the definition by the Rwanda Education Board is "learning continuously throughout one's career to improve performance. CPD is an umbrella term that covers all formal, non-formal and informal professional learning experiences over the duration of a teacher's career" (REB, 2015). We therefore define certified CPD programs as certified sustainable and formal professional development programs provided by an accredited learning institution building on existing practice and interventions in Rwanda, with formal learning and practicing activities and excluding one-off, one day or short residential courses. Over 2014–2016 period, the University of Rwanda-College of Education (UR-CE), Rwanda Education Board (REB) and VVOB - Education for Development-in Rwanda initiated a certified CPD programs for primary school leaders on effective school leadership and sector education officers on enabling head teachers' professional learning communities. At the same time the program concerned tutors in teacher training colleges as trainers of pre/primary teachers on improving learner centered pedagogy (VVOB, 2016). The program was extended to a multiyear program (2016–2021) namely 'Leading, Teaching and Learning Together' (LT^2) to enhance the implementation of the Competence Based Curriculum and eventually to improve learning outcomes. Through a partnership with the Mastercard Foundation, referred to as the Leaders in Teaching initiative, the program was further upscaled to secondary education in 14 additional districts.

Ongoing provision of certified CPD in Educational Mentorship and Coaching as well as in Effective School leadership is likely to improve the quality of teaching which eventually contributes to improved students' learning outcomes. Taking into account those assumptions, at the core of the program, the aforementioned partners developed a CPD system for School Leaders and Teachers, consisting of certified CPD Diploma and Certificate courses, complemented with Professional Learning Communities (PLCs) or Community of Practices (CoPs) for sharing experiences, best practices and challenges amongst these stakeholders.

García and Weiss (2019) observed an absence of a universally accepted set of supports that constitutes a good, supportive early training and ongoing professional development system with regard to professional development and continuous training opportunities. The present paper aims at contributing to fill in this gap by sharing practices in a specific context. We intended to achieve this goal by describing the different CPD programs and their linkages and presenting some preliminary results of the Leading Teaching and Learning Together program. Thus, the following specific research objectives will be addressed:

- To describe different CPD programs for teachers and headteachers that were developed in the context of the Leading Teaching and Learning Together program in Rwanda;
- To understand how these CPD programs impact personal learning and behaviour change.

2. Contextual background

2.1. The education system in Rwanda

Like other many countries, the formal basic education system in Rwanda is structured around four levels: pre-primary, primary, lower secondary and upper secondary levels (3-6-3-3years); the number of years for undergraduate program in tertiary education varies between 3 and 6 depending on the subject. Within the Education for All program, there is a compulsory 9 year basic education for primary and lower secondary education as well as the 12 years education in which upper secondary education is also considered. While the preprimary is not yet compulsory, students in Rwanda undergo National examinations at the end of each of the three levels: primary, lower secondary and upper secondary.

The Rwandan education system has undergone through various and sudden reforms towards providing an education that responds to the societal needs. Starting earlier 90s, primary and secondary schools had the opportunity to choose between English and French as the language of instruction while a bilingualism education system (French and English) was put in place at tertiary level depending on individual lecturer's educational background. Since 2009, there was a total switch of medium of instruction from French to English at all levels of education. At the same time, the Dakar declaration on education for all (UNESCO, 2000) enabled most of children especially those with disabilities who initially were culturally left out to attend formal education. Some few years later (since 2015), the national curriculum shifted from knowledge based to competence based. All those national changes had impacted in one way or another on both classroom practices and school leadership. Students' low performance in national exams, lack of reading skills and school dropping out at primary level are the most listed non achievements. Furthermore, with regard to these language reforms to some extent any reform in Rwandan education system, the challenge of lack of transitional period and unpreparedness before implementing any language policy was observed (REB, 2017). According to a recent study (MINEDUC, 2017) on understanding the drop out and repetition in Rwanda, it would be beneficial to strengthen professional development opportunities for primary school teachers and improving their quality by providing teachers with opportunities for capacity development and in-service training to increase the quality of teaching and address learning issues and teaching practices in the classroom.

2.2. Rationale for developing CPD programs

Policy reforms by the Government of Rwanda particularly those related to increasing access to education through the 9 years and 12 years

basic education have contributed to a remarkable increase in the enrolment rate of close to 100% at primary level but consequently increasing the pupil to qualified teacher ratio (50:1), which directly cannot be disconnected to the quality of education. In addition, the introduction of a Competence-Based Curriculum (CBC) in the Rwandan schools calls for a comprehensive change and new thinking on instructional approaches in teaching and learning, focusing on learner centered approach, whereby the teacher is a facilitator. Teachers need to be equipped with new methodologies in order to increase the quality of their teaching. Improving the quality of teaching is a career long process, it cannot happen in one training. To institutionalize this ongoing process of improving teachers' knowledge, skills and attitudes after initial training, the Rwanda Education Board (REB) has outlined a School-Based Mentorship Program Framework (SBMP) to support teachers in complying with the CBC. With this framework REB aims to strengthen the roll out of the CBC and the use of English as medium of instruction. To facilitate the SBMP implementation, under guidance of the (deputy) head teachers, a School-Based Mentor (SBM) has been selected in each public/government aided school (REB, 2016). In addition to their teaching load, SBMs have to (i) assist teachers in improving their language skills in English; (ii) organise professional development activities as needed, (iii) support teachers in improving their pedagogy for competence based teaching and learning, and (iv) stimulate reflection and facilitate the giving of feedback on the quality of teaching and learning at school. It is worthy to notice that none of SBMs was prepared to assume these new responsibilities, thus becoming a challenge for not only themselves but also for education local education leaders in terms of the implementation.

