

# Cascade Approach on Teachers' Continuous Professional Development to improve learning outcomes in Pre-primary and Primary Education: Experience in the implementation of the F4L project in East Africa.

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## Abstract

The cascade method in education is a scalable and affordable continuous professional development (CPD) strategy that entails training a subset of teachers who impart newly learned knowledge to their peers. Enhancements to teachers' knowledge and abilities are among its positive results; nonetheless, problems such as content misunderstandings show how much improvement is required. This paper presents a study that examined the efficacy of a cascading approach to teacher professional development. According to this study, the most effective training approaches emphasize reflection and experience. Thus far, the cascade approach has shown potential for improving teaching methods and fits in with the larger objectives of the Foundation for Learning (F4L) project in the West Nile region of Uganda. The F4L trains and equips students, teachers, school leaders, families, communities, civil society organizations, and government leaders with the knowledge, skills, attitudes, and values needed to promote more gender-responsive and pluralist quality education systems in Tanzania, Kenya, and Uganda.<sup>1</sup>

**Keywords:** Cascade approach; Continuous teacher professional development; Primary tutors; Pre-primary tutors

**DOI:** 10.7176/JEP/16-1-03

**Publication date:** January 30th 2025

## 1. Introduction

This paper presents the findings of a study that explored the nuances of a cascade approach used in teacher-educator professional development. The core of the cascade paradigm is how it is designed, with educators choosing specialized training and then using their skills to share what they have learned with their peers. This cascading technique has its roots in Hayes' (2000) 'Cascade Training and Teachers' professional development which discussed the cascade model as a diffusion of innovation in English teaching at the primary level in Sri Lanka (Hayes, 2000 p.135). It embodies a dynamic process in which a chosen group of teachers becomes both agents of information spread and beneficiaries of instruction. It is well documented according to Hayes (ibid) in the literature that the cascade approach is the innovation where teachers are at the heart of any innovation within national education systems (Hayes, 2000). Therefore, teachers' needs and context demands must be considered in the development of cascade interventions. According to Bett (2016), the immediate benefit of the cascade model is its ability to reach many teachers within a short period. In his study of using a cascade model for teachers' professional development in Kenya, he concluded that in situations where national governments are grappling with many teachers, using such a model was seen to be relevant.

The cascade model, is considered a quick solution to teachers' professional development and it is notable for being cost-effective in reaching many teachers alongside school-based and distance learning approaches to teachers' professional development (Bett, 2016) Therefore, the cascade strategy offers instructors the chance to be chosen as trainers, in addition to being active in their professional development, resulting in a more expansive reach beyond those initially targeted. (Bett, 2016). It is also cost-effective because despite being a model in

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<sup>1</sup> <https://www.aku.edu/iedea/Pages/f4ec.aspx>

which the training is conducted downward from above, it does not require long periods out of service, and it uses existing teaching staff as co-trainers (Gilpin, 1997 as cited by Hayes, 2000). Careful training of trainers should be taken into consideration because using trainers drawn from successive tiers may dilute the training as it goes further down the cascade (Hayes, 2000). The recommendation is to develop a training design that is not transmissive but experiential and reflective (Hayes, n.d.). In Bangladesh, China, and Nepal, among other contexts, this top-down approach of professional learning, in which main trainers transfer information to secondary trainers, has been effectively implemented (Abdull et al., 2021).

The inclusion of continuous coaching, mentorship, and support, all of which are acknowledged as important contributors to long-lasting behavioral change and enhanced instructional strategies, is a unique characteristic of the cascade model (Karalis, 2016).

The Foundations for Learning (F4L) Project, implemented by one of the universities in East Africa, adopted the cascade approach to provide continuous professional development (CPD) to pre-primary and primary tutors in selected teacher training colleges in Kenya, Uganda, and Tanzania. Graduates of the university, who have been developed as teacher trainers and are referred to as Professional Development Tutors (PDTs), are pivotal in providing CPD to the tutors. This has provided us with important lessons about the impact of the cascade approach on teacher professional development which we share in this paper.

