



CONCEPT NOTE

Integrating ICT

in Continuous Professional Development
of Teachers and School Leaders

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Rationale

Information and communication technology (ICT) can have impact on in-service teacher and school leader professional development (EDT, 2018). More specifically, technology enables the creation of continuous learning opportunities via online communities of practice, online courses and online discussion. It is in this context that VVOB - Education for Development is integrating ICT to provide cost-effective, flexible and personalised learning as well as opportunities to develop teachers and school leaders' digital literacy. ICT is integrated within Continuous Professional Development (CPD) training programmes. In addition, ICT is introduced in professional learning networks to aid in the monitoring and evaluation, and to give teachers and school leaders access to multimedia resources for facilitation of such networks. The benefit of blended learning at VVOB is three-fold:

Cost efficiency: Traditional face-to-face workshops and paper-based monitoring and evaluation are effective but often inefficient. Travel and accommodation costs as well as travel time are a few examples of costs that affect efficiency. Technology enables geographically dispersed learning.

Flexibility: Technology enables learners to learn at their own convenient time, pace and place; within set deadlines of the course.

Personalized learning: The learners can go more into depth in topics they find relevant to engage further with. This can create ownership over their own learning which can increase the effectiveness of learning and increases learning outcomes.

ICT in Education Policy in Rwanda

Integrating ICT in CPD aligns well with the priorities of the Rwandan Government to improve quality education. According to Vision 2020, ICT in education is a strategic lever for achieving the transformation of Rwanda from a low-income economy based on subsistence farming to a middle-income-knowledge-based society (MINECOFIN, 2012). Likewise, the Education Sector Strategic Plan (ESSP) (2018/19 to 2022/23) acknowledges the role of ICT in education to achieve rapid social and economic development. In 2016, the Cabinet approved the ICT in Education Policy and its Implementation Framework (MINEDUC, 2016a). Strategic Objective 2 of this Policy aims at increasing ICT penetration and usage at all educational levels. This includes scalable ICT infrastructure, broadband and user support required to transform schools into "Smart Schools". Infrastructure includes interactive whiteboards, servers, local area networks, cloud services, broadband connectivity and electric power. Yet it is Strategic Objective 3 that is particularly relevant to VVOB's blended learning approach. This objective focuses on capacity building of two key stakeholders as outlined in the following points:

- Leadership development that helps, leads, supports and encourages the regular use of ICT in schools and classrooms.
- Teacher preparation and development, as teachers remain key to the successful integration of ICT in education. As such, the ICT in Education Policy envisions a strong teacher training effort to transform teaching methodology from teacher-centred to learner-centred methods.

The ICT in Education Policy was followed by the National Open, Distance and eLearning (ODEL) policy (MINEDUC, 2016b) that underpins the development of online and blended learning as well as ODeL capacity building for staff involved. Its strategic goals and objectives are among others: to integrate the provision of ODeL programmes in the education system and to promote research and development, collaboration, partnerships and networking among ODeL providers. The policy recognises that deployment of harmonised ODeL is a viable strategy for increasing access to quality education and support for Rwanda.

Integration of ICT in CPD of Teachers and School Leaders in Rwanda

In the framework of a Multi-year programme known as Leading, Teaching and Learning Together (LT2), different institutions are partnering on responsive technology enhanced Continuous Professional Development (CPD): the University of Rwanda-College of Education (UR-CE), Rwanda Education Board (REB) and VVOB - Education for Development. These organisations are collaborating on CPD for teachers and school leaders to advance the implementation of the Competence Based Curriculum and improve learning outcomes. These CPD programmes are implemented in successive cohorts allowing VVOB and its' partners to constantly learn, re-develop and improve the learning outcomes.