2.3. The leading teaching and learning together program

Research projects (e.g.; García & Weiss, 2019) on education quality reveal that the demands of teaching are constantly changing and teachers need to continually adapt their knowledge and practice (García & Weiss, 2019). But training teachers alone could not lead to desired changes in terms of teaching and learning. In this regard, Professional development of teachers, head teachers and to some extent all education local leaders is one of the policy priorities for the education sector policy. The Leading, Teaching and Learning Together program targets head teachers and teachers in primary and secondary schools. This program has two major components: School leadership targeting Head Teachers, Sector Education Officer; and District Directors of Education with a CPD Diploma, and an Induction Component targeting Teacher Training College Tutors (TTC Tutors), Mentor teachers, STEM Subject Leaders and New Teachers with

a CPD Certificate in Educational Mentorship and Coaching. An overview of the program's intervention logic can be found in the figure below known as VVOB theory of change (VVOB, 2019).

The Leading, Teaching and Learning Together program runs from 2017 until 2021 and is rolled out in 17 districts in Rwanda (see Fig. 1 below) targeting a total of 1157 primary and secondary schools. The main objective of the program is to improve the quality of basic education in Rwanda by strengthening the competences of key education actors through improved Continuous Professional Development (CPD) services and support systems for these actors.

As it can be seen in the figure which depicts the intervention logic, there are two pathways to change. The first pathway focuses on school leadership support. In this pathway school leaders follow a CPD Diploma program on effective school leadership (first box) and these same school leaders receive support from a trained Sector Education Officer through Professional Learning Communities (PLCs) at sector level (second box). The second pathway focuses on teacher support. In this pathway School Based Mentors (SBMs) and TTC tutors follow a CPD training program on Educational Mentorship and Coaching (first box). STEM School Subject Leaders (SSLs) receive a similar program, however with more focus on STEM (first box). At the school level, SBMs, TTC tutors and STEM Subject Leaders support their fellow teachers through Communities of Practices (CoPs), coaching and mentoring and induction programs for newly qualified teachers (second box).

In conclusion, there are two main modalities to providing support to school leaders and teachers, namely:

1. Training Programs on effective school leadership for school leaders and on educational mentorship and coaching for SBMs and SSLs;
2. Professional Learning Communities for headteachers and Communities of Practice (CoPs) for (new) teachers.

3. Methodology

In this paper we are describing the CPD programs that were developed in the context of the Leading Teaching and Learning together Program and presenting some preliminary results of the program. To do so, we make use of the different monitoring and evaluation outputs and training assessments that have been produced by the program so far. To guide our Monitoring and Evaluation (M&E) activities within the program, we make use of the Kirkpatrick evaluation of trainings framework (Kirkpatrick & Kirkpatrick, 2015). This framework postulates that a sound evaluation of a CPD activity should focus on four levels:
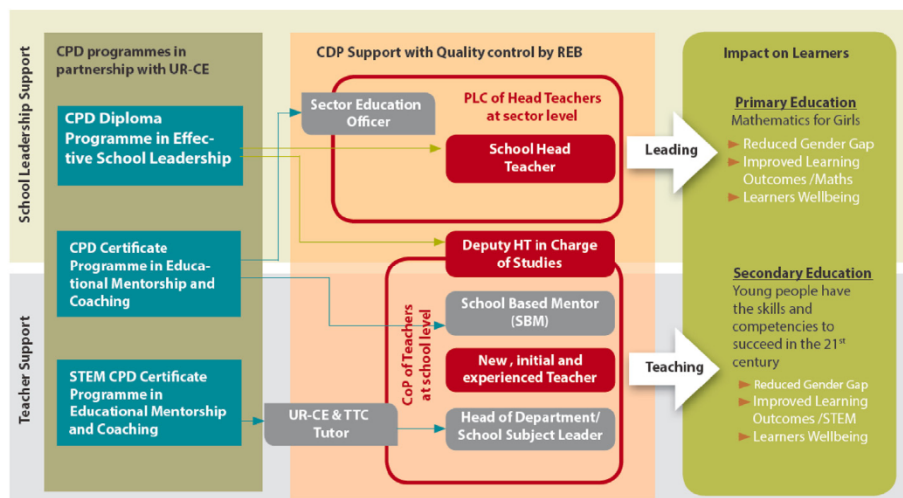

Fig. 1. Intervention logic of the Leading Teaching and Learning Together program (source: VVOB).