The cascade approach has its limitations despite its praise and broad acceptance. For example, it has been pointed out that secondary trainers may misinterpret the main trainers' content (Karalis, 2016). In addition, Bett (2016) indicates that there is an incorrect assumption that the cascade model is founded on the notion of an "expert" delivering valuable ideas to often "inexperienced" or "ignorant" teachers. He sees this notion of 'expert' vs 'inexperienced' to override the underlying problems because teachers have unique needs and experiences, and when these are ignored or not paid attention to by "perceived superior advice, the process is set to fail from the start" (Bett, 2016 p.4). This possible hazard requires a careful implementation strategy that prioritizes good communication and clarity at every stage of the cascade process.

This article, therefore, weighs the advantages and disadvantages of the cascade paradigm by examining its historical background and real-world applications. To provide important insights into the workings and effects of this method on teachers' professional development, this paper presents a thorough analysis of pertinent literature and real-world instances.

### **1.1 The Cascade Model**

The cascade model of professional development is widely used but it has a history in professional development. The model was first initiated as a workplace training programme as part of many United States war efforts during World War II (Jacobs & Russ-Eft, 2001 as cited in Moulakdi, & Bouchamma, 2020 ) The goal at the time was to rapidly train company leaders, who in turn would train their employees through an established hierarchy, to support production for military purposes Dooley, (1945 as cited in Moulakdi, & Bouchamma, (2020 ). The cascade model begins by training a group of individuals who are expected to train others (Bett,2016, Moulakdi and Bouchamma, 2020). However, caution is made that the dependence on the trained experts to deliver the training may dilute the quality of the intended training (Turner, et.al., 2017, Bett, 2016). Also, there is a need to consider teachers' needs and the contexts in which they live and work because they tend to influence the vital follow-up activities for the teachers post-training and any established support measures to enable teachers to apply the acquired knowledge and skills (Moulakdi, & Bouchamma, 2020). These documented experiences serve to caution the considerations of the use of the cascade model in teachers' professional development. Some criteria are suggested in adapting the cascade model as they were summarized in the table below by Hayes (2000)

**Table 1** *Criteria and project principles*

<b>Criteria</b>	<b>Project training principles</b>
<b>1. The method of conducting the training must be experiential and reflective rather than transmissive.</b>	<ul style="list-style-type: none"> <li>- Context sensitivity</li> <li>- 'Normative re-educative training</li> <li>- Reflexivity</li> </ul>
<b>2. The training must be open to reinterpretation; rigid adherence to prescribed ways of working should not be expected.</b>	<ul style="list-style-type: none"> <li>- Context sensitivity</li> <li>- 'Normative re-educative training</li> <li>- Reflexivity</li> <li>- Flexibility and responsiveness</li> <li>- Needs continuing professional development</li> </ul>
<b>3. Expertise must be diffused through the system as widely as possible, not concentrated at the top.</b>	<ul style="list-style-type: none"> <li>- Participative development</li> <li>- Collaboration</li> <li>- Continuing professional development</li> </ul>
<b>4. A cross-section of stakeholders must be involved in the preparation of training materials</b>	<ul style="list-style-type: none"> <li>- Participative development</li> <li>- Collaboration</li> </ul>

The five criteria above as they were proposed by Hayes (2000) though dated, are still valid in the current discussions on the cascade approach to professional development. These criteria were observed in the planning and development of the cascade approach to teacher professional development in the F4L project in selected teacher training colleges in Tanzania, Kenya, and Uganda. The methods that were used in conducting the training considered the andragogy approach to teaching adults and they were mainly experiential with the emphasis on reflective practice. Efforts were made to ensure that the trainers encouraged the active participation of teachers so that they were able to own the process. This was important because the hands-on nature of these methodologies fosters a sense of ownership and agency among educators, leading to a profound and sustained impact on their teaching approaches (Bhatty, 2020). Participants in the training feel better equipped to adapt and innovate in response to the evolving needs of their students and educational contexts (Kim et al., 2019). This is important because the cascade model relies heavily on active learning methodology. The core of an efficient and dynamic teacher professional development plan is the active learning approach (Moulakdi, & Bouchamma, 2020). These methods, which include brainstorming sessions, role-plays, group projects, and other participant-centered exercises, are considered essential for developing a dynamic and captivating learning environment that encourages teachers to collaborate, think critically, and become creative (Wango, Rarieya, Abunga, Oluga & Dato, 2024).