CPD training Programmes

The programme includes the development, design and implementation of three (3) Certified CPD Training Programmes for professional development of Head Teachers, Deputy Head Teachers, Sector Education Inspectors, School-Based Mentors, STEM SSLs and TTC Tutors (referred to as direct beneficiaries):

- CPD Diploma Programme in Effective School Leadership (40 credits)
- CPD Certificate Programme in Educational Mentorship and Coaching for STEM SSLs/Heads of Department (20 credits)
- CPD Certificate Programme in Educational Mentorship and Coaching for School-Based Mentors (SBMs), and Sector Education Inspectors (SEIs) (20 credits)

CPD support in Professional Learning Communities

VVOB's experience has shown that training alone is insufficient and needs to be complemented by strategies that provide continuous support and involve school leaders and teachers themselves. Professional learning communities (PLCs) or communities of practice (CoPs) can be an effective form of professional development (Vescio, Ross & Adams., 2008; Ingvarson, Meiers & Beavis, 2005). 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 and Fransen, 2017). In the context of VVOB, PLCs and CoPs are supported as follow:

- PLCs of school leaders at the sector level
- CoPs of teachers at the school level

Their cost-effectiveness and embeddedness into existing structures at sector and school level contributes to their sustainability as an instrument for professional development.



ADDIE model to integrate ICT

Instructional design is a systematic process that is employed to develop education and training programmes in a consistent and reliable way. One of the most commonly used instructional design models is Analysis-Design-Development-Implementation-Evaluation (ADDIE). Following the ADDIE model, steps have been made to implement technology-enhanced CPD through eMonitoring, blended learning and access to multimedia resources.

Analysis

The analysis focused on the analysis of teachers' and school leaders' characteristics, as well as the challenges and opportunities for integrating ICT in both CPD modalities, i.e. the CPD training programmes and the additional CPD support in professional learning networks.

Characteristics of school leaders, teachers and SEIs

The analysis of characteristics of school leaders, teachers and SEI's (hereafter referred to as direct beneficiaries) shows limited digital literacy in a technology-challenged environment. The needs assessment study conducted by VVOB (2018) shows a significant imbalance between self-perceived competences and actual performance by participants. Access to hardware and internet-connectivity is often very limited. Many head teachers however can see the importance ICT might play in education, which might be a positive indication of motivation.

Challenges and opportunities in CPD Training Programmes

The three CPD programmes offered by VVOB, are provided within a series of workshop through face to face delivery, with assignments in between the workshops. Workshops are provided in district training centres during weekends. DESL consists of 8 weekends sessions. Both EMC and EMC-STEM require 4 weekend sessions. Participants travel to the training centres to participate in these programmes.

ICT integration in such CPD Training programmes can take many forms. Examples are Individual online learning (course contents are fully delivered online and studied individually), MOOCs (massive open online courses, aimed at unlimited participation and open access via the web) and Blended Learning (online learning activities are combined with traditional face-to-face learning sessions). These types of ICT integration all include some form of online learning.

A content analysis on the three CPD Training Programmes was conducted using a framework for online learning suitability by Lee et al (2017). In this framework, analysis aims at finding out whether content is factual, less challenging and unequivocal, and whether the communication required can be unidirectional and asynchronous. In several units of the CPD Training Programmes, the content was found to be suitable for online learning. Units whose content is not suitable for online learning might still require a face-to-face workshop approach. This analysis of content provided a guideline that informed an appropriate integration of ICT in the CPD Training Programmes.

VVOB's partners, URCE and REB, both use the Moodle Learning Management System (LMS). An LMS is required to integrate online learning in a curriculum. Via an LMS, learners can learn an online course, discuss its content and be assessed. On their part, tutors/trainers can track their students' progress and provide them with an appropriate support.

Challenges and opportunities in Professional Learning Networks

Professional Learning Network sessions like PLCs or COPs often lack a certain purpose and focus. While agenda setting is done by participants of such network sessions, relevant topics and accompanying input materials are often not available to network facilitators. In addition, there is limited follow-up on the topics participants had decided to focus on. Monitoring and evaluation of discussions and resolutions during network sessions is challenging and not efficient. No or limited data on topics being discussed and other aspects of the network sessions is currently being collected. Such data would help network facilitators to learn and improve on the facilitation of the networks. To ensure short feedback loops between data collection and reporting, and to avoid data entry errors and data loss, ICTs, such as mobile devices with digital forms could be used to address these issues.



