An Evaluation of ELLN Digital

Technology-Supported Teacher Professional Development on Early Language, Literacy, and Numeracy for K-3 Teachers

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TABLES

FIGURES

APPENDICES

ACRONYMS

CK	content knowledge
CoP	community of practice
CPK	content and pedagogical knowledge
DFID	Department for International Development (United Kingdom)
DepEd	Department of Education (Philippines)
DL4D	Digital Learning for Development
ECARP	Every Child A Reader Program
ECS	end-of-course survey
ELLN	Early Language, Literacy, and Numeracy
FIT-ED	Foundation for Information Technology Education and Development
LF	Learning Facilitator
IDRC	International Development Research Centre (Canada)
IRI	Informal Reading Inventory
LAC	Learning Action Cell
LACF	Learning Action Cell Facilitator
MTB-MLE	Mother Tongue-Based Multilingual Education
PCK	pedagogical content knowledge
PK	pedagogical knowledge
Phil-IRI	Philippine Informal Reading Inventory
PWLE	Philippine Word List in English
RAN	rapid autonomized naming
RR	Reading Recovery
TPD	teacher professional development
TSNA	teacher strength and needs assessment
USAID	United States Agency for International Development

CONTENTS

EXECUTIVE SUMMARY

This report describes a mixed methods study of the Early Language, Literacy, and Numeracy Digital (ELLN Digital) teacher professional development (TPD) program pilot in the Philippines, which took place in 2016-2017. The study aimed to evaluate the effectiveness of the TPD, a blended learning version of the established face-to-face ELLN course. Data were collected through multiple methods, including an end-of-course survey; pre- and post-course assessments of teacher pedagogical and content knowledge, and teacher strengths and needs; interviews, focus group discussions, and observations in six case study schools. The research was conducted under the Digital Learning for Development (DL4D) project of the Foundation for Information Technology Education and Development (FIT-ED) of the Philippines, jointly funded by the International Development Research Centre (IDRC) of Canada, the Department for International Development (DFID) of the United Kingdom, and the United States Agency for International Development (USAID) through the Philippine-American Fund.

Qualitative findings and an end-of-course survey indicate that participating teachers and school principals were positive about the course, its design, and content. They were generally of the opinion that valuable learning had occurred and had impacted on teaching practice and on children's learning. Teachers were generally positive about the blended learning model, which combined Learning Action Cells (LACs) with a CD courseware intended to be studied prior to LAC meetings in a flexible, self-paced learning mode. The model was designed to encourage teachers to take charge of their own learning within communities of practice. Teachers indicated that they found the LACs a safe and supportive space in which they were able to reflect on and discuss their learning and their practice. However, due to problems in accessing technology and the courseware, and time constraints, many teachers were unable to engage in the courseware in a genuinely flexible, self-paced fashion. Another key finding is that the LACs were not always implemented as intended, with some resembling traditional classes with information transmission style lectures and presentations rather than genuine communities of practice characterized by teachers taking ownership of their own learning through reflection, discussion, and action. Quite often, teachers were unable to put their learning into practice satisfactorily because of insufficient classroom resources such as 'big books.'

Despite some shortcomings in the implementation of the ELLN Digital course, quantitative findings on teacher learning indicate that the pedagogical and content knowledge of participating teachers were significantly better in the post-test overall, with some variation between the subgroups of teachers. In particular, teachers in rural schools demonstrated significantly larger mean gains in scores in content and pedagogical knowledge than those in urban schools, and mean gains in scores of teachers with higher qualifications were significantly greater than those with only bachelor degrees.

Recommendations include ensuring that ELLN Digital is adequately resourced. It is crucial that all participating teachers have ongoing access to the CD courseware or its internet version, and a working computer, so they can learn at a time, pace, and place that suits them. It is also important that all classroom resources mentioned in the course are made readily available to each teacher. Participating teachers also stated that the weekly time commitment was somewhat excessive. Running the course over a longer duration with shorter weekly LACs, or LACs every two weeks instead of weekly, may alleviate time pressure and encourage deeper learning. It is also recommended that additional training be given to teachers and LAC Facilitators on the intended role of the LACs in their learning so that there is not an expectation that the LAC Facilitator provides lectures, presentations, and 'correct answers' as would be the case in many traditional professional development sessions. Finally, there is scope for the provision of more quality formative feedback throughout the course so that teachers can monitor their own learning in an informed way.