## **2. Methodology**

The F4L project was carefully designed to provide professional development (PD) interventions to teachers, head teachers, educational leaders, and teacher educators in four teacher education colleges in Tanzania, Kenya, and Uganda. The interventions focused on expanding higher professional development opportunities and practices for college tutors and educational leaders in the areas of gender-responsive and pluralist Education. In Kenya, 47 tutors from the teacher training college participated in the study. In Tanzania, 17 tutors participated in the study while 82 tutors participated in the study from two teacher training colleges in Uganda. In all the participating teacher training colleges, the whole college approach was used to make sure that all the tutors from the participating colleges participated in the training so that they could participate in the cascading training to support the professional development interventions to teachers, head teachers, and other education leaders in the areas where F4L project was implemented.

The data for this study were collected through interviews, focus group discussions, and pre-test and post-test evaluations. The one-on-one interviews involved district leaders, ward education officers, tutors, and head teachers to understand the impact of the cascading approach in expanding quality professional development opportunities and practice of participating tutors and teachers. The focus group discussions were used with teachers from the participating primary schools in the three countries where the F4L project was implemented. As was the case with interviews with district leaders, ward education officers, tutors, and head teachers, the focus group aimed at providing opportunities to share their experience of participating in the professional development training workshops that were conducted by tutors using the cascading model.

Pre- and post-test evaluations were used to determine how well the initiatives had been received and implemented. Osterlind (1989) argues that assessments conducted both before and after a particular educational intervention are primarily used to determine the participants' degree of knowledge and skill development. Osterlind (n.d), further indicates that pre and post-tests are placed in a way that makes it possible to compare the knowledge and proficiency of participants before and after their educational experience. The tests were administered at the beginning (pre-test) and at the end (post-test) of the intervention.

### **3. Results and Discussion**

The data collected from pre and post-test evaluation, interviews, and focus group discussions were analyzed and key findings are presented in the following paragraphs. The presentation of results and discussions are simultaneous, but efforts are made in such a way that there is clarity of the order in the flow of the points raised and discussed.

#### **3.1 Creating synergies across levels of education**

The workshops were planned and implemented to focus on the different levels of education offered in teachers' education colleges. The different workshops included pre-primary education, primary education, gender, inclusion, and makerspace. The tutors were exposed to different new approaches based on their own experiences, national government policies, curriculum requirements, and contextual realities. The interventions targeted college tutors because they were expected to cascade learning in their pre-service teacher training courses as well as support in-service teacher professional development. In all the workshops, facilitators made efforts to persuade workshop participants of the need to create and appreciate synergies across levels of education especially pre-primary and primary education.

Different ideas about primary teaching approaches and Early Childhood Care Education (ECCE) were presented to the participants. Connecting theoretical knowledge with real-world applications was made easier by implementing a learning framework. The participants acknowledged the value of this strategy and said that the training sessions opened their eyes to new perspectives on working with ECCE and student teachers. According to a study of pre-and post-test data, participants' awareness and comprehension of ECCE ideas significantly improved. In the pre-test, only 4.7% of the participants strongly felt that they understood ECCE ideas; however, in the post-test, this percentage rose to 57%. This statistical shift highlights the effectiveness of the intervention in improving participants' comprehension of ECCE concepts and is suggestive of the information and skills acquired throughout the training.

