Investigating Influence of Teacher Agency in Implementing the Early Primary Curriculum of Ugandan Schools
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<td><strong>Series</strong></td>
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<td>Dr. Mmantsetsa Marope</td>
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<td>Godfrey Sentumbwe</td>
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<td>Continuing Professional Development (CPD) – Information and Communication Technology (ICT) – teacher agency – teachers' training - Uganda</td>
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Open Note of the IBE

The IBE has launched the Diploma Alumni Series to create a shared space to involve local education professionals into a global dialogue and inspire original research and meaningful discussion. It intends to position the diploma alumni as active and distinct researchers, producers and disseminators of local knowledge and mastery. These through the elaboration of small-scale innovative research projects that will eventually enrich and advance the development of quality curricula for all.

The Diploma Alumni Series is the result of a Diploma Alumni Grant established by the IBE in 2015 with the hopes of providing professional development opportunities for the diploma alumni. The idea of promoting a grant for small-scale innovative research derives from the valuable contributions of the case studies written by the participants of the Postgraduate Diploma in Curriculum Design and Development as part of their coursework. During the past years, participants have been producing comprehensive and unique case studies, sharing a variety of approaches, strategies and practices in curriculum initiatives across regions. These products have become essential tools and reference materials of the Diploma and Masters programmes, as they allow the participants to reflect on diverse contexts and perspectives and further apply these new ideas into ongoing curriculum reform and worldwide discussions on current and critical issues in curriculum, learning and assessment. Echoing the success of the case studies, the Diploma Alumni Grant enables and encourages the animated participation of diploma alumni in continuing with their professional development through evolving their case studies and research topics into small-scale in-depth research.

Endorsed and produced in the three official languages of the Diploma and Masters Programmes, English, French and Spanish, the series of research primarily presents effective and relevant practices around (i) curriculum policy and reform and (ii) teaching, learning and assessment. Through their research projects, fourteen Diploma Alumni, 9 from Africa and 5 from Latin America and the Caribbean, shed light on teaching and learning approaches used at local level as well as on the state of education and curriculum reforms in these two regions. The Diploma Alumni Series becomes, therefore, an invaluable asset as it highlights concrete education practices across regions, fostering inclusive and holistic approaches that are simultaneously community-based and an extension of the global discussion on the concerns of Member States. Along with the series In-Progress Reflections on Current and Critical Issues in Curriculum, Learning and Assessment, the Diploma Alumni Series aims to facilitate online interactions through continuous reflection and exchange of ideas between local and international experts.

Dr. Mmantsetsa Marope: Director, International Bureau of Education
Investigating Influence of Teacher Agency in Implementing the Early Primary Curriculum of Ugandan Schools

Abstract: This study explores two research questions: (1) How do early grade primary teachers in disadvantaged communities perceive the use of digital tools for enhancing their local language-based teaching and learning practices?, and (2) What factors affect the successful use and integration of Information and Communication Technology (ICT) tools in Continuing Professional Development (CPD) of primary school teachers? The sample used in the study was comprised of 160 early grade primary school teachers from 40 focal government-aided schools in Gulu and Koboko districts. The study was carried out in four public primary schools with 16 purposively selected early grade teachers who teach in local language. A mixed-methods research design (quantitative questionnaire and focus group discussions) was used to examine teachers’ perceptions of factors influencing their acceptance of technology. The research findings highlighted teachers’ perceived importance of technology in education, as well as concerns regarding facilitating conditions for the use of ICT in education. This study shows the potential of ICTs in supporting sustainable teacher training programmes whose potential is immense though not yet tapped fully in Uganda. In order to effectively use ICT, CPD should be preceded by empirical studies that go beyond citing the infrastructural hurdles as the pertinent barriers that are mostly responsible for the slow uptake of ICT in education.

Keywords: Continuing Professional Development (CPD) – Information and Communication Technology (ICT) – teacher agency – teachers’ training - Uganda

1 The author wishes to acknowledge the constructive feedback provided by one anonymous reviewer of the survey questionnaire, as well as my two colleagues in LABE based in Northern Uganda; Joyce Nairuba and Joy Oroma, who worked as research assistants during data collection.
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Background

The watershed UNESCO conferences in Jomtien-Thailand (1990), Dakar-Senegal (2000) and the 2000 Millennium Summit in New York-USA resulted in global common visions for children and adults to access basic education. In line with these UNESCO conferences, most African governments, including Uganda, have undertaken education reforms, which include curriculum reform, commitment to universal primary school enrolment, gender parity in education and adult literacy. Uganda’s commitment to achieving Education for All (EFA) and universal primary schooling has led to over one million children, who would be out-of-school, to participate in the formal education system.

However, this dramatic increase in primary school enrolments has severely affected the quality of basic education. Studies conducted by the Uganda National Examinations Board (2011) and corroborated by non-State actors still reveal disappointing performance in literacy and numeracy. One study on grade three pupils’ reading proficiency found that only one out of every ten children assessed was able to read a grade two level story correctly (UWEZO Uganda, 2012).

From 2007, the government implemented curriculum reforms, including the re-introduction of local languages as mediums of instruction in early primary grades (grades one to three) to address the poor literacy and numeracy learning outcomes. Now, in wake of this curriculum reform, teachers are increasingly required to act as agents of change, in recognition of their roles as interpreters of and responders to policy. In order for them to become agents of change, teachers need to be empowered to draw their own curricula within the framework of an official national curriculum to allow for more teacher ownership of the curriculum implementation at the school level. Stacy (2013) advances teacher-led professional development as the kind of empowerment that can combat reliance on the officially scripted curricula since it provides teachers with a voice including curricula decision making. Moreover, as Meidl and Meidl (2011) observe, even if teachers are mandated to implement scripted curricula, teacher-led professional development can enable curriculum adaptation of the existing official curricula to fill the gaps. The challenge is that primary teachers, particularly in remote, marginalized communities, are untrained or poorly trained in adapting the official curriculum through local language-based bilingual pedagogies.