Keywords: *teacher professional development, blended learning, literacy, early childhood, communities of practice, flipped classroom*

I. INTRODUCTION

1.1 Purpose of the study

This study aimed to assess the effectiveness of the pilot of *ELLN Digital: Technology-supported Teacher Professional Development on Early Language, Literacy, and Numeracy for K-3 Teachers* in the Philippines. Although the Early Language Literacy and Numeracy Digital (ELLN Digital) course covers both literacy and numeracy teaching in the early years, this evaluation study focused on literacy teaching only.

ELLN Digital is a blended learning teacher professional development (TPD) program designed to support the ELLN face-to-face TPD program, which was introduced in 2015 to support the *Every Child a Reader Program* (ECARP) in the Philippines. ECARP mandates that interventions should be put into place to assist all children in meeting literacy expectations. The goals of ELLN were to ultimately improve the literacy and numeracy skills of K-3 pupils through an effective, flexible, scalable, sustainable, and cost-effective professional development system for teachers. The ELLN face-to-face TPD program is composed of a 10-day face-to-face course, and is delivered using the cascade model, in which regional and divisional trainers are trained by expert instructors. They then reproduce this training to teachers and school leaders. Learning Actions Cells (LACs) – communities of practice that are intended to meet for weekly professional development activities such as discussion, reflection, and sharing – are suggested as optional means of enhancing teacher learning. ELLN Digital was intended to overcome problems identified with the ELLN face-to-face TPD; namely, difficulties in ensuring consistency in quality of content, expert instruction, and facilitation through the cascade model. ELLN Digital also aimed to increase cost-effectiveness and sustainability in educating large numbers of in-service teachers. A team of experts worked on the development and implementation of ELLN Digital; they came from two universities in the Philippines, the Foundation for Information Technology Education and Development (FIT-ED), and the Philippine Department of Education (DepEd). In addition, other experts were consulted.

Many (n = 4040) K-3 (Key Stage 1) teachers enrolled in the ELLN Digital pilot course and, of these, 2,750 completed all the modules. The pilot ran from November 2016 to April 2017. A sample of approximately 10% (n =4 34) of the teachers participated in the evaluation study by completing an end-of-course evaluation survey and permitting the researchers to access their pre-and post-course test results (see Methodology section for sampling strategy and details about the tests). Teachers and school principals in six case study schools were also invited to participate in focus group discussions (FGDs), interviews and observations. Teachers and school staff at a seventh school, where teacher gain scores were low, were also interviewed in an attempt to discover inhibitive factors. Course designers were consulted about the rationale for, and the intended implementation of, the blended learning course.

The ELLN Digital project developed multimedia courseware on CD, intended to be delivered through a blended learning (BL) mode. What was intended to be self-paced learning, using the multimedia courseware, took place prior to weekly LAC meetings. The courseware was delivered on CD because of limited internet access in many parts of the Philippines. It was intended that participating teachers would apply in their classroom what they learned through the courseware and the LACs to improve their lesson planning, lesson preparation, classroom instruction, and assessment processes, and reflect on this during subsequent LACs. Each LAC was mentored by a Learning Action Cell Facilitator (LACF), who was essentially a peer mentor, also taking the ELLN Digital course. Each LACF was supported by a Learning Facilitator (LF), who was intended to be available to visit the LACs, and to provide support and assistance via telephone and through texting. The LFs were supervisors based in the DepEd division and regional offices. They received a higher level of training through webinars run by expert instructors.

It is important to note that it was not the intention of this study to assess or critique the course content per se, as this was already established as part of the face-to-face ELLN course. Rather, the intent was to evaluate the blended learning model (ELLN Digital).

1.2 Language and literacy context, policy, and curriculum in the Philippines

The literacy rate in the Philippines has been steadily increasing throughout the last century. At the time of the most recent national Functional Literacy, Education and Mass Media Survey (FLEMMS) in 2013, the basic literacy rate was at 96.5% (Philippines Statistics Authority [PSA], 2015, p. 35). However, the definition of basic literacy is the ability to "read, write and understand simple messages in any language or dialect" (PSA, 2015, p. 2). This is not an ambitious definition and in the 21st century, there is a pressing need to improve not only the basic literacy rate but also the functional literacy rate. Functional literacy is defined in the Philippines as follows:

> The skills must be sufficiently advanced to enable the individual to participate fully and efficiently in activities commonly occurring in his life situation that require a reasonable capability of communicating by written language. A functional literate person is one who can at least read, write, compute and/or comprehend. Also, persons who graduated from high school or completed higher level of education are classified as functionally literate. (PSA, 2015, p. 2).