#### **3.2 Pre-test and post-test assessment**

The findings from the pre-test and post-test assessments indicate that there were improvements in the activities that were carried out during the workshops and after the workshops. The significant improvement in outcomes between the pre-and post-tests highlights both a gain in awareness and a noticeable influence on participants' capacity to use the knowledge gained from the training in their daily routines. For example, pre-primary

education tutors and pre-primary and primary teachers now use play as a teaching tool. According to Dockett and Perry (2014), this awareness shift signifies a paradigm shift in how players (teachers and students) view and use play for learning. The efficacy of the pedagogy session was robustly validated using pre-and post-test assessments. The intervention effectively provided participants with the necessary knowledge and abilities to integrate play into an educational setting, as evidenced by the measurable increase in participants' awareness, which is consistent with the larger goals of the F4L project.

Insights from pre- and post-test evaluations confirmed the effectiveness of the current intervention and offered useful information for developing future educational initiatives. The pre-tests also allowed the facilitators, in the course of the project, to more accurately modify interventions to address changing educational requirements by identifying the areas where participants exhibited development or where obstacles continued.

The post-test findings after the intervention showed a significant change, with all participants attesting to their increased proficiency in the pedagogical strategies introduced by the project. This statistically significant improvement shows how well the intervention worked to transfer knowledge and improve participants' abilities to use active learning strategies as a deliberate and purposeful aspect of the teaching and learning processes. (Rarieya, Bakuza & Wango, 2024). The participants' experiences, attitudes, and proven skills showed that the training program using the cascade approach produced significant beneficial outcomes which are discussed in the ensuing sections below.

### **3.3 Collaboration between the teacher colleges and the surrounding primary schools**

The benefits of the cascading model of professional development include the transfer of knowledge with recognition of the context realities and increased collaboration between college tutors and the surrounding primary schools. The tutors who were trained were later tasked to extend the training to the surrounding primary schools. The interviews with tutors, headteachers, and focus group discussions with teachers have indicated that there are growing working relationships between teachers' colleges and surrounding primary schools. This kind of collaboration is likely to sustain the knowledge gained during the workshops. There are also mentorship opportunities and follow-up from the tutors who are closer and most likely that the interactions would continue beyond the project intervention phase. Their cascade model has also rejuvenated the collaborations between teachers' colleges and the surrounding schools which tend to be very limited to only practicum activities. Data from the interviews and focus group discussions indicate that the head teachers' and teachers' discussions reflected the knowledge acquired from the training workshops. There was a special appreciation for the good work done under F4L. The ward and district leaders applauded the differences in practice among teachers and head teachers who attended the F4L workshops. It was reported and observed that there was a growing interest in the mutual interaction between teachers' education colleges and primary schools. Teachers' education colleges increasingly provided space for primary school teachers to develop teaching and learning materials using resources in the makerspaces, which are located within teachers' education colleges. Since tutors have been empowered through the cascading model, they are now supporting primary school teachers who visit college makerspaces. Each college has a well-trained tutor to support his/her fellow tutors, primary school teachers, and students using existing resources in the maker space, resulting in improved school practice.

### **3.4 Community Involvement**

The findings from interviews and focus group discussions have indicated that in all three countries, there was increased community involvement. It was also noted that communities were becoming more involved in school development because of improved collaboration between schools and the community, such as contributing to school infrastructure renovation and supplying food for early childhood students. Public primary schools across Tanzania, Kenya, and Uganda are experiencing an increased number of pupils who are enrolled in pre-primary classes and grade one every year. The increase in number which is not matched with the number of teachers available, also comes with the need for classrooms, teaching and learning materials, and other necessary supplies. During the workshops, teachers were encouraged to involve parents in addressing some of the teaching

and learning needs. For example, teachers were advised to involve parents in materials development where the no or low-cost materials would be made by parents to support the teaching and learning in large classes. The interviews with head teachers and a few parents indicated the appreciation of the approach which supported the schools to involve parents and the community at large to solve some of the problems that were within the reach of the schools in collaboration with the communities.