1. The reaction level assesses the degree to which participants react favourably to the CPD activity. Examples of indicators are satisfaction, engagement and relevance.
2. The learning level assesses whether the CPD activity has increased the competences, confidence and commitment of participants.
3. The behaviour level assesses the degree to which participants apply what they have learned during the training on the job.
4. The results level assesses whether the training has had an impact on the overall (school) environment.

Table 1 below provides an overview of the different methods that were used to gather evidence on the four levels. To describe the preliminary results of the program at each level, we have triangulated the data from the different sources and conducted a meta-analysis of the main results to date. As the program continues to evolve, more data is being collected at each level which helps to further strengthen the knowledge base on the impact of the program.

Given that we will not be able to describe all the results of the different evaluation studies conducted, we will zoom in on level 2 and 3 of the Kirkpatrick model, namely the results at the level of learning and behaviour change. To do so we use data from pre- and post-knowledge, attitude and practices (KAP) surveys and from Focus Group Discussions (FGDs) with trainees.

3.1. Study instruments

As indicated above, the results section will, in terms of evaluation

Table 1
Overview of evaluation methods, focus, timing and sample.

Level	Method	Main focus	Timing and sample
Reaction level	Telephone interviews	Satisfaction and relevance	Halfway the training programs, random sample
	Participatory evaluation		After each training session, all participants
	Focus Group Discussions (FGDs)		Towards the last training session, purposive sample of 8–10 participants in 4 selected centres
Learning level	Knowledge, Attitudes and Practices surveys Focus Group Discussions (FGDs)	Competencies, confidence and commitment regarding roles and responsibilities	First training session (pre), exam (post), all participants Towards the last session, purposive sample of 8–10 participants in 4 selected centres
Behaviour level	KAP surveys Surveys In-depth interviews Focus Group Discussions (FGDs)	School Leadership practices	External baseline and endline evaluation in 14 districts and 247 schools.
	In-depth interviews using outcome mapping approach	Mentoring and Coaching practices	External qualitative midline evaluation in 7 districts and 14 schools
	E-monitoring of PLC sessions	Effective Teaching practices (in STEM)	All sectors
Results level	Most Significant Change Stories	School level changes in four domains: ● Effective teaching ● Positive learning environment ● Internal collaboration ● External collaboration	All participants from cohort one, selection of most significant stories through pre-defined criteria

results, focus on how the CPD programs have contributed to learning and behaviour change. To measure this, we have conducted pre- and post KAP surveys among trainees. Such KAP surveys are incorporated into all the CPD programs as training assessments and are completed by all trainees. The KAP surveys focus on measuring concepts like shared leadership (school leaders and Sector Education Officers), knowledge of roles and responsibilities (all trainees), and attitudes about roles and responsibilities (all trainees). In addition, some practices have been measured such as: the frequency of coaching and mentoring conversations (SBMs and SSLs), the frequency of induction activities for newly qualified teachers (SBMs and SSLs), the frequency of PLCs, and school leadership practices. In some cases, existing and validated scales were used to assess these practices. The included validated scales were: Headteacher self-efficacy scale used to assess the standards of school leadership (Tschannen-Moran & Gareis, 2004) and the work-related basic needs satisfaction scale (Van den Broeck, Vansteenkiste, De Witte, Soenens, & Lens, 2010) used to assess job satisfaction among all trainees. We have tested the reliability of these scales by assessing Cronbach Alpha's. The headteacher self-efficacy scale shows good reliability for specific subscales: Setting strategic direction (3 items, $\alpha = 0.679$), Leading learning (4 items, $\alpha = 0.706$), Leading teaching (4 items, $\alpha = 0.760$), Managing the school as an organisation (5 items, $\alpha = 0.787$), Community and parental involvement (5 items, $\alpha = 0.655$). The work-related basic needs satisfaction scale had low reliability in most cases ($\alpha < 0.6$) but had better reliability in the group of school subject leaders ($\alpha > 0.60$).

To assess whether the CPD programs have increased participants' competencies and motivation, pre- and post-test Knowledge, Attitudes and Practices (KAP) surveys were administered among all participants from primary education, this included Head teachers ($N = 154$), School Based Mentors ($N = 38$), Sector Education Officers ($N = 69$), School Subject Leaders in Mathematics ($N = 39$).

To complement the quantitative KAP surveys with qualitative data, we also undertook FGDs. These FGDs were conducted during the last training sessions with a convenience sample of eight trainees (a mix of males and females) per FGD (those that were able to stay after the training). A FGD guide was used to facilitate the discussions which took approximately 60 min.

3.2. Analysis

Pre- and post KAP survey results were merged on respondent codes to allow for a longitudinal comparison over the two time points. To test for differences between pre- and post-tests on different outcome measures, we either conducted a paired *t*-test for continuous variables or a paired McNemar for dichotomous variables. Results from FGDs were analysed using Excel by looking at major and minor themes. Two coders were involved in the coding and analysis of the FGD transcripts.