In 2013, 90.3% of Filipinos were functionally literate, with the functional literacy rate for females (92.0%) higher than for males (88.7%) (PSA, 2015, p. 36).

A relatively recent legislative and policy framework in the Philippines aims, among other things, to improve basic education for all, which includes functional literacy for all. Learning to be literate now formally starts in kindergarten for five-year-old children. Principles of inclusion are embedded in the K-12 curriculum, which necessitate more differentiated teaching than was previously practiced. Further, in common with many countries around the world, the implementation of age-appropriate pedagogies is now encouraged. Traditionally, this has not been widespread in the Philippines. The government has prioritized the improvement of education in the early years, with The Early Years Act of 2013 and The Enhanced Basic Education Act of 2013 ensuring that formal compulsory education starts at the age of five (kindergarten in the Philippines).

The teaching of language and literacy in the Philippines is complex because children must learn literacy in three languages: their mother tongue, Filipino, and English. By Quarter 3 (Term 3) of Grade 3, English becomes the main medium of instruction for some subjects, and children will have started to read English texts in the second half of Grade 3. Children will already have started to read and write in their mother tongue and in Filipino in the previous years. See Table 1 for the recommended sequence of learning and using the three languages in K-3 (ELLN Digital courseware, 2016).

Mother Tongue-Based Multilingual Education (MTB-MLE) is an important element of education in K-3 in the Philippines:

> MTB-MLE is education, formal or non-formal, in which the learner's mother tongue and additional languages are used in the classroom. Learners begin their education in the language they understand best - their mother tongue - and develop a strong foundation in their mother language before adding additional languages (DepEd, 2016, p. 2).

There is growing literature on the merits of the mother tongue being used in early education (see UNESCO, 2008), and benefits include the child's identity and culture being valued, stronger cognitive development using the mother tongue, and increased opportunities to implement age-appropriate pedagogies engaging high levels of social interaction (classroom talk). There is some evidence that transition to other languages as the medium of instruction should be held off until the later primary school years, after children have gained a strong oral and written grasp of their mother tongue. However, many countries around the world commence this transition around Grade 3 (Ball, 2010). In the ELLN Digital course, 'bridging' is proposed as an effective way to use the child's mother tongue as a basis for learning second and third languages. Here, teachers are asked to explicitly show children similarities and differences between the three languages, which can help learners progress in each of the languages (Kupferberg, 1999).

There are many challenges in the educational system in the Philippines. Thus, innovative and cost-effective solutions are needed to provide quality literacy education to all. Developing effective and affordable means of educating in-service teachers is very much part of the agenda.

Table 1: Sequence of language and literacy instruction in mother tongue, Filipino, and English

Grade	Mother Tongue	Filipino	English
K	Oral fluency Pre-reading activities Medium of instruction	-	-
1	Oral fluency Academic vocabulary Reading and writing Medium of instruction	Oral (listening and speaking) in Q2 Reading (Q4)	Oral (listening and speaking) in Q3
2	Oral fluency Literacy development Medium of instruction	Oral (communicative competence) Literacy development	Oral (communicative competence) Reading (Q2)
3	Oral fluency Literacy development Medium of instruction for most subjects	Oral (communicative competence) Literacy development Medium of instruction for some subjects (Q1)	Oral (communicative competence) Literacy development Medium of instruction for some subjects (Q3)

(Source: ELLN Digital CD)

II. OBJECTIVES

The aims of this research were to ascertain the effectiveness of the ELLN Digital teacher professional development (TPD) program. For the most part, the objectives of the study were met, although there were several limitations which will be discussed later.

The main research question was: *How effective is the ELLN Digital TPD program?*

The guiding sub-questions were:

1. What is the impact of the ELLN Digital TPD program on K-3 teachers' early literacy teaching?

    1.1. What is the impact of the ELLN Digital TPD program on the K-3 teachers' pedagogical and content knowledge of early literacy instruction?