Design

The design phase essentially deals with the creation of a “blueprint” for the integration of ICT. Objectives and content are defined, together with a practical ICT integration plan.

Blended learning modalities for delivery of CPD Training Programmes

Based on the suitability of content for online learning identified in the analysis phase, the blended learning modality was considered as the most appropriate design to integrate ICT within the CPD Training Programmes. A fully online learning design would be too much for trainees to handle considering their limited digital literacy and limited connectivity. Blended learning has the benefit in this context to still have some face-to-face workshop sessions in which trainees can be assisted. A blended learning approach enables learners to learn some content online and from their workplace or home, at their time of convenience and own pace; while dedicating the face-to-face sessions to deepening the understanding of the content (flipped classroom approach). On the part of trainers, this design enables them to follow up closely their online learners’ progress and provide timely learner support. As both REB and URCE have a Moodle, it was decided to host the online course components on this LMS. Based on the findings from learner characteristic analysis, a slow increase in terms of difficulty and complexity of learning contents and activities was envisaged. Finally, building trainees’ capacity in online learning and trainers’ capacity in facilitating online learning was planned in the design phase.

Multimedia support to and e-monitoring of Professional Learning Networks

In response to the identified lack of purpose and focus during professional learning network sessions, multi-media resources are developed to support facilitation of such sessions. For timely follow up through monitoring and evaluation, digital monitoring forms were designed for data collection by network facilitators. Kobo Toolbox, an open source software for data collection, was identified in this design phase for development of eMonitoring forms that can be uploaded and updated centrally. After data entry by network facilitators, the platform enables a short feedback loop between data entry and reporting. KoBo Toolbox survey software can also be used offline. Both the multi-media resources and eMonitoring forms are designed to be used on a broad spectrum of hardware, ranging from smartphones, to tablets and to computers. A visual dashboard is designed to provide relevant insights for network facilitators in the functioning of their respective networks. Relevant indicators to be visualized on this dashboard are defined in this phase.

Hardware

A successful integration of ICT in CPD modalities requires competent devices. Regarding the CPD Training Programmes, laptops and an internet connection are considered the ideal solution to offer the programmes in blended mode. They offer the learner mobility to learn, while not sacrificing the comfort of a bigger screen and a full-size keyboard to work on assignments. The facilitation of professional learning networks requires an even more mobile solution. Tablets are a good fit for this purpose. Coupled with an internet connection, they enable monitoring and data collection on the go and offer easy access to multimedia resources.

Development

Content and multi-media for blended learning in CPD Training Programmes

During the development phase, the identified learning content for online learning is redeveloped into interactive learning activities. The content is developed in the Moodle LMS. Alternatives for trainees with limited and no connectivity are also developed. The courses in blended learning modality are jointly validated by course creators, representatives from REB and URCE. Feedback is collected from each cohort, which gives the opportunity to redevelop course materials in the light of the feedback. During this phase, multimedia resources are developed to support learning materials, but also the professional learning networks such as PLCs and CoPs. These are accessible via a timely-updated repository of multimedia resources,

available on direct beneficiaries’ devices.

eMonitoring forms and dashboard for Professional Learning Networks

The redesigned monitoring forms, used for PLCs and CoPs, are redeveloped in KoBo’s online system. A URL is generated and shared with stakeholders. This URL also works offline: even without connectivity, data can still be collected. Both the courses and eMonitoring forms are tested internally to collect constructive feedback that informs their improvement. Any issue reported in the feedback is addressed prior to the joint validation and the roll out on real learners or users. An intuitive dashboard is developed based on the pre-defined indicators from the design phase. It will be accessible online with up-to-date data. A quarterly report will also be generated in a PDF-format and emailed to stakeholders.