### 3.5 Gender-responsive leadership practices

The F4L project has a strong emphasis on gender-responsive practice in leadership and teaching where gender-responsive pedagogy is highly emphasized. The cascading workshop like other workshops conducted under F4L had a strong emphasis on gender-responsive leadership practice. The F4L project's emphasis on gender responsiveness and inclusion is consistent with international efforts to promote equitable education. The need to develop learning environments that address gender inequities and meet a range of learning requirements is emphasized by UNESCO (2020). It is anticipated that the champion tutors that emerge from this project will be essential in promoting inclusive practices.

The findings from the collected data have indicated that when it comes to teaching and learning in schools, head teachers are becoming more conscious of the need to be more gender sensitive. Examples include sitting arrangements, leadership positions, vision of responsibilities, and special closets for girl services stocked with sanitary towels and other hygiene facilities.

School leaders and teachers indicated their increased readiness to put what they learned in F4L workshops into action, such as renovating school environments such as offices, classrooms, and restrooms; developing and implementing a school vision and mission; and the ability to develop and implementing school-based strategic plans.

The participants' noted changes in behavior and attitude were among the noteworthy results. The demonstrations of the training sessions, which showed how concepts are produced, were crucial in helping participants' knowledge and abilities to improve. They reported becoming aware and keen on gender-responsive pedagogy, the integration of technology in teaching, and practicing reflective practice. According to reports, there was a discernible shift in participants' mindsets based on their written reflections and discussions.

Testimonials from participants, obtained through interviews and focus group discussions, emphasize the direct positive effects of the cascading program on their instructional strategies. Enhanced support for children during school practice and the creation and application of instructional materials by lower primary school teachers were committed to some of the testimonials from those who participated in the professional development workshops. These claims demonstrate a concrete conversion of learned information and abilities into workable plans to enhance instructional techniques.

*"Next time when our students go for School Practice, we shall make sure we support them very well using this knowledge." CP (Course participants)*

*"For me, I am going to make sure these lower primary teachers develop and use materials while teaching." College Course Tutor (CCT)*

The outcomes of the training program show the success of the cascading strategy used in the F4L project. Participants' knowledge and conceptual understanding were improved by the program, but their behavior was also changed, which resulted in an improvement in their attitudes. Developing practical skills places participants in a better position to use efficient instructional techniques. The participants' pledge to use their acquired

knowledge to assist students and other educators highlights how the training program can potentially affect the teaching methods in the institutions it is intended for. Overall, the results show that theory and practice were successfully integrated, demonstrating the cascade model's effectiveness in bringing about significant and long-lasting benefits in educational settings.

### 3.6 Reflective Approach

A dynamic and transformative angle is the incorporation of the reflective method into continuous professional development (CPD) within the framework of the cascade model. Through the promotion of methodical and interpretive reflection among educators, this strategy enhances not only the quality of individual teaching practices but also the overall performance of college tutors. The use of reflective practices (Galea, 2012) is a significant and integral strategy for CPD delivery within the cascade model. The incorporation of reflective practices serves as a powerful tool for educators to critically examine their teaching methods and foster a culture of continuous improvement and professional growth. Teachers who use reflective techniques gained during the teachers' continuous professional development (TCPD) have the opportunity to develop competency for quality and equity in teaching and learning in basic education (URT, 2020). Teachers go through a purposeful, methodical process in which they carefully consider and evaluate the lessons they have taught (Schön, 1987). The workshops particularly emphasized the use of reflective practice by participants to do more than just evaluate themselves. They were also encouraged to critically examine the feasibility of the pedagogical strategies they were introduced to as well as use reflective practice to improve their general teaching practices. More particularly, they were encouraged to think about the reasons behind the instructional decisions they make, the effects of those decisions on students' learning, and alternative strategies (Machost and Stains, 2023). In addition, the participants also reflected on their learning gains linking them with the improved practices.

The findings indicate that participants' feedback emphasized that integrating reflective practices into CPD had a transforming effect on their teaching practice. Through reflective engagement, teachers transcend traditional teaching approaches and progress towards a more methodical and interpretive approach to delivering information. (Tonna et al., 2017). Likewise, during the F4L workshops, tutors could assess the success of their teaching methods, pinpoint areas for development, and modify their methods using knowledge based on the reflective lens they wore. Here are a few quotes from workshop participants:

*"I benefited from the workshop under F4L because I was able to reflect and assess my teaching methods and to seek help in areas, I thought needed improvement"* (Tutor, from Tanzania).