    1.2. What is the impact of the ELLN Digital TPD program on the K-3 teachers' perspectives on early literacy instruction?

    1.3. What is the impact of the ELLN Digital TPD program on the K-3 teachers' early literacy teaching practices?

2. How does the ELLN Digital TPD program help K-3 teachers learn?

3. What are the conditions that support effective implementation of the ELLN Digital TPD program?

    3.1. What factors/conditions enable or facilitate teacher learning in the ELLN Digital TPD program?

    3.2. What factors/conditions inhibit or constrain or limit teacher learning in the ELLN Digital TPD program?

III. REVIEW OF LITERATURE

3.1 Early childhood literacy teaching and learning

3.1.1. What are the important elements of early literacy?
Teaching language and literacy in early childhood classrooms is complex, especially in multilingual contexts. Teachers require knowledge and skills to support children's learning in many aspects of literacy. They also need to be able to understand the significance of children's abilities and prior experiences, including a range of social, linguistic, cultural, cognitive, and behavioral factors that impact on learning. The National Early Literacy Panel (NELP, 2008) reviewed what is important in literacy learning for children from birth to the age of five, and identified 11 variables that predict children's later success in learning to read and write. These include: concepts about print, alphabet knowledge, phonological knowledge and phonological memory, rapid autonomized naming (RAN), print knowledge, the ability to write one's name, and oral language. Teachers in K-3 are able to assist children to acquire and strengthen most of these important foundations for literacy success. The National Reading Panel (2000) in the USA found that children in their early school years need to be taught five main areas to read well: phonemic awareness, phonics, vocabulary, comprehension, and fluency.

Oral language is particularly crucial in early literacy learning, and should be skillfully interwoven with the teaching of reading and writing (Alexander, 2012). Without sufficient attention to oral language in the early years, attempts to teach print-based aspects of literacy such as phonics, reading comprehension, and text composition will be compromised. O'Toole and Stinson (2013) have stated that four dimensions of oral language should be taught: functional, dialogic, linguistic, and paralinguistic. Children need to learn oral language for a variety of purposes. The phonology (sounds), syntax (grammar), semantics (meanings), and pragmatics (social expectations/conventions) of language/s are all important elements for children to understand and be able to apply (Fellowes & Oakley, 2014). This becomes even more important in multilingual contexts where children need to be able to make links and comparisons between the languages they use.

It is important to acknowledge that the nature of literacy has changed greatly in recent years, not least because of the prevalence of technology and of digital and multimodal texts. The ways by which readers and writers access, compose, and share texts have also changed with the expansion of the internet and the social web, which means that audiences and authors of texts have also changed, increasing the need for critical literacy skills. Texts themselves have changed and are now often dynamic and written by multiple authors, who may be separated across space and time. Notwithstanding this, children still need to learn oral language and the fundamentals of reading and writing, or 'conventional' skills (NELP, 2008), because there are still conventional texts in the world and many of the skills transfer to more complex digital literacy scenarios. However, children today need to learn a range of additional skills, understandings, and strategies to enable them to understand and create meaning, in the context of digital texts and emerging literacies (Mills, 2016).

3.1.2. Approaches to teaching literacy in the early years.
It is established that literacy is foundational to children's learning in all curriculum areas. Although there has been controversy about 'best practices,' there is a growing body of research evidence that can guide early childhood educators in their teaching of language and literacy. There is evidence to indicate that active and play-based methods that encourage children to construct and test their understandings, as individuals and in groups, are important in the early years (Right to Play, 2015). With reference to early childhood education in general, contemporary pedagogies acknowledge that learning is a sociocultural practice and that the learning environment is very important, and can be a third teacher, alongside teachers and family/community members (Victorian Curriculum and Assessment Authority, 2008). Outdoor learning environments are also being acknowledged as effective learning spaces for young children, as these can be used to encourage curiosity, problem solving, and social interaction through play (Jechura, Wooldridge, Bertelsen, & Mayers, 2016).

Martlew, Stephen, and Ellis (2011) have argued that active learning can be effective for young children:

> Learning which engages and challenges children's thinking using real-life and imaginary situations. It takes full advantage of the opportunities presented by spontaneous and planned, purposeful play; investigating and exploring; events and life experiences; focused learning and teaching. (p. 73)

The authors acknowledge, however, that this can be challenging to implement.