Implementation

Blended delivery of CPD Training Programmes

After the development, the implementation phase starts. The implementation of the CPD Training Programmes is gradual, across 3 cohorts of trainees. Through feedback forms and user-experience assessments, the gradual implementation offers opportunities for re-design and re-development. In three cohorts, a rollout occurs to all learners, trainers and other stakeholders participating in the CPD Training Programmes. To facilitate participation in the CPD Training Programmes 689 participating schools received laptops, 3G modems and an Internet subscription. In the implementation phase, blended learning is facilitated by trainers (both online and face-to-face). To build their capacity in this new mode of tutoring, VVOB created an eTutoring (electronic tutoring) course in a self-paced online learning modality, also provided on Moodle. The course builds capacity of the trainers in facilitating online learning and hosting learners in the online learning environment. Trainees take the Digital Literacy for Online Learning course, which offers a practical introduction to the use of a computer and how to engage in online learning. The course focusses on

hands-on practical skills needed by teachers and school leaders in their professional life, and on how to thrive in an online learning environment.

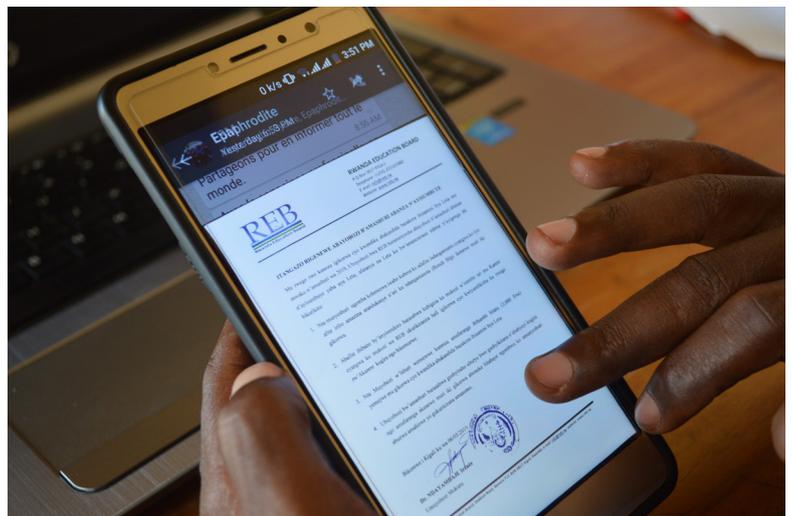
ICT support for Professional Learning Networks

209 tablets were handed over to Sector Education Inspectors for facilitation of PLCs. The tablets were pre-installed with the multimedia resources and eMonitoring forms. All SEIs received a manual and instructions on how to use the forms. SEIs now use the multi-media to facilitate network sessions and use the eMonitoring forms to collect data on the functioning of the PLCs every quarter. Reports and data visualizations are automatically generated, based on pre-defined indicators. 18 tablets were handed over to TTC tutors to be used in the monitoring of the induction of New Teachers in six districts within the (LT)2 programme. eMonitoring forms were pre-installed and data is collected three times a year. A training is provided before field visits and TTC tutors are asked to familiarize themselves with the form each time they go to schools.

Evaluation

The evaluation of the integration of ICT in both CPD modalities focusses on the five criteria for evaluation development assistance, as defined by Organisation for Economic Co-operation and Development's-Development Assistance Committee; OECD-DAC (1991):

1. Relevance: the extent to which the ICT integration is suited to the priorities and policies of the target group, recipient and donor.
2. Effectiveness: a measure of the extent to which the ICT integration attains its objectives.
3. Efficiency: the extent to which ICT integration can be less costly without compromising the achievement of the desired results. This is done by comparing alternative approaches to achieving the same outputs, to see whether the most efficient process has been adopted.
4. Impact: the direct, indirect, intended and unintended positive and negative changes of the ICT integration. Positive and negative impact of external factors are also taken into consideration.
5. Sustainability: the extent to which the benefits of ICT integration are likely to continue beyond the intervention; with assessment of environmental as well as financial sustainability.