*"The workshops provided us the opportunity to challenge ourselves and I can assure you that my teaching has changed since I participated in the workshops"* (Tutor from Kenya).

*"The unique characteristics of the F4L workshop were an emphasis on reflective practice. Even gender responsive pedagogy was not a new concept to me, but I perceived differently during the workshop and my lenses are now clear on promoting gender in and out of class"* (Tutor from Uganda)

These quotes from tutors across East Africa cement the impact of the cascade model workshops that aimed at transforming the teaching practice in teachers' colleges and surrounding pre and primary schools. The process of self-reflection contributes to a deeper understanding of pedagogical methods and the dynamics of the learning environment.

Continuous improvement in teaching techniques is in line with continuous professional development (CPD) that adopts a reflective approach (Krismalita Sekar Diasti & Kuswando, 2020). Teachers play an active role in their professional growth when participating in reflection exercises. This dynamic process of self-evaluation and self-correction fosters continuous learning and an adaptation mindset. According to Knowles et al., (2020), the

application of reflective techniques is in perfect harmony with adult learning. Opportunities for self-directed learning and reflection are beneficial for adult learners, in this case, educators. Teachers can take charge of their professional development and customize it to meet their unique needs and challenges, which respects educators' autonomy.

From the foregoing, it is evident that by engaging in reflective practice, educators actively participate in their professional growth and foster a culture of learning and ongoing improvements within the educational community. Based on the principles of adult learning, the reflective method enables educators to take a proactive approach to professional growth. This, in turn, has a positive effect on the quality of instruction provided in educational contexts, with and without resources.

#### **4. Lessons Learned**

The F4L project's use of the cascade model for teachers' professional development (TPD) interventions produced insightful information and important lessons. These insights, which are derived from participant experiences and facilitation methodology, advance the knowledge of practical methods for improving instructional design.

TPD intervention has highlighted the importance of ongoing professional development in rekindling and strengthening the subject-matter expertise of teaching practices. According to Kennedy (2005), providing teachers with continual learning opportunities guarantees that they stay up-to-date on the most recent pedagogical approaches and practices.

Using a coaching approach as part of the cascade approach is an effective way to improve tutor and student performance because it allows for one-on-one interactions between mentors and mentees. Individual requirements and concerns can be addressed with customized help thanks to this individualized approach.

To enhance practitioners' current experiences, expertise, and abilities, a workshop facilitation style was developed. Inquiring about participants' past knowledge of the topics being discussed, along with facilitation techniques, facilitated fostering a collaborative environment in which practitioners are encouraged to share, discuss, and reflect on their practices.

Throughout the workshops and seminars, a range of teaching and learning techniques were used to recognize the participants' diverse learning styles. There are a few examples of multimedia materials, including audio and video clips, role-plays, group and pair conversations, brainstorming exercises, demonstration lessons, gallery visits, cooperative learning techniques, and quick facilitator presentations.

The learning process benefited greatly from reflective techniques. By recording their reflections in reflective journals, participants used their past knowledge and abilities in reflective practice. Through these reflection sessions, the participants were able to connect newly acquired knowledge to prior experiences, develop new insights, and become conscious of new learning.

The facilitation technique included differentiated instruction in recognition of the fact that every learner has a unique learning style. According to Rarieya et al (2024), the differentiated instruction technique promoted a more inclusive and productive learning environment by ensuring that participants' varied needs were met through a variety of activities and tactics. Participant involvement has increased with the use of active learning techniques such as case studies, group projects, and demonstration courses. By putting learning in the students' hands, these techniques promote engagement and active participation.



## 5 Recommendations

The field reports from the cascade workshops which were reviewed during the writing of this paper contain thoughts and suggestions that if carefully considered may provide helpful directions for improving and implementing cascade techniques in teacher preparation programs. These suggestions are in line with (Verna, 2020) the significance of reflective, experiential, and flexible training techniques.