Even though play is important in early childhood learning (DEEWR, 2009; Shipley, 2008), there is considerable evidence that show young children also need systematic and explicit instruction in order to progress satisfactorily. Snow, Burns, and Griffin (1998) wrote about the prevention of reading difficulties in children. They stated that through the provision of appropriate literacy instruction in the early years, later difficulties in literacy could be ameliorated if not avoided. Explicit and systematic instruction plays an important part in the prevention of later difficulties.

As well as explicit and systematic instruction, children need ample opportunities to engage with texts such as good quality children's literature, and to read and write texts for authentic purposes (Fellowes & Oakley, 2014), to practice and apply what they have been taught through explicit instruction. A 'balanced' approach to literacy instruction, where skills such as phonological awareness, phonics and grammar are taught explicitly but linked to texts that are interesting and meaningful to the child, is now promoted as an effective way to teach essential literacy skills while encouraging children's motivation and capacity to read and write for authentic purposes. Indeed, this approach was recommended in major reviews of literacy teaching, such as the National Reading Panel (2000) and the Australian National Inquiry into the Teaching of Literacy (2005). NELP (2008) found evidence that the following categories of strategies are effective in supporting young children's literacy: code-based strategies such as explicit phonics teaching; shared reading activities; strategies that involve encouraging literacy engagement in the home; preschool programs; and oral language enhancement programs. Other activities and experiences such as hearing and saying nursery rhymes, being immersed in print, and singing are also important for emergent literacy learners (Shoghi, Willersdorf, Braganza, & McDonald, 2013).

Like learning to read, learning to write is a complex and difficult undertaking for many children and needs to be carefully scaffolded by educators. The teaching of writing needs to be linked to the teaching of reading; children should be exposed to a range of quality written texts to learn various concepts about print and understandings about texts (what they are for, who they are for, and how they are structured). They also need to see that their knowledge about letters and sounds, vocabulary and texts can be applied to both reading and writing. Importantly, children need many opportunities to participate in writing activities that are purposeful and meaningful to them (Wells Rowe & Flushman, 2013). Children need to learn how to write a range of different text forms and should be taught various processes and strategies for writing. Very young children should be encouraged to make marks (Dunst & Gorma, 2009), scribble, and engage in role play writing and, over time, more conventional writing will develop if appropriate teaching and learning experiences are in place.

In terms of overall pedagogical strategies, the gradual release of responsibility model (Pearson & Gallagher, 1983), where teachers explicitly teach/model the concepts before moving on

to shared, guided, and independent practice underpins much literacy teaching in the early years of school. The spiral curriculum (Bruner, 1960), where concepts are introduced then revisited over time to deepen and broaden children's understandings, can also be an effective means of supporting children's learning, and can be applied to literacy teaching. Importantly, it has been found that there is a close correlation between the quality of teacher practice in several dimensions and young children's literacy learning (Louden, Rohl, & Hopkins, 2008). Thus, it is too simplistic to assert that applying a suite of teaching strategies will automatically result in better learning.

Nowadays, technology is being used more in the early years to teach literacy, with mobile technologies such as tablet computers becoming popular in some school systems (Pegrum, Oakley, & Faulkner, 2013). It is important if not essential to use technology in the classroom as many texts are now in digital, multimodal format, and children need to work with these to become literate for the 21st century.

3.1.3. Differentiated literacy instruction. Schools and classrooms include students with diverse needs, often from diverse sociocultural and linguistic backgrounds. To cater for the different needs, interests, and abilities of children within the regular classroom, differentiation has been proposed as an effective approach for teachers, rather than common alternatives such as cross setting or streaming. Differentiation, as explained by Tomlinson (2017), is when teachers proactively plan to modify content, process, product, and the learning environment for students based on student readiness, interests, and learning profile within the regular classroom. As Heacox (2012) explains: "Differentiating instruction means changing the pace, level or kind of instruction you provide in response to individual learners' needs, styles or interests" (p. 5).

Differentiation is not a new concept (Algozzine & Anderson, 2007; Heacox, 2012; Levy, 2008; Tomlinson, 2017). The practice of differentiation has always been at the core of effective teaching and all teachers have differentiated in some way, such as providing some students with extra time or providing students with challenge or support (Heacox, 2012; Levy, 2008). However, it has been repeatedly reported that teachers often 'teach to the middle' with a 'one size fits all' approach, leaving students of diverse needs without adequate and targeted instruction to cater for their specific needs (Heacox, 2012; Rock, Gregg, Ellis, & Gable, 2008; Tomlinson, 2017). Therefore, a framework for differentiation, such as the one proposed by Tomlinson (2017), promotes a more systematic implementation to target specific diverse needs of students within the classroom (Levy, 2008). There are a few key concepts that are fundamental to effective differentiation.