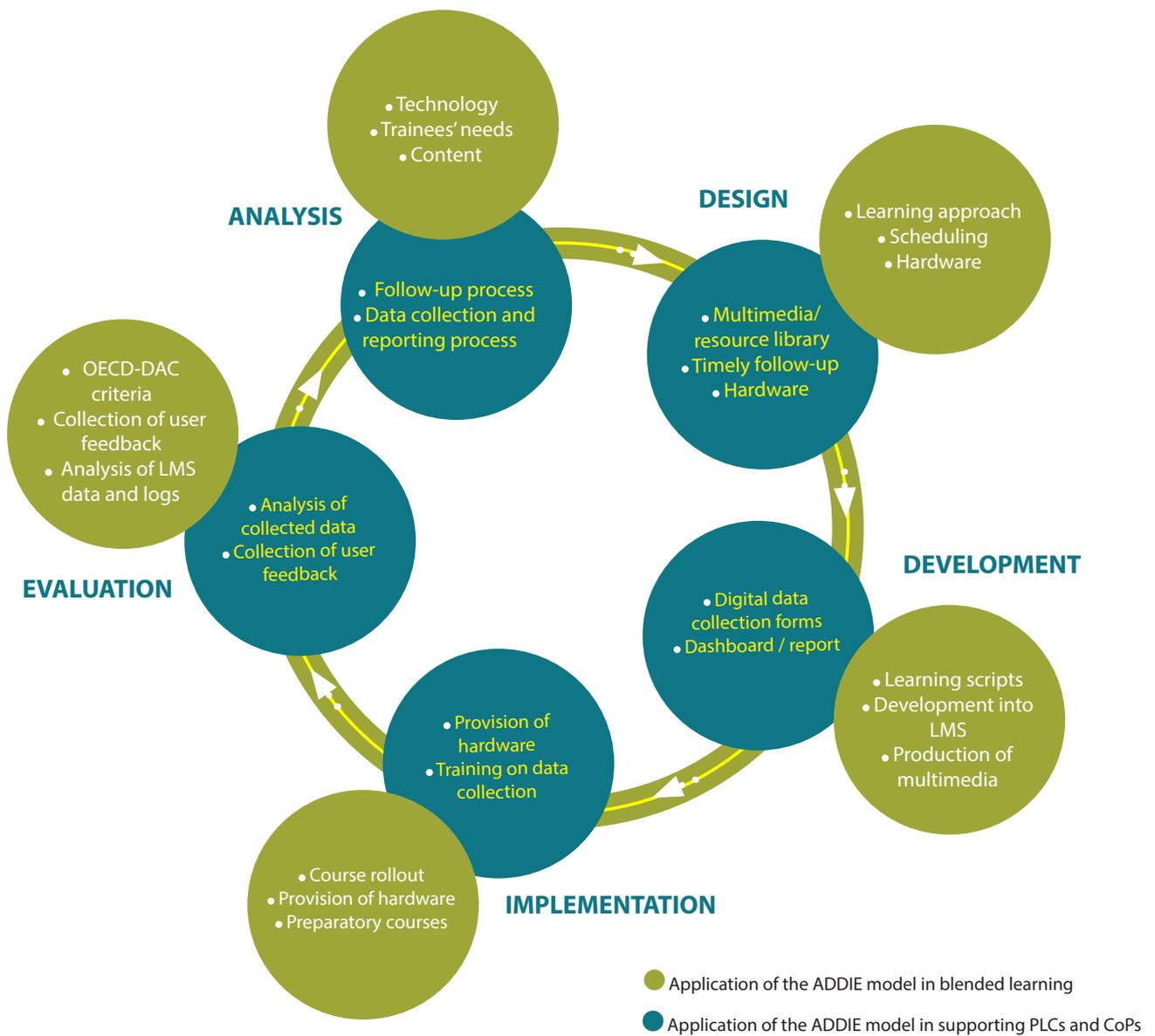


Figure 1: Addie model visualisation



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