In response, government policy makers adopted a cascade system of teacher professional development prior to the nationwide implementation of the new early grade primary curriculum. In this model, national level master trainers equipped the Coordinating Centre Tutors (CCTs) as outreach teacher trainers to train, upgrade and support in-service teachers in the classrooms. This traditional top-down continuous professional development (CPD) model has been found to be inadequate because it is rushed and short in duration (Altinyelken, 2010; World Bank-SABER, 2012). The inadequate teachers ‘training, together with lack of instructional materials in local languages, has led to low levels of teacher confidence in curriculum delivery, creating resentment and opposition to the local languages-medium curriculum.

ICT for teachers’ CPD: LABE’s intervention strategy

Against this background, Ugandan NGO, Literacy and Adult Basic Education (LABE), initiated the Mother Tongue Education Project, in 2009, in six conflict-affected districts in Northern Uganda. The Project, now in its second four-year phase, supports the implementation of the national curriculum for lower primary learners, particularly focusing on the use of local languages as mediums of instruction.

One of the project’s key activities is the provision of support to the professional development of early grade primary school teachers, through the use of Information and Communication Technologies (ICTs) to implement this curriculum reform. Briefly, the aim of this ICT training is to increase meaningful access to primary education for marginalized children through the development and promotion of local language literacy resources, skills and culture. A total of 600 project teachers from grades one to four,
mostly possessing a primary teaching certificate classified as grade three, are equipped with solar-powered computers. The computers are placed in one selected school, which serves three or four other nearby schools. Teachers go through modules for learning basic ICT skills, creating books, establishing publishing teams and using the created materials. The basic requirement for all the trainings is for teachers to work collaboratively with fellow teachers from the nearby schools as a team. ICT training workshops initially took place once every 2 weeks, from 2.00 - 5.30 pm in 2015 and early 2016. The initial training courses were delivered at each level of the cascade to a team of teachers in a school with computers, because upon completion, that team would then be able to train the next school – spreading skills and sharing experiences through the cascade.

**Literature Review**

This study contributes to three threads in the literature on teacher agency in the implementation of curriculum reform through ICT-supported professional development: teacher agency in curriculum reform implementation, models of teacher CPD, which enhance implementation of curriculum reforms, and ICT-based professional development for curriculum change.

**Teacher agency and curriculum reforms**

There are emerging global trends in curriculum policies, which stress active contribution of teachers through their agency to shape work in school-based curriculum development (Biesta et.al, 2015; Pantic and Florian, 2015). Teacher agency, traced from human agency, describes the unique capacity of individuals to engage with their environments, identify problems and find solutions. Biesta and Tedder (2006) propose the ecological view of teacher agency, which they define as the way in which people critically shape their responses to problematic situations in diverse contexts. This ecological view implies that agency does not primarily reside in teachers’ mind but is an outcome of the teacher acting meaningfully within the educational and social milieu. Edwards (2005) coins the relational agency dimension, which is described as the capacity to offer support, and to ask for it from others, in order to expand the object one is working on and trying to transform. Edwards’ relational agency concept has emerged from a study of the then prevailing forms of teacher education in England, which required students and teachers to work in isolation from others, to deliver lesson plans based on a tightly controlled national curriculum. Inevitably, these teachers were not benefiting from the professional wisdom of expert practitioners in the act of teaching.

Several factors have contributed to the emergence of teacher agency globally and most of these emanate from the benefits that accrue from working together, including the tendency to enable teachers to have voice and ownership of curriculum change (Kirk and MacDonald, 2001). Additionally, as prime agents of education change, teachers are viewed as the most significant in-school factor influencing student achievement, as well as change agents in reducing educational inequalities (Pantic and Florian, 2015). Priestley et. al (2012)’s study of a project in Scotland identifies teachers’ greater understanding of their roles and working in networks as the additional key benefits. Similarly, Yeung et.al (2012) note that through teacher agency, teachers learn to translate personal theories into action and to crystallize daily practices into theoretical understanding. They conclude that teachers who develop personal theories will attain ownership of the curriculum, thus enabling them to better understand their personal and educational beliefs. A possible conclusion derived from the above studies is that teacher agency is a useful concept to use when discussing how individuals shape their own learning and how teachers ensure that they learn in formal and informal settings.
Pantic (2014), however, observes that despite the available evidence about the powerful roles teachers’ agency plays in students’ learning, the concept is still under-theorised. Whereas the literature on teacher agency is gradually growing, there is still inconsistent of how teacher agency impacts mediation of innovative curriculum reforms. In addition, most of the available literature is primarily based on resource-rich developed country contexts. Literature on teacher agency from sub-Saharan Africa is still scanty.

It is therefore imperative to reconceptualize teacher agency with its features and ground it in the Ugandan context to avoid adopting it as an education panacea based on emerging European or North American trends which may compromise and restrict its relevance.

**CPD models and curriculum reform implementation**

One of the key means identified through which teacher quality can be enhanced is CPD, emanating from policy makers’ increasing recognition that schools can be no better than the teachers and administrators who work within them (Guskey, 2002; Moushesh et al., 2010). Evaluation of the effectiveness of CPD has been approached from different viewpoints including the ingredients and outcomes of effective CPD and the needs of teachers that effective CPD meets (Lydon and King, 2009). A significant proportion of the literature on teachers’ CPD focuses on specific models of CPD and its characteristics. For instance, a review by the Assessment and Qualifications Alliance, which examined a number of studies of teacher CPD in different (western) countries, observes that several characteristics associated with the effective CPD might be: driven by identified learning needs; sustained; subject-specific; based in the classroom; collaborative; and should make use of external expertise (Whitehouse, 2011). Similarly, Duncombe and Armour (2004) note that CPD is more likely to be effective when it is active, ongoing, reflective, collaborative, planned and focused on the specific needs of teachers and pupils. They also mention that CPD is ineffective when it is undertaken away from the school environment, resulting in decontextualized professional development, with few opportunities for follow up activities.

Kennedy (2014) has developed a spectrum of CPD models classified into the transmissive, malleable and transformative categories. As shown in Table 1 below, each category has examples of CPD models linked to their capacity to promote professional autonomy and teacher agency.