Most important to differentiated instruction are the elements of choice, flexibility, ongoing assessment, and creativity, resulting in differentiating the content being taught, or how students are processing and developing understanding of concepts and skills, or the ways in which students demonstrate what they have

learned and their level of knowledge through varied products (Algozzine & Anderson, 2007, p. 50).

In teaching literacy, teachers can differentiate content through providing a variety of texts based on different reading abilities and/or texts to cater for students' different interests (Heacox, 2012). When a teacher plans to differentiate content according to student readiness in literacy, the teacher can provide a variety of different levelled texts with matched comprehension questions and group students according to pre-assessment data regarding the student's current reading and comprehension abilities. In this instance, the teacher is differentiating the content based on students' readiness. However, teachers can also differentiate by providing students with a choice of books which cater to their identified interests and/or by offering students choices regarding how they work (individually, in pairs or in small groups), and which text they choose, based on their interest (Algozzine & Anderson, 2007; Tomlinson & Allen, 2000). Through providing students with choice and links to their interests, teachers can increase student engagement, motivation, and achievement. Morgan (2014) suggests that to increase student engagement, teachers need to know their interests and make explicit links to the content being taught, where suitable and relevant.

Teachers can differentiate process and product by offering students the choice to work individually, in pairs, or in small groups, while still addressing the specific content and learning outcomes for the lesson or activity (Algozzine & Anderson, 2007; Tomlinson, 2017). They can also differentiate process and product by providing students with choices through instructional strategies such as choice boards or tiered tasks, where the criteria or learning objectives remain the same for all students (Algozzine & Anderson, 2007; Tomlinson & Moon, 2013). In literacy, differentiation can occur by offering students the choice of topic that they use for a writing task. By offering students the choice, teachers can cater for students' interests.

Providing students with choices in how they demonstrate their knowledge and understanding is an integral part of effective differentiation, and teachers can purposefully direct students to make informed choices as needed (Heacox, 2012). This clearly has implications for teacher assessment strategies.

Teachers often cite the following factors as reasons why they find differentiation difficult: class sizes, preparation time, limited resources, and teacher workload (Nicolae, 2014; Rock et al., 2008; Westwood, 2001). While Nicolae (2014) reported that teachers' beliefs and understanding of differentiation are related to their implementation, teachers are most likely to change their instructional practices more readily than other suggested areas for differentiation (content, product, and learning environment) as this is thought to be more commonly aligned with the core practice of teaching.

It is acknowledged that differentiation can be a challenge for teachers to implement effectively and consistently (Morgan,

2014; Rock et al., 2008, Westwood, 2001). Nonetheless, it is an effective way for teachers to cater for student diversity within the regular classroom, and maximizes opportunities for all students to succeed.

3.1.4. Assessment and early literacy. Effective teaching of literacy in K-3, and the provision of differentiated instruction, is enhanced when teachers can use a range of assessment techniques to identify children's learning strengths and needs, and to monitor their learning. A range of diagnostic and progress monitoring assessment instruments and procedures are available for children learning English literacy (Barratt-Pugh & Oakley, 2007). However, there are fewer assessments for the wide range of languages and mother tongues around the world, making it more challenging for teachers to conduct fine-grained assessments.

Along with ECARP, the Reading Recovery (RR) intervention, the Philippine Informal Reading Inventory (Phil-IRI), and the Philippine Word List in English (PWLE) assessments were introduced. Informal Reading Inventories (IRIs) can be useful tools to assess students' levels of word reading, text comprehension, reading rate, and types of reading errors (Nilsson, 2008). Further, IRIs can assist teachers in providing levelled texts to children at an appropriate difficulty level, and provide differentiated instruction. The Phil-IRI, which has both English and Filipino assessments, is intended to be administered twice a year to monitor progress and guide teaching. While IRIs are useful, they should be used alongside a range of other ongoing assessment strategies such as phonics inventories and phonological awareness assessments, to diagnose and monitor students' literacy needs and progress. It is also necessary to assess oral language and writing through a range of authentic assessment strategies, which necessitates a great deal of expertise on the part of the teacher, and can be time-consuming.