The experience of interacting with tutors, student teachers, and primary school teachers as beneficiaries of the F4L interventions has prompted PDTs to advise the creation of experiential cascade approaches that allow learners to actively participate in the process of learning. The impact of the training was increased by the inclusion of reflective components, which motivated participants to evaluate their experiences and teaching strategies. This is in line with adult learning principles and enhances the overall efficacy of the training model (Verna, 2020).

Careful workshops were conducted with the main goal being to rejuvenate tutors' understanding, skills, and attitudes. This positive outcome signifies that the training interventions successfully contributed to the professional growth and development of tutors. The transformative impact on attitudes suggests a shift towards best practices in teaching, which is essential for fostering an enriched learning environment.

The workshop evaluation forms analyzed after all workshops highlighted the perceived relevance of the training sessions using the cascade model of training. An overwhelming 89.5% of the participants expressed excitement and desire for more workshops. This positive feedback underscores the effectiveness of the cascading model in meeting the needs and expectations of participants. The enthusiasm displayed by the participants indicates a genuine interest in continued professional development.

A significant result of the seminars is that participants now have an intense desire to incorporate 21st-century teaching techniques into their routines. This fits with the overarching objectives of the Foundation for Learning (F4L) initiative, which aims to provide educators with the tools they need to support creative and efficient teaching approaches. Workshops have effectively encouraged participant preparation and execution of teaching and learning procedures in line with contemporary educational practices.

The development of champion teachers with 21st-century competencies is the aim of the F4L project. The objective was efficiently achieved by the cascade paradigm, as evidenced by positive reactions from the participants. By imparting pertinent knowledge and skills, the intervention is shaping teachers into well-prepared professionals who can effectively fulfill the demands of modern education in Tanzania, Kenya and Uganda, and the West Nile region.

These suggestions and favorable assessment results support the effectiveness of the cascade approach used in the F4L project. Success is attributed to its capacity not only to impart knowledge but also to revitalize and motivate teachers, bringing about a revolutionary influence on instructional strategies that are in line with the changing face of education.

## 6. Conclusion

To conclude, the implementation of the cascade model in the F4L project has exhibited certain advantages and disadvantages concerning teachers' professional development. A huge number of educators were reached at a low cost using this technique, which is defined as training a select group of instructors who subsequently share the information with their peers. The tutors' knowledge, abilities, and attitudes have been revitalized because of

the model's emphasis on varying teaching styles, coaching, and continuous support. However, difficulties such as misconstrued content and practical problems emphasize the necessity of ongoing improvement.

The findings discussed above reflect that the project interventions addressed the core professional needs of pre-primary teachers and primary teachers. The interventions have enhanced tutors' and teachers' understanding of the strategies, approaches, skills, knowledge, and attitudes in developing pedagogical practices such as leadership, competence curriculum, and gender-responsive and inclusive education. Participants in the study indicated that the project intervention improved their professional skills and that the classroom situations were improving, with an emphasis on gender-responsive and inclusive education for all girls and boys. In addition, the findings of the study indicated that the project interventions were able to enrich the preparation of student teachers based on gender responsiveness, inclusivity, and competence-based curricula. The student teachers who participated in the study appreciated that they were well prepared to implement the competence-based curriculum. They indicated that they were sensitized to planning and implementing their teaching, paying attention to gender-responsive and inclusive education for all girls and boys.

As demonstrated by the extremely positive workshop reviews, the cascading approach shines despite the difficulties in igniting the participants' excitement. In line with the larger objectives of the F4L project, the seminars effectively motivated instructors to incorporate 21st-century teaching abilities into their practice. To ensure long-term efficacy and flexibility in subsequent implementations, this study emphasizes the significance of experiential and reflective training approaches as advised by Professional Development Tutors. At the end of the day, the cascading model can play a major role in the continuous improvement of instructional strategies, which could have a revolutionary effect on education in Southern Tanzania, Eastern Kenya, the West Nile region, and throughout Uganda.

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