<table>
<thead>
<tr>
<th>Purpose of Model</th>
<th>Examples of models of CPD which may fit within this category</th>
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<tbody>
<tr>
<td>Transmissive</td>
<td>• Training models</td>
</tr>
<tr>
<td></td>
<td>• Deficit models</td>
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<tr>
<td></td>
<td>• Cascade models</td>
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<td>Malleable</td>
<td>• Award-bearing models</td>
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<td></td>
<td>• Standards-based models</td>
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<td></td>
<td>• Coaching/mentoring models</td>
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<td></td>
<td>• Community of practice models</td>
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<tr>
<td>Transformative</td>
<td>• Collaborative professional inquiry models</td>
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*Table 1: Spectrum of CPD models (adapted from Kennedy, 2014)*

The transmissive CPD category – the lowest in promoting teacher agency – is comprised of the training, deficit and cascade models. The malleable category is in the middle of the spectrum with models like coaching and mentoring. The transformative category, described as having the highest capacity to promote teacher agency, has the collaborative professional inquiry models.
The consensus emerging from this analysis and related scholarship on CPD indicates that on-going collaborative models turn out to be more effective than individual CPD. Among the collaborative models, the professional learning community (PLC) paradigm is highly preferred. PLCs are grounded in two assumptions: first, that knowledge is situated in day-to-day lived experiences of teachers and best understood through critical reflection with others who share the same experience; second, the actively engaging teachers in PLCs will increase their professional knowledge and enhance student learning (Vescio et.al, 2008). Caena (2011) notes that the PLC paradigm meets all key criteria that seem to inspire teachers to change their classroom practices, especially through collaboration and joint work with others on concrete tasks and problem-solving. At its core, the PLC paradigm rests on the premise of improving student learning by improving teaching practice. One of its elements that help foster changes in teaching cultures is emergence of teacher authority through which teachers develop a sense of ownership over the curriculum (Vescio et al, 2008). This is further corroborated in Owen’s (2015) findings in three case study schools where PLC processes and joint activities, including co-planning, co-teaching and co-assessing, enabled teachers to build new skills and sustain innovative practices.

Despite PLCs’ laudable efforts in fostering teacher change, including curriculum reform, transmissive CPD models are the predominant models still used in the Ugandan context. This confines early grade teachers to mere targets of curriculum change instead of becoming the active agents of curriculum change. Initiatives such as integrating ICTs in teachers’ professional development need to be explored to transit from transmissive CPD to collaborative PLCs.

ICT for teachers’ CPD

According to Ertmer (2005), changes in teacher beliefs regarding the value of computers are more likely to occur when teachers are socialized by their peers in thinking differently about the use of technology. There have been numerous continental and national-level projects designed to introduce ICT into African schools. The application and proper use of new digital technologies is being acknowledged as having the potential to revolutionise the quality of teacher training, while achieving wider access at low cost even in the African context (Leach et al, 2006).

However, Unwin (2005), observes that many ICT initiatives that have been introduced with the best of intentions in developing country contexts, have failed to achieve the ambitious aspirations of their promoters. This is mainly because these initiatives follow a top-down approach and are supply-led, with insufficient attention paid to involvement and training of teachers. Therefore, it is implied that these initiatives have not clearly captured teachers’ perceptions, attitudes and practices of ICT use in schools.

Yet, several studies have confirmed that teachers’ perceptions, beliefs and attitudes have a more significant influence on ICT adoption and implementation in the classroom (Jimoyiannis and Komis, 2007; Unwin, et. al, 2010). Teachers in such ICT-integrated PLCs are expected to use ICT voluntarily, readily, or according to their own preference. Lubin (2016) refers to this as the intentional ICT use approach through which perceptions of need and agency are very critical. He asserts ‘...just because we provide ICT does not mean people will want to use it. ...intentional ICT suggests that there must be a willingness or motivation to use the technology’ (Lubin, 2016, p.16). This claim resonates with Ertmer et. al’s (2006) description of teachers being considered as the intrinsic enablers to technology integration. Even though some teachers may have access to only one computer, they can still manage to use that one piece in an exemplary fashion. Hence it implies that the intrinsic enablers such as personal beliefs and self-efficacy are more important to teacher technology use than extrinsic enablers, like access to ICT hardware. In terms of school practice, Zhao and Frank (2003) argue that teachers may use technology professionally following the principle of reciprocal altruism by drawing on help from others to implement computer use. Teachers in such communities have ‘the support of colleagues for generating and then applying ideas’ (Zorfass and Rivero, 2005, p.9). This is corroborated by Hartnell-Young (2006) who report that teachers who appropriated technology in their school-based communities of practice frequently shared interactive discussion as they designed class activities using resources like computers.
In the Ugandan context, previous research on the use of ICTs to improve teacher development has focused on teachers in secondary schools and tertiary institutions (Farrell, 2007). Murphy et. al’s (2002) earlier report on distance education and ICTs for learning in Africa concludes that using computers in primary schools, especially in rural areas, is not feasible due to costs and infrastructure issues, and result in favouring the use of print and radio technologies. The inference drawn from these studies is that innovations in education through ICT should not only target primary teachers but also secondary teachers. Extrinsic enablers like access to computers should be prioritised over the intrinsic enablers. Therefore, there is a dearth of research on the application of ICT to teaching and learning in developing country contexts in the areas of literacy, numeracy and science at primary level (Leach et. al, 2006). As much as it is generally believed that ICT can empower teachers and learners, data to support these perceived benefits from ICT is limited and evidence of effective impact is elusive (Adam et. al, 2011).

**Study objectives**

This study aims to provide information towards better understanding the opportunities provided by ICT in enhancing school-based collaborative professional development of early grade primary school teachers, in order for them to be their own agents of change.

The main objective was to investigate how agency within an ICT-supported PLC of early grade teachers positively influences their knowledge and practice of local language as medium of instruction. Specifically, the study explores these two research questions:

1. How do early grade primary teachers in disadvantaged communities perceive the use of digital tools for enhancing their local language-based teaching and learning practices?
2. What factors affect the successful use and integration of ICT tools in CPD of primary teachers?

In this study, a disadvantaged community is distinguished from a well-to-do one by adopting the description of UNDP-Uganda. According to UNDP-Uganda’s Human Development Report (2015), disadvantaged communities experience not only income poverty, but also poor health, low education, poor hygiene, and lack of production assets, amongst others.