3.3. Ethical considerations

For the research and evaluation activities (i.e. external evaluations) that are undertaken within the Leading Teaching and Learning Together programme, ethical approval has been sought from the Rwanda National Ethics Committee. Respondents included in these evaluations provide informed consent prior to commencement. Consent forms are stored separately from data to ensure no identifying information can be linked to individual responses. Data is kept confidential and anonymised at all times using respondent codes.

4. Results

4.1. Description of the CPD programs

CPD Diploma Program in Effective School Leadership: This program aims at equipping head teachers and deputy head teachers with the

competences to fulfil their roles as school leaders. The 5 standards for effective school leadership form the backbone of the program. Attention is paid to both concentrated and distributed forms of leadership, inclusive education and both task and emotional dimensions of school leadership. The program/training is offered as a year-long program with 18 contact days (16 training days and 2 examination days). The program was first offered by UR-CE as a Diploma Program in 2016 when 397 head teachers from schools with a primary section graduated (1 head teacher per sector was enrolled; total of 416 head teachers). Action research and an impact study formed the basis for an extensive revision of the program in 2017 (VVOB Rwanda, 2018). Since 2018, the program has been revised to target both head teachers and deputy head teachers. Between 2018 and 2021, all head teachers from primary schools (including 9-year and 12-year basic education schools) in 6 districts and all head teachers and deputy head teachers from secondary schools (including 9-year and 12-year basic education schools) in 14 districts will take part in the one-year program. During this period, about 2000 school leaders from 1322 schools will take part in the program.

CPD Certificate Program in Educational Mentorship and Coaching for SEOs: Under this program, SEOs benefit from a CPD Certificate in Educational Mentorship and Coaching to enable them to guide and coach school leaders in leading their schools effectively, with an emphasis on CPD for teachers in general and new teachers' induction in particular, as a significant means for improving quality of teaching and learning. The CPD Certificate in Educational Mentorship and Coaching for SEOs will provide them with coaching and mentoring skills to organise and facilitate sector-based Professional Learning Communities of (deputy) head teachers. In the first cohort of 2018, 75 participants from 6 districts have been enrolled in the program. At secondary level, 138 participants have been enrolled to undertake this CPD Certificate Program in other 14 intervention districts.

CPD certificate in Educational Mentor and Coaching for SBMs: this program provides them with skills to guide and organise school-based CPD, and to promote reflective practice in their schools to advance the implementation of the CBC. It focuses on teacher development as an ongoing process in a teacher's career including the induction of new teachers, peer learning through PLCs, coaching conversation with fellow teachers and other pedagogical skills, assessing teacher professional development needs to inform a CPD plan, conducting a lesson observation and a lesson study, and gender consideration in the facilitation of CPD activities. At primary level 38 SBMs and 8 TTC Tutors from 6 districts have been enrolled to partake this CPD Certificate in Educational Mentorship and Coaching in 2018. At secondary level, 231 SBMs in 14 districts have been enrolled.

CPD Certificate Program for Maths SSLs: The CPD Certificate for Maths SSLs builds on the CPD certificate for SBMs with a specific application on Maths. SSLs in Maths are introduced to a variety of aspects of pedagogical content knowledge for Maths and Maths leadership. Examples related to selected topics of the primary mathematics curriculum are drawn, to mentor and coach their fellows and new teachers. All Mathematics SSLs from all primary schools in 6 districts are expected to be enrolled into the program; to date, 100 Maths SSL completed the program by 2019.

CPD Certificate Program for STEM SSLs: This program builds on the CPD certificate for SBMs and extension of the program to secondary education level supported by the Mastercard Foundation. STEM SSLs are introduced to a variety of aspects of pedagogical content knowledge for STEM and STEM leadership. Examples related to selected topics of the secondary STEM curriculum are drawn, in order to mentor and coach their fellows and new teachers. Between 2018 and 2020, two STEM teachers (one mathematics SSL and one science SSL) in each secondary school of 14 districts are expected to benefit from this program.

As described above training alone is insufficient and needs to be complemented by strategies that provide continuous support and involve school leaders themselves. For (deputy) head teachers PLCs are organised by SEOs at the sector level and for teachers at school level by the SBMs in collaboration with either the Head teacher or the deputy head teacher at the school level. Activities at the school level may include collaborative lesson preparation, lesson study/observation, case discussions, analysing student work on assessments, analysing marking and record keeping systems, or developing strategies for teaching learners with special educational needs (SEN). PLCs can be an effective form of professional development (Ingvarson, Meiers, & Beavis, 2005; Vescio, Ross, & Adams, 2008). They bridge the gap between theory, policy and practice, focus on practice, provide opportunities to participants to break out of their isolation, create a forum for sharing and contribute to job satisfaction and motivation (Vande Walle & Fransen, 2017). Their cost-effectiveness and embeddedness into existing structures at sector level contributes to their sustainability as an instrument for professional development. Research has underlined the importance of a competent and motivated leader (in Rwanda: SEOs) for PLCs to introduce fresh insights and ideas and avoid group thinking. VVOB's experience has confirmed the need for extensive coaching and feedback to help PLC members understand the bottom-up and collaborative nature of PLCs and the positive impact on head teachers' and teachers' motivation (VVOB Rwanda, 2019).