**Theoretical framework**

The theoretical framework for this study is partly grounded in the technology acceptance model (TAM) originally developed by Davis (1989), as the basis to trace how external variables influence belief, attitudes and intention to use technology. As one of the most influential research models in studying the determinants of information technology acceptance, TAM postulates that attitude towards using a technology is a function of two key cognitive beliefs: perceived usefulness and perceived ease of use. Perceived usefulness is defined as the ‘the degree to which a person believes that using a particular system would enhance his/her job performance’, while perceived ease of use defined as the ‘degree to which a person believes that using a particular system would be free of effort’ (Davis, 1989, p.320). Thus, users’ perceptions about the technology’s usefulness and ease of use may result in a behavioural intention to use or not to use the technology. The TAM not only aims to explain these key factors of user acceptance of technology but also to predict the relative importance of the factors in the diffusion of technological systems (Davis et.al, 1989). Consequently, Shroff et.al (2011) observe that the TAM has received empirical support for being robust in predicting technology adoption in various contexts and with a variety of technologies.
In this study, the factors of perceived usefulness, perceived ease of use and intention to use ICT have been borrowed and adapted from the original definitions proposed by Davis. However, the relationship between them in predicting technology adoption has not formed part of this study. Extensions to improve the TAM’s applicability to the study context have also been done. An additional construct called facilitating conditions which is not present in the original TAM, is added in this study, which has been borrowed from Venkatesh et.al’s (2003) Unified Theory of Acceptance and Use of Technology Model. Facilitating conditions, referring to the degree to which the potential adopter believes that an organisation exists to support the use of the system, make adoption behaviour less difficult by removing any obstacles to adoption and successful usage. Most important to this study is that the constructs adapted from the original TAM constitute both first order (extrinsic) and second order (intrinsic) enablers of technology usage which are analysed in later sections.

Methodology

Research setting and sampled participants

The population of this study comprised 160 early grade primary school teachers from 40 focal government-aided schools reached by Literacy and Adult Basic Education’s Mother Tongue Education project in two post-conflict districts of Koboko and Gulu. According to the UNDP-Uganda Report (2015), Koboko is a sporadically conflict-affected district, while Gulu is a severely conflict-affected one in Northern Uganda. In line with the government’s language-in-education policy that requires using local languages as the medium of instruction from grade one to three, three local languages are used in primary schools in the two districts. In Koboko, located in the North-West of Uganda bordering Democratic Republic of Congo and South Sudan, Kakwa and Lugbarati are the two languages of instruction. In Gulu district on the hand, the local language of instruction is Acoli. In both districts, there has been limited success in the delivery of adequate and meaningful education to communities, which are also physically distanced from central structures of authority.

The study was carried out in 4 public primary schools with 16 purposively selected early grade teachers who use local language as the medium of instruction, including 4 head teachers and 4 outreach teacher-trainers/tutors from both districts. School selection was made based on their exposure to ICT use in their schools. From each district, one school with over a year’s exposure to ICT was selected, while the other school had just been introduced to ICT use for less than twelve months.

Design

The study employed a mixed-methods research design in which both qualitative and quantitative data collection methods were used to examine teachers’ perceptions of factors that influenced their technology acceptance. Quantitative data from the survey questionnaire was complemented by qualitative data from focus group discussions. The aim for using both methods was to produce an overall and convincing interpretation that captures different facets of the study, something that would not be possible if only one approach is used (Wegerif and Mercer, 1997).
Instruments

Two instruments were used: a survey questionnaire and a focus group discussion guide. The modified technology-adoption questionnaire was developed with two sections. Section one had four items about demographic information and section two was consisted of 14 five-point Likert items reflecting the four constructs – perceived usefulness, perceived ease of use, facilitating conditions and intention to use – ranging from strongly agree (5) to strongly disagree (1). Respondents were required to respond to items in both sections by ticking as applicable.

The instrument was developed after reviewing similar surveys in the literature (for example, Luan and Teo, 2009) as a means of establishing construct validity. The tool was field pre-tested with eight teachers from two non-focal schools and with a senior lecturer from the teacher training university as an expert reviewer to provide suggestions for improvement. The final survey instrument incorporated the changes provided including wording and specific details to assure that the items were relevant to survey respondents, thus assuring some measure of face validity. To test the reliability and consistency of the tool, the Cronbach’s alpha was used. The survey tool had a Cronbach’s alpha value of 0.813, suggesting that it was reliable and consistent to be used in making deductions.

The following 14 items were included and are described in Table 2 below. However, on the final instrument administered to the respondents, the constructs were not labelled as it is here. This was deliberately done to avoid any bias in the teachers’ responses which could arise from the clues inferred from labelled statements.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived usefulness of ICT (PU)</td>
<td>PU1</td>
<td>Using ICT is making it easier for me to teach the thematic curriculum.</td>
</tr>
<tr>
<td></td>
<td>PU2</td>
<td>ICT is allowing me to create local language teaching materials more quickly.</td>
</tr>
<tr>
<td></td>
<td>PU3</td>
<td>ICT is enabling me to acquire new skills I use in my work.</td>
</tr>
<tr>
<td></td>
<td>PU4</td>
<td>Using ICT is enabling me to work more closely with fellow teachers.</td>
</tr>
<tr>
<td>Perceived Ease of Using ICT (PEOU)</td>
<td>PEOU5</td>
<td>Learning to operate the computer provided to my school is easy for me.</td>
</tr>
<tr>
<td></td>
<td>PEOU6</td>
<td>It is getting easier to produce teaching resources I need with the computer.</td>
</tr>
<tr>
<td></td>
<td>PEOU7</td>
<td>I am quickly becoming skilled at using ICT to do what I want to do.</td>
</tr>
<tr>
<td></td>
<td>PEOU8</td>
<td>Using ICT to create teaching resources does not need a lot of mental effort.</td>
</tr>
<tr>
<td>Facilitating Conditions of using ICT</td>
<td>FC9</td>
<td>In general, my school supports using ICT for teaching.</td>
</tr>
<tr>
<td></td>
<td>FC10</td>
<td>I can access the resources necessary for ICT use.</td>
</tr>
<tr>
<td></td>
<td>FC11</td>
<td>Support from my fellow teachers is available when I need help to encounter ICT problems.</td>
</tr>
<tr>
<td></td>
<td>FC12</td>
<td>I have sufficient time available to use ICT.</td>
</tr>
<tr>
<td>Intention to Use ICT</td>
<td>IU13</td>
<td>I intend to continue using ICT more often in future.</td>
</tr>
<tr>
<td></td>
<td>IU14</td>
<td>I intend to continue using ICT with other teachers.</td>
</tr>
</tbody>
</table>

Table 2: List of constructs and corresponding items in final tool for research study
The focus group discussion guide used with the four head teachers and four teacher trainers plus four teacher representatives had 6 questions to triangulate the information in the survey questionnaire. Video clips shot earlier by project teachers to showcase new learning from ICT, were used to provide snippets of cases to enrich the discussions during focus group sessions.