Within their role of oversight for the implementation of the education sector policy related programs at the sector level, SEOs in addition to their oversight role play a central role in collecting and analysing school performance data. These data form the basis for identifying areas for improvement and establishing collaboration among schools. Through their engagement in PLCs of (deputy) head teachers, SEOs obtain better insight in school performance and take more data-driven decisions.

5. Development and implementation of the CPD programs

Constructing school leaders to some extent any school leaders as autonomous professionals through management and leadership training constitutes the first step to releasing their potential to improve school quality (Barret, 2013). Since 2014, the University of Rwanda-College of Education (UR-CE), Rwanda Education Board (REB) and VVOB - Education for Development (VVOB Rwanda) have partnered to develop formal training programs, namely certified CPD programs. Prior to this, REB in collaboration with VVOB organised over a timeline of 10 years several non-formal training programs for school leaders. During the whole process a lot of lessons were learned about how best to develop, implement and monitor and evaluate CPD programs. It was for instance noted that CPD Programs for teachers alone are insufficient and need to be complemented by strategies that provide continuous support and involve school leaders and teachers themselves. Therefore, technical support is provided to establish Professional Learning Communities (PLCs) at sector and school level. In its current form, the partnership implements three CPD programs. In this paragraph we describe how the CPD programs are developed, implemented, monitored and trainees assessed.

A number of studies have explored to some extent school leaders' collaboration and mutual support as agents in raising the performance of teachers (Veenam et al., 1998; Smith, 1999; Beatty, 2000; Day, Hadfield, & Kellow, 2002; Rhodes et al., 2006). It was found that teachers learning from each other - through observing lessons, working together on real school improvement problems, drawing on best practice in developing solutions, feedback, taking part in coaching and mentoring-is considered by many teachers as the most effective way to improve their practice (Rhodes et al., 2006). But more importantly, the provision of opportunities for teachers to reflect on their teaching and engage in dialogue about it with other teachers helps building motivation and commitment (Day et al., 2002). Based on these positive findings, coaching, mentoring and peer-networking are considered as valuable means in raising the effectiveness of professional development, in ensuring the embedding of changed practice and enhancing the impact of professional development within the classroom experience of learners (Hairon & Dimmock, 2012). Finally, same studies emphasise the importance of teachers learning with and from other teachers, the importance of school support in improving

teacher practices as a result of professional development and encouragement of schools to become learning organizations or learning communities. In this way, to support the implementation of the CBC, all CPD trainings are competence-based whereby the focus is on practice based and learning collaboration. The practice is done through trying out and reflecting on practices, practice based assignments, portfolio evidence. Learning collaboration through developing culture of discussion, active participation and learning together (e.g. Fig. 2), learning through interaction with group members, not only with facilitator, diversity of contexts and expertise and set up a CoP in school and PLCs in sector.

Face to face sessions (4 for a certificate and 8 for a diploma) take place during Saturdays and Sundays for not interrupting school activities; there is at least one month between two consecutive sessions to allow participants reporting on their practices as part of in course-assignments. The written reports are submitted during the next session. Online sessions are being tried out since January 2020. The overall assessment is composed of in-course assignments, portfolio and final assessment (individual and supervised written exam). At least 85% attendance to face to face sessions are required for participant to sit for final assessment. In the middle of the course for a given program, facilitators (UR-CE, REB, VVOB staff) conduct field visits as one way of providing grounded continuous and constructive feedback as well as monitoring and evaluation. Facilitators endeavour to provide feedback on any written assignment, exercises, field visits reports before the final assessment.

6. Results of the CPD programs: focus on learning and behaviour change

6.1. KAP survey results

Results of the *KAP* surveys show improvements among beneficiaries in competencies and confidence as well as more commitment to roles and tasks after completing the training programs.

Learning from the CPD programs - For school leaders, more favourable attitudes about shared and transformational leadership were observed after the training compared to before the training. More headteachers for instance agreed at post-test that "I influence decisions about this school taken at a higher administrative level", "an important part of my job is to ensure that teachers are held accountable for the attainment of the school goals". Less headteachers agreed to the statement that "an important part of my job is to resolve problems with the time table and lesson plan" or "an important part of my job is to check for mistakes and errors in administrative procedures and reports (see Fig. 2).

Head teachers also reported to receive more support from the sector (pre- and post-mean scores (SD) 3.2 (1.0); 3.5 (1.0); p < 0.01) and, teachers (pre- and post-mean scores (SD) 3.8 (0.9); 4.2 (0.7); p < 0.001) at their school and reported a better professional climate at school.

For SEO, positive changes were perceived in self-reported knowledge about SEO roles and responsibilities such as how to organise Professional

Learning Communities (pre- and post-mean scores (SD) 2.0 (0.7); 3.5 (0.5); p < 0.001) and coaching and mentoring on the five standards of school leadership (pre- and post-mean scores (SD) 2.3 (0.6); 3.5 (0.5)); p < 0.001.

Also in attitudes about shared leadership within PLCs for head teachers we found changes, with SEOs less often agreeing with "As an SEO I define goals to be accomplished by schools (45% agreeing at pretest versus 39% at post-test).

SEOs also feel more competent and motivated in their work after the training with an increase observed in Work Related Basic Needs Satisfaction (see Fig. 3). The latter includes improvements in perceived autonomy, relatedness and competence at work.

For SBMs and subject leaders in Mathematics, improvements were observed in self-reported knowledge about mentoring and coaching especially activities for new teachers. Among SSLs an improvement was also found in Work Related Basic Needs Satisfaction, especially for the subscale on competence (mean scores (SD) pre and post-test 83.1 (13.5); 93.0 (9.2); p < 0.05) (see Fig. 4).

Indications of behaviour change – Pre- and post KAP surveys also show that SEOs report to conduct more frequent field visits to schools after being trained (see Fig. 3: Practices of SEOs before and after the training program). SBMs and SSLs indicated to more frequently organise coaching and mentoring activities for teachers (both new and experienced) at their schools after having been trained (see Fig. 5). We further observed that SBMs devoted more time to organizing induction activities for new teachers.

Among headteachers, the pre-post KAP surveys thusfar show no clear indication of a change at the level of school leadership practices (five standards). As can be seen in Fig. 6 below, mean scores for all five standards have stayed constant over the two time points. We argue that in part this is because it may be too soon to see such a bigger behaviour change. It will be of interest to study this a few months after the end of
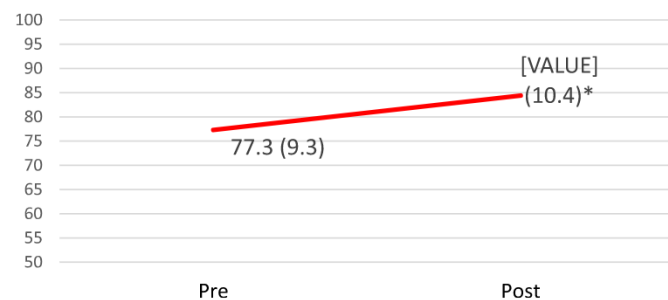

Fig. 3. Work-related basic need satisfaction of SEO before and after the training program
A higher mean score indicates greater satisfaction
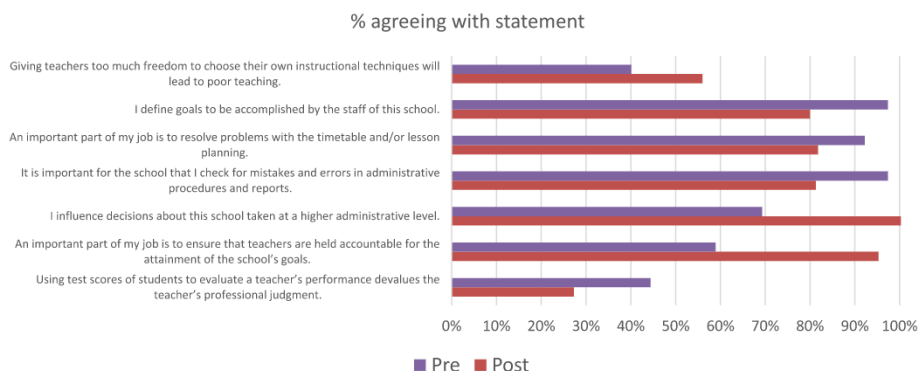*Difference between pre- and post-test is significant (P < 0.001).

Fig. 2. Attitudes of headteachers about roles and responsibilities pre- and post training
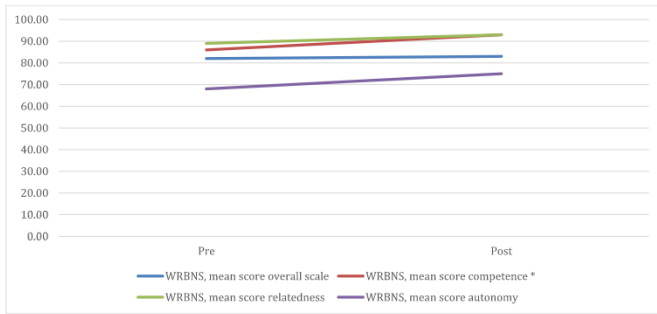*Differences between the pre- and post-test for all presented statements are statistically significant (p < 0.05).

Fig. 4. Work-related basic need satisfaction of SSL before and after the training program
*p < 0.05.

the training programme.