**Procedure**

All 16 sampled teachers were administered the technology adoption survey questionnaire in their respective four schools after obtaining permission from the school authorities. Teachers completed the questionnaire during the second school term between mid-May and early July 2016. Being a mixed methods research study, data collection was done sequentially with survey questionnaires administered first to the teachers and then focus group discussions held afterwards. This was to enable the four teacher representatives be part of the focus group discussions with their head teachers and centre tutors.

Administering each questionnaire in the four schools took approximately 30 minutes, while the focus group discussions lasted for approximately one and half hours. Prior to questionnaire administration, the teachers were asked to respond as honestly as they could and were assured that there was no right or wrong answer.

To address ethical issues, measures were taken to ensure anonymity by requesting that respondents not put their names on questionnaires. Similarly, equitable selection was stressed by not discriminating because of gender, religious affiliations age, or ethnicity. Furthermore, both respondents and focus group discussants were all well informed about the purpose of the research.

**Data analysis**

Two mixed levels of data analysis were performed to answer the research questions. The first level was a quantitative (descriptive) statistical analysis of the survey. Teachers’ ratings of the 14 statements were entered into SPSS and descriptive statistics were computed for analysing data through frequency count and percentages.

The second level of analysis derived from the focus group discussions (qualitative data). The sessions were audio-recorded, though this process was not completed in Koboko because the audio machine broke. The process was completed in Gulu district where it was complemented with an amateur video recording. After the sessions, the raw audio and written discussions were listened to and read several times to sort relevant statements. Repeated key words and phrases in the discussions were distilled to create thematic categories aligned to the constructs on the TAM-based questionnaire. From the distilled thematic categories, significant excerpts used in the study were extracted.

**Evidence and Results**

**Basic information**

Three female (18.75%) and 13 male (81.25%) teachers participated in the study. The majority of respondents were between 30 to 44 years of age, with the majority of them having had more than 5 years of teaching experience. In terms of computer proficiency, which is mainly measured by number of years in computer usage, the majority of them are beginners (56.25%). Table 3 below shows selected demographics of the respondents.
**Table 3: Respondents’ demographic data (N=16)**

<table>
<thead>
<tr>
<th>Personal Characteristics</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
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<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>13</td>
<td>81.25%</td>
</tr>
<tr>
<td>Female</td>
<td>3</td>
<td>18.25%</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 30 years</td>
<td>4</td>
<td>25%</td>
</tr>
<tr>
<td>30 – 44 years</td>
<td>9</td>
<td>56.25%</td>
</tr>
<tr>
<td>45 above</td>
<td>3</td>
<td>18.25%</td>
</tr>
<tr>
<td><strong>Teaching experience</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 1 year</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Between 1 – 5 years</td>
<td>2</td>
<td>12.5%</td>
</tr>
<tr>
<td>More than 5 years</td>
<td>14</td>
<td>87.5%</td>
</tr>
<tr>
<td><strong>Computer proficiency</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beginner</td>
<td>9</td>
<td>56.25%</td>
</tr>
<tr>
<td>Novice amateur</td>
<td>6</td>
<td>37.5%</td>
</tr>
<tr>
<td>Established user</td>
<td>1</td>
<td>6.25%</td>
</tr>
</tbody>
</table>

Descriptive quantitative and qualitative analyses

*Table 4* illustrates the descriptive analysis in order to provide a broad understanding of the teachers’ view of ICT adoption in teaching that is mainly based on the TAM constructs.

<table>
<thead>
<tr>
<th>Question</th>
<th>n</th>
<th>No Response</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>16</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>56.3%</td>
<td>43.8%</td>
</tr>
<tr>
<td>Q2</td>
<td>16</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>43.8%</td>
<td>56.3%</td>
</tr>
<tr>
<td>Q3</td>
<td>16</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>12.5%</td>
<td>25.0%</td>
<td>62.5%</td>
</tr>
<tr>
<td>Q4</td>
<td>16</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>62.5%</td>
<td>37.5%</td>
</tr>
<tr>
<td>Q5</td>
<td>16</td>
<td>0.0%</td>
<td>0.0%</td>
<td>6.3%</td>
<td>6.3%</td>
<td>37.5%</td>
<td>56.3%</td>
</tr>
<tr>
<td>Q6</td>
<td>16</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>6.3%</td>
<td>37.5%</td>
<td>56.3%</td>
</tr>
<tr>
<td>Q7</td>
<td>16</td>
<td>0.0%</td>
<td>0.0%</td>
<td>12.5%</td>
<td>6.3%</td>
<td>50.0%</td>
<td>31.3%</td>
</tr>
<tr>
<td>Q8</td>
<td>16</td>
<td>0.0%</td>
<td>6.3%</td>
<td>6.3%</td>
<td>25.0%</td>
<td>43.8%</td>
<td>18.8%</td>
</tr>
<tr>
<td>Q9</td>
<td>16</td>
<td>6.3%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>6.3%</td>
<td>37.5%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Q10</td>
<td>16</td>
<td>0.0%</td>
<td>6.3%</td>
<td>0.0%</td>
<td>43.8%</td>
<td>31.3%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Q11</td>
<td>16</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>25.0%</td>
<td>31.3%</td>
</tr>
<tr>
<td>Q12</td>
<td>16</td>
<td>0.0%</td>
<td>0.0%</td>
<td>31.3%</td>
<td>25.0%</td>
<td>31.3%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Q13</td>
<td>16</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>25.0%</td>
<td>75.0%</td>
</tr>
<tr>
<td>Q14</td>
<td>16</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>37.5%</td>
<td>62.5%</td>
</tr>
</tbody>
</table>

Q1-4= Perceived Usefulness; Q5-8=Perceived Ease of Use; Q9-12=Facilitating Conditions; Q13-14=Intention to use

*Table 4: Data for ICT adoption using modified TAM indicators*
From Table 4, it is clear that most of the teachers’ responses were either ‘agree’ or ‘strongly agree’, which suggests that most of the respondents are in agreement with the statements on the questionnaire.

Specifically, questions 1 – 4 rated teachers’ perceptions about the usefulness of ICT. No teacher strongly disagreed or disagreed with any of the four statements. Only in statement three, ‘ICT is enabling me acquire new skills I use in my work,’ did 12.5% of the respondents remain neutral to the statement. In the other questions 1, 2 and 4, teachers’ responses were either ‘agree’ or ‘strongly agree.’ These results generally indicate that respondents perceived the use of ICT as being useful in their teaching. This is further reiterated in comments made by two head teachers and a teacher trainer from the focus group discussions:

‘The ICT makes teachers active, manage time and get new knowledge they can share with others’. (Head teacher A)

‘ICT is a motivating factor even with the lazy teachers!’ (Head teacher B)

‘The computer helps teachers who are not skilled in drawing with illustrations and pictures.’ (Teacher trainer)

Regarding questions 5 – 8, about perceived ease of use, the majority of the teachers agreed and strongly agreed to the four statements as highlighted in Table 4, implying that ICT use is not a very complicated undertaking to them. However, there is a noticeable minority who indicated their disagreement to questions 7 (12.5%) and 8 (6.3%). An additional 6.3% strongly disagreed with question 8. As the majority of the respondents (56.25%) rated their computer proficiency to be at beginner level, there is a likelihood that some of these are still finding it difficult to use ICT for things like creating teaching resources, which needs a lot of their mental effort. This is alluded to one teacher representative of the focus group discussion who noted that one of the things that will have a great influence on the successful use of ICT is to ‘avail a support trainer/resource person for at least a month. When there is this support, even others can get on board’. This kind of support is suggested for making ICT easy to use by teachers who still find it as a difficulty.

Questions 9 to 12 were linked to the TAM construct of facilitating conditions. Whereas there was some level of uniformity in respondents’ agreement or strong agreement to items in perceived usefulness and perceived ease of use constructs, it is somewhat different for the facilitating conditions. In particular, a sizeable number of respondents (31.3%) disagreed with the item ‘I have sufficient time available to use ICT’. Similarly, 43.8% remained neutral while 6.3% strongly disagreed on the item ‘I can access the resources necessary for ICT use.’ From the focus group discussions, again facilitating conditions-related themes are cited as critical to the success of ICT adoption by teachers. When asked to describe the factor they considered the most important for successful use of ICT by teachers, a teacher trainer remarked: ‘I have discovered that most of the teachers are interested in ICT, but the distance stops them from continuing the learning process. When the ICT centre is nearer, the teacher budgets time and gets the ICT training.’

Since one school computer lab in the project is used by more than one school, it is plausible that teachers from schools where these labs are not located had to either remain neutral or strongly disagree to the statement cited above.

On the other hand, the question ‘In general, my school supports using ICT for teaching’ was positively rated as ‘agree’ (37.5%) and ‘strongly agree’ (50.0%). From the two focus discussion groups, it was also observed that school administrators in the project were supportive of teachers’ use of ICT. For example, one teacher said: ‘Yes administrators are supportive. Teachers are allowed to come and use computers. Head teachers give teachers time to go to the computer lab.’ This then corroborates the majorly positive results shown in the survey questions about the facilitating conditions.
Finally, the last two questions on the survey questionnaire sought to get teachers’ intention to use ICT in future individually and as a group with other teachers. Statement 13, ‘I intend to continue using ICT more often in future’, had a response of 75% ‘strongly agree’ and 25% ‘agree’. Similarly, statement 14, ‘I intend to continue using ICT with other teachers’, had 62.5% ‘strongly agree’ and 37.5% ‘agree’ without anyone disagreeing or remaining neutral. Drawing from the focus group discussions, there is a perceptible condition for the continued intention to use ICT: ‘For good performance, there must always be competition. Awards will motivate teachers to work harder and learn more to get certificates. The proof of one’s skills is the certificate, it also adds on one’s CV’ (Teacher-participant in the discussion).

**Participants’ general thoughts about the ICT teachers’ training project**

The focus group discussions were also used as a way of establishing the general views of project participants about the ICT teachers’ training project in their district. This was done in the introductory stages of the focus group discussions. *Table 5* is a list of responses by major themes and sub-themes which emanated with some significant statement examples given by the three categories of respondents.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Sub-themes</th>
<th>Examples of significant statements by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovative project....</td>
<td>...moving teachers into the 21st century.</td>
<td>‘Very good project, the world is moving towards ICT and so, if we want the teachers to perform it is high time we initiate them...’</td>
</tr>
<tr>
<td></td>
<td>...improving teachers’ performance.</td>
<td>‘It is in line with what I heard, that the government is proposing to get all teachers go ICT literate...’</td>
</tr>
<tr>
<td></td>
<td>...making teachers ICT literate.</td>
<td>‘A good initiative that is going to enrich the education system’</td>
</tr>
<tr>
<td>Teaching resources creation</td>
<td>...eases materials production.</td>
<td>‘The computer helps teachers who are not skilled in drawing with illustrations and pictures’</td>
</tr>
<tr>
<td></td>
<td>...saves teacher’s time.</td>
<td>‘It simplifies work for teachers – they develop materials which make learning real for children.’</td>
</tr>
<tr>
<td></td>
<td>...multiplication of learning materials.</td>
<td>‘ICT makes it easier for the teachers to make instructional materials, it saves time...’</td>
</tr>
</tbody>
</table>

*Table 5: Focus Group Participants’ thoughts about the ICT teachers’ training project*

Two key themes emerged as shown in *Table 5*, depicting that the ICT project is regarded by participants as an innovative project which also supports the creation of resources by teachers themselves. Overall the inference from this general discussion reveals that participants associated advancement in their professional knowledge through acquiring and applying ICT skills and knowledge.