6.2. Focus group discussion results

The FGD findings largely confirm findings from the KAP surveys but also highlight some new and unexpected learnings. The FGD with SBMs for instance showed that the following skills were acquired during the training program: Conducting CoPs, conducting a coaching conversation, planning skills (e.g. making a CPD plan), conducting lesson observations, dealing with resistance to change, school management and leadership, reporting and induction of new teachers. Though most of these learning areas are in line with the modules of the training program, some of the more cross-cutting skills which were not specifically covered in a module like planning, reporting and leadership came out quite strongly during the FGDs.

"Before the training, if a teacher was having difficulties, I would just tell him/her how to solve the problem. But today, I am helping them to find the right way to the solution through coaching and mentoring" (SBM, Rusizi).

FGDs further show that the program has boosted the SBMs' confidence when it comes to their role as SBMs. As a result, teachers trust them more and there is more respect for the SBM. FGDs with STEM SSLs revealed that improved teaching skills was the most important competence that has been acquired through the training program. STEM SSLs indicate that the program has helped them create more structure in their classes through the use of specific methodologies that they were exposed

to during the program. Also, they feel more able to develop clear lesson plans and instruction techniques and evaluate learners in a more systematic manner. Another finding revealed by the FGDs is that STEM SSLs also feel more confident looking for their own teaching resources and aids. Coaching and mentoring skills and knowledge on how to conduct a CoP have also been mentioned by most of the STEM SSLs as gained competences.

"The changes are so many for me. Before I didn't use any strategies for teaching the learners and I didn't use for instance the Bloom's taxonomy when assessing the learners. I also understand better how to be a professional in my teaching." (SSL Gisagara).

"I used to only do things after receiving instructions from my school leaders but today it is not the case, I am not doing things just to satisfy the leaders but I fulfil my responsibilities because I know what to do in my daily work." (SSL Nyamasheke)

FGDs with school leaders were conducted after session three which made it more difficult to assess the early impact of the program as school leaders had only received three out of eight sessions. Nevertheless, school leaders already mentioned some important newly acquired skills and learnings. One of these is that the program has provided school leaders with more clarity on their tasks and how to juggle these different tasks in an effective manner. To do this, many of them mention that they have started collaborating a lot of more with their staff members (teachers,

Fig. 6. Headteacher scores on standards of school leadership pre- and post-training.
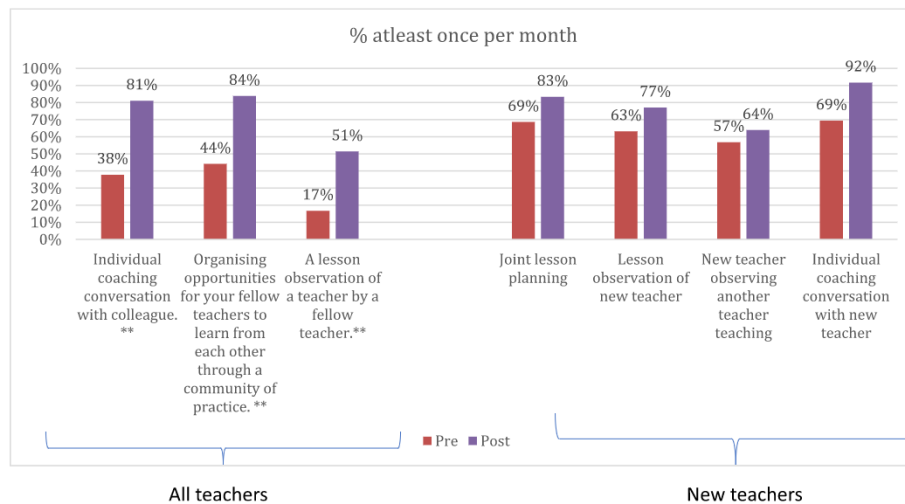

Fig. 5. Frequency of mentoring and coaching activities for (new) teachers according to SBM before and after the training program before and after the training program
*P < 0.05; **P < 0.005, ***<0.001.

deputy headteachers) as well as with parents and the community. School leaders also appreciate the focus of the program on gathering evidence and using such evidence to implement school-level policies (e.g. on teacher absenteeism).

"We can use this course to show them (teachers) evidence. Teachers don't think about absenteeism, coming late, etc. They say this is an issue for students and headmasters only. But now I will train on the values and responsibilities of a teacher. I think from such training they will be able to uplift their experience".(Head teacher, Kamonyi).

7. Discussions and conclusions

This article provides an overview of the CPD programmes that have been developed for different key educational leaders in Rwanda, including head teachers, Sector Education Officers, School-based Mentors and subject leaders in STEM. It also provided an idea of how impactful such programs can be in terms of influencing personal learnings (competence and changes in attitudes in particular) and behaviour change.