**Factors that will have great influence on using ICT successfully**

In addition to establishing the focus group participants’ general thoughts about the ICT project, this study also sought to find out the influential factors on successful use of ICT in education. As an open-ended discussion, it was mainly to triangulate the four constructs, which were used in the questionnaire. *Table 6* is the matrix with the list of the different participants’ responses on these factors, how they ranked them and why.
<table>
<thead>
<tr>
<th>Respondents</th>
<th>Key factors cited</th>
<th>Ranking (mean)</th>
<th>Why ranked first</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCTs</td>
<td>Regular teacher sensitisation by school administration about benefits of using ICT.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Respondents</td>
<td>Key factors cited</td>
<td>Ranking (mean)</td>
<td>'When the ICT centre is nearer, the teacher budgets his/her time and gets to the ICT lab…. for training and regular practice.’</td>
</tr>
<tr>
<td></td>
<td>Setting up ICT labs in schools easy to reach by teachers.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Availability of paper and ink to produce teaching resources.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Head teachers</td>
<td>Frequent refresher training on ICT.</td>
<td>3</td>
<td>'...materials should always be available. If these are not there, trainings cannot take place, learning aids can’t be made…’</td>
</tr>
<tr>
<td></td>
<td>Availability of materials to use ICT.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regular access to functional computers by teachers.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Teachers</td>
<td>Add ‘ICT hour’ (used for making resources) on the timetable.</td>
<td>3</td>
<td>'For good performance, there must always be competition. Awards will motivate teachers to work harder and learn more…’</td>
</tr>
<tr>
<td></td>
<td>Avail a support trainer/resource person at least for a month.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Award certificates to teachers based on their performance in the use of ICT</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Table 6: Matrix of key factors having great influence on using ICT successfully

In sum, it is worth noting which factors have been been cited as key for the successful use of ICT in schools by the three main categories of respondents. Teachers cited motivation through award of certificates as the key that will have great influence on using ICT successfully, whereas teacher trainers and head teachers regard proximity of ICT labs to users and availability of materials as the key factors. Thus, teachers, found the key factor to be the intrinsic factor of personal motivation, whereas tutors and head teachers perceived the extrinsic factors, earlier referred to as the facilitating conditions, to matter most on successfully using ICT.

Discussion

Teachers, particularly those working in marginalized, resource-poor environments like Northern Uganda, find themselves subjected to teaching practices which they regard to be outside of their control. When asked to engage in processes such as implementing new curriculum changes, many are quick to profess that they do not have adequate resources. Yet the underlying cause is due to a fixed mindset of learned helplessness. Learned helplessness, as a basic principle of behavioral theory, explains why individuals may accept and remain passive in negative situations despite their clear ability to change them (Seligman, 1993). Referring to mathematics students, Yates (2009) noted that students affected by learned helplessness believed they will never be successful at school for a variety of reasons including their perceived lack of ability and difficulty of the tasks.
This also applies to sub-Saharan African teachers who are required to use local languages as the medium of instruction in a bid to implement a new top-down curriculum reform. Their helplessness is exacerbated by a prevalent linguistic framework, which according to Skutnabb-Kangas (2016), continues to maintain a linguistic hierarchy that stigmatizes local languages as mere dialects or vernaculars and glorifies the dominant (English, French or Portuguese) language as superior in clarity and richer in vocabulary. Such teachers need to be encouraged that they also have power to change their operating system, particularly through their agency, which is a quality found within them and a matter of their personal capacity to act.

This study investigated how teacher agency in ICT-supported teachers’ professional learning communities can positively influence early primary school teachers’ implementation of a curriculum reform like local language-medium instruction. Teacher perceptions of ICT in enhancing capacity to deliver curriculum change through local language-medium have been explored in this study. The study has confirmed what other literature on the subject elsewhere has shown particularly about the factors that either enable or inhibit technology integration in education. As Straub (2009) notes, technology adoption for pedagogical change does not happen in a vacuum; there are contextual, cognitive and affective factors that impact it. These factors have been examined through the lens of the TAM, whereby contextual factors relate to the facilitating conditions (or first-order enablers/barriers), while cognitive and affective factors relate to perceived ease of use and perceived usefulness (or second-order enablers/barriers). The results of the study also support the ability of the TAM to be a useful theoretical framework for better understanding of the teachers’ intention to use ICT in local language-medium education.

The analysis presented has confirmed that facilitating conditions as first-order enablers/barriers still play a significant role in teachers’ adoption of ICT for pedagogical change. The support from the entire school system as a facilitation condition to strengthen the growth of the collaborative professional learning community earlier reviewed in the literature is particularly instructive.

However, it has also been observed that teachers’ beliefs and attitudes about perceived usefulness and perceived ease of use (second-order enablers) towards ICT adoption need to be equally stressed to enable teachers working with limited ICT resources to achieve meaningful technology use for pedagogical change. Such teachers must have basic technology and skills to use ICT, which should be an evolutionary and gradual approach. This is also reiterated in Kopcha’s (2010) systems-based approach to technology integration that uses mentoring and communities of practice to create a teacher-centred process for integrating technology. It is likely that teachers, like the ones in this study, experience more success and less frustration if they take small, but progressive steps (such as producing local language instructional materials) towards change through continuous school-based professional learning communities. This implies the focus should first be on technology literacy before moving on to knowledge deepening and knowledge creation with ICT, borrowing from UNESCO’s ICT Competency Framework for Teachers (2011).

Limitations

The results of this study are limited by the small sample size drawn from only one region of Uganda. Data were collected from these teachers using a convenience sampling technique. Thus, this sample size may not be representative enough of the majority of the population for making ecological generalizability or transferability of the findings. Secondly, the data may contain personal bias. Despite the careful attention given to the methodology, the data collected was based mainly on respondents’ subjectivity and their perceptions towards ICT use.