Research (e.g.; Ingvarson et al., 2005) on school leadership indicates that changes in school improvement and school effectiveness are a result of effective leadership. Therefore, leadership is needed especially in times of rapid change. Rwanda's education sector has undergone significant changes over the past decade. These changes necessitate competent school leaders who can chart a course for those they supervise, make sense of an unpredictable environment and provide a vision for how to harness change to improve the quality of education. School leaders have the responsibility to assist those they lead in harnessing the opportunities that changes provide, but this can only happen if they are reflective about their own responses to change, their ability to lead others and if they possess necessary leadership skills. School leaders' educational values, reflective strategies and leadership practices shape the internal processes and pedagogies that result in improved pupil learning and well-being. Experience from this program shows that when key educational leaders receive additional instruction and peer learning through such certified CPD programs, the capacity of these actors to deliver can remarkably increase, also influencing the learning outcomes of students. We for instance saw great improvements in knowledge about their roles and responsibilities which can be considered an important foundation for further change. We also saw attitude change, with headteachers and Sector Education Officers being more susceptible to more shared or distributed leaderships. This can be considered a huge stride forward in Rwanda, where leadership is often top-down, and teachers, parents and students are given little decision power. Also of interest, are changes in practices and behaviour, which are visible directly after completion of the CPD programs. It is noteworthy that learnings from a CPD programme do translate into changes in practices. To this end, we can consider the content of the CPD programmes (much focus on learning by doing) and further support through Professional Learning Communities as key to this translation process.

While these programs were primarily developed to enhance the capacity of UR-CE and REB to train school leaders on how to conduct CPD activities at the school level, the partnership for the development and implementation has also enabled the accreditation of the programs for their delivery at UR-CE and as per the standard guidelines and academic requirements for certified academic programs at the University of Rwanda. This partnership also made it possible to contextualize the following key concepts: school leadership, mentoring, coaching and induction of new teachers. Success of these programs has informed the need as well as an entry point for the harmonisation of CPD training programs by different partners in Rwanda on both the content delivered and effective use of resources. Future plans for these programs include the expansion of the CPD programs to other districts through the use of online and blended learning approaches, more research on how these respective CPD Programs affect teaching with an emphasis on professional practice and improved collaboration through sustainable institutionalised CPD programs. More research on how the CPD programs affect the learners, with an emphasis on STEM outcomes and student well-being. More on-site hands-on support is envisaged in the next program interventions to strengthen practice at the field level and inform program review. In addition, digitalization of planning, monitoring and evaluation systems is foreseen, including a better e-Monitoring system. Currently, real-time e-Monitoring systems are already being developed and piloted in intervention districts to ensure timely monitoring and feedback on implementation of CPD activities at various levels. This is critical to sharing knowledge on what is working and how it works, the reach of the program and cost effectiveness of the program. To ensure sustainability of these CPD Programs, room is made for teachers to identify their priority challenges for CPD based on the existing practice, respective environments and available resources and accordingly, explore and implement solutions that could potentially contribute to improved teaching and learning outcomes. This is also the same for promotion of governmental institutions' ownership of the programs. As final thought, positive results cannot be attributed solely to the training program as external factors may also be influencing the results found. Control group is lacking so we don't know if without the training program the same results would be found (maturation effect). Furthermore, statistics applied are currently very basic; multivariate analysis would be used to test effects on specific groups (e.g. differences by gender, differences by workload, differences by district) but the small sample size limited us to some extent.

8. Recommendations

While the policy environment is very conducive and theoretically supportive of CPD programs, both development and implementation of the programs has faced a number of challenges. There is a need for improved coordination of interventions for the capacity development of school leaders, particularly aligning the different CPD initiatives. There is also need to implement some CPD policy provisions for effective implementation of CPD activities at different levels including reduction of the teaching workload for mentors and subject leaders (SBMs, SSLs) to allow them to organise and implement CPD activities in their respective schools. School leaders too are involved in more administrative tasks that makes them loose a sense of autonomy and prevents them from effectively following up on CPD activities in their schools (Ndayisabye, 2019).[1] In addition, more effort should be invested in monitoring and evaluation at school level on for instance the application of the five standards of school leadership by authorities at Sector, District and National levels.

CRediT authorship contribution statement

Alphonse Uworwabayeho: plays key role in coordinating all continuous professional development programmes and took responsibility in developing and organizing the final manuscript based on initial draft produced by Andrew. **Ilse Flink:** plays key role in data collection and analysis and reporting on this section. **Astérie Nyirahabimana:** participated in the conception of the intial paper. **Jef Peeraer:** as VVOB Rwanda manager coordinated overall development of the draft in addition to funding acquisition. **Innocent Muhire:** played a role in critical reading the paper and providing linguistic correction. **Andrew Ntwali Gasozi:** initiated the development of the initial draft that was presented to an international conference.

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[1] Ndayisabye, H. (2019). *Exploring the outcomes of VVOB continuous professional development program for headteachers in Rwanda: A case of Nyabihu district.* Unpublished Master thesis: Adventist University of Central Africa, Rwanda.

Declaration of competing interest

All authors participate in one way or another in facilitating the continuous professional development programme that is the basis of this paper. There is only one funding source for the programme that is the VVOB. All materials used in the paper are VVOB properties and have been used under the agreement between the University of Rwanda-College of Education and VVOB.

Therefore, we do not expect any conflict of interest.

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