While these limitations may prevent generalization of results across populations, the study has provided new insight into the complex relationship between teacher professional development and the factors that lead to technology integration drawing from their agency.
Conclusion and Recommendations

This research has combined qualitative and quantitative methods to study collaborative learning in technology-poor environments like Uganda. The study shows that the potential of ICTs in supporting sustainable teacher training programmes whose potential is immense though not yet tapped fully in Uganda. This is partly due to lack of information from practice. The importance of this research lies in the fact that the implementation of ICT for both pre-service and in-service teacher training in Uganda is relatively new and researches are needed to augment the existing research base.

A well-designed Continued Professional Development (CPD) programme through ICT for teachers at primary school level is essential for developing countries like Uganda if they are to meet the demand of providing quality basic education to children. However, this should be preceded by empirical studies that go beyond citing the infrastructural hurdles as the pertinent barriers to the rapid uptake of ICT in education. Aspects of collaborative agency, such as shared sense of purpose and collaborative action, satisfaction with ICT and achievement are the other essential teacher factors affecting learning process that need consideration.

1. **Recommendation One: Augment transmissive CPD approach with transformative approaches**

   In order to offer meaningful support to in-service primary school teachers, the existing nation-wide approach to in-service teachers’ CPD through outreach Centre Coordinating Tutors (CCTs) needs to be augmented by school-based collaborative Professional Learning Community networks. As this study has shown, professional learning for teachers is not simply a matter of irregular face-to-face inductions or short-duration workshops. It needs to include a capacity for interpreting and approaching educational problems, for contesting interpretations, for reading the environment and for being a resource for others, which can be achieved through regular collaborative teacher networking whereby teachers are active change agents.

   Thus, if properly strengthened, the ICT- and school-based collaborative professional learning networks will enhance teachers’ capacity to translate the intended curriculum into clear implementable taught curricula. In this way, these teacher networks are typical forms of micro-level bottom-up language-in-education initiatives which address specific issues and needs such as local language resources, pedagogic practices and adjustments which are usually ignored by macro-level policy. Yet, these need to be made to adequately implement a macro-level policy such as a national curriculum reform.

2. **Recommendation Two: Reconsider the primacy of teacher factors in ICT for education**

   This study has shown that three interlocking factors- the institution, resource availability and teachers’ beliefs and attitudes- affect uptake and use of ICT. Whereas past ICT education initiatives in Uganda have focused on physical resource availability like equipment, this study shows that actual ICT take-up and use is founded to a large extent on teachers’ feelings, skills and attitudes or the intentional ICT use. It is therefore recommended that future ICT in education actions reconsider the intrinsic factors in promoting ICT-based PLCs in primary schools in marginalized communities. Once adequately addressed, intrinsic factors greatly lower the high costs of introducing ICTs always viewed mainly from the infrastructure availability perspective.

Teaching and learning to use student-centred ICT in both resource-poor communities like Northern Uganda and resource-rich schools is a complex process, particularly since it may involve simultaneously learning about technology, from technology and with technology. To successfully integrate ICT in education in more student-centred ways by primary teachers in marginalized communities, an overemphasis for teachers to first become highly skilled in computing skills needs to be minimized. It is recommended that a gradual approach to ICT learning is spread over a longer period and that emphasizing peer-to-peer support is adopted for teachers. This will help them transform from novice to expert ICT users capable of learning about, with and from technology concurrently. One way to accomplish this is to provide opportunities for primary school teachers to continually share their successes and challenges in their PLCs.
References


http://www.tandfonline.com/doi/pdf/10.1080/135406002100000512


[https://www.stir.ac.uk/media/schools/education/documents/teacheragency/What%20is%20teacher%20agency-final.pdf](https://www.stir.ac.uk/media/schools/education/documents/teacheragency/What%20is%20teacher%20agency-final.pdf)


Annexes

Annex 1: Research Instruments

Instrument 1: Technology adoption survey questionnaire
There are two sections which you should respond to.

Section one: Demographic information (Tick the one that best applies to you)

a) Gender: 1=Male    2=Female

b) Age: 1=Under 30 years  2= 30 to 44 years  3=above 45 years

c) Teaching experience: 1= under one year  2=1 to 5 years  3=more than 5 years

d) General computer technology: 1=beginner  2= novice amateur  3=established user

Section two:
Here are 14 statements related to various factors that may be involved in your acceptance of using ICTs as working tools for you. ICT here refers to the application of the computer and mobile phone in aspects of teaching and learning. Please indicate your level of agreement with each of the following statements using the scale (1 – 5) provided below:

1= strongly disagree  2= disagree  3= neutral  4= agree  5= strongly agree
For each statement you should tick in only one box that indicates your level of agreement.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using ICT is making it easier for me to teach the thematic curriculum.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICT is allowing me to create local language teaching materials more quickly.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICT is enabling me to acquire new skills I use in my work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using ICT is enabling me to work more closely with fellow teachers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning to operate the computer provided to my school is easy for me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is getting easier to produce teaching resources I need with the computer.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am quickly becoming skilled at using ICT to do what I want to do.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using ICT to create teaching resources does not need a lot of mental effort.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In general, my school supports using ICT for teaching.

I can access the resources necessary for ICT use.

Support from my fellow teachers is available when I need help to encounter ICT problems.

I have sufficient time available to use ICT.

I intend to continue using ICT more often in future.

I intend to continue using ICT with other teachers.

Thank you very much for your cooperation.

Instrument 2: Focus Group Discussion guide (For research assistants’ use only)

1. What do you think of the ICT teachers’ training project by LABE in this district?
2. Do you think the administrators in the schools engaged in this ICT project are supportive of teachers’ use of ICT (computers and mobile phones)? If yes, how?
3. When one says: “using ICT successfully for teachers’ continuing professional development”; what words, thoughts, images, etc come to your mind?
4. Take a piece of paper and jot down 3 things that will have a great influence on the successful use of ICT by the Thematic Curriculum teachers.
5. Let us list these on flipchart. Which one of those three do you consider to be the most important?
6. Why have you considered this one factor as the most important to you? Why do you think so?
Annex 2: 2 Videos (sent separately)

- Snippets of teacher-shot video used during focus group discussions
- Gulu district focus group discussion in session – partial shots