3.2 Teacher knowledge

To be equipped to teach effectively, teachers need content knowledge (CK) (knowledge about the subjects and topics to be taught) and pedagogical knowledge (PK) (knowledge about how to teach the content to students). They also need to combine their PK and CK in appropriate ways to ensure that students learn; this is called pedagogical content knowledge (PCK) (Shulman, 1986). To teach literacy in early childhood, teachers need to know about language, concepts as phonological awareness, and how sounds and letters map onto each other. They also need to have a good command of vocabulary. In addition, they need to know about children's literature, text types, grammar, and how young children learn language and literacy. What is more difficult is learning and honing appropriate pedagogies to teach young children these concepts. To do this, teachers need to understand how young children develop and how they learn. The knowledge that teachers need to teach literacy is complex. As pointed out by Medway, Wray, Poulson, and Fox (1998):

Literacy is not, in fact, a 'subject' in the usual sense, with clearly defined boundaries and conventions. Its content draws upon a number of disciplines including the psychology of learning, child language development, linguistics and literary criticism and is best expressed as a series of inter-linking processes rather than a body of knowledge. (n.p.)

3.3 Teacher professional development models

There are several models of teacher professional learning or professional development. The cascade model, the blended learning model, and the communities of practice model will be the focus of this brief review, since they are the key models informing the ELLN and ELLN Digital courses.

3.3.1. The cascade model. The cascade model of professional learning involves teachers attending professional development events and then passing on or 'cascading' the information to other teachers. This model is often utilized where resources are limited. A drawback of this model is that it is most suited to transmission of information, with an emphasis on skills and knowledge, and may be less useful in instigating changes in such aspects as values and attitudes (Kennedy, 2014). Since changes in values and attitudes are often needed to transform practice, this limitation has the potential to be serious. Further, there is the risk of information and skills not being faithfully or accurately cascaded, leading to a reduction of quality down the line.

3.3.2. The community of practice model. The community of practice (CoP) model, according to Wenger (1998), involves participants learning within a community though social learning processes. This model is participatory and has the potential for participants to be more committed to the professional learning undertaken. It is premised on social learning theories where learners co-construct knowledge and solve problems through social interaction. Learners can learn from each other and assist each other with their learning, and together they make sense of learning materials and produce their own knowledge. Wenger, Trayner, and de Laat (2011) provide this definition of CoP:

> A learning partnership among people who find it useful to learn from and with each other about a particular domain. They use each other's experience of practice as a learning resource. And they join forces in making sense of and addressing challenges they face individually or collectively. (p. 9)

CoP are in themselves social learning systems, which involve networks of people with common interests and concerns, and can be enhanced through the use of social media, which can facilitate communication and the building of dynamic banks of knowledge. However, online communities are sometimes better described as just networks as they do not have the essential characteristics of communities. Face-to-face CoP are likely to have the hallmarks of communities, such as shared identity and a shared intention. CoP can be formal or informal, and their intentions can be either explicit or tacit, but "the key characteristic is the blending of individual and collective learning in the development of a shared practice" (Wenger et al., 2011, p. 10).

3.3.3. The blended learning model. Blended learning can be an effective way of improving learning by providing ICT-based learning alongside face-to-face learning. The 'blend' of face-to-face and ICT-based can be designed to suit the situation. Blended learning can foster learning communities that build knowledge through inquiry, reflection, and discourse (Garrison & Vaughan, 2013). This type of professional learning can arguably be a better way to promote changes in values and attitudes than the cascade model. Within a blended learning model, students are also afforded some flexibility in learning in terms of time, place, pace, or path (Clayton Christensen Institute, 2015), provided they have the required access to appropriate technology. Despite its promise as a means of increasing access, engagement, and enhanced learning, the effects of blended learning models have been mixed (Deschacht & Goeman, 2015), which may spring from the fact that there are many different models of blended learning (Oakley, 2016). One popular variation of blended learning is the 'flipped' model, whereby students are exposed to content prior to class, usually delivered via technology such as multimedia presentations (videos), websites, or courseware, then using face-to-face time to 'workshop' or apply the knowledge used (e.g., Bergmann & Sams, 2012).

3.4 Evaluation of teacher professional development

3.4.1. The features of successful teacher professional development. Teacher professional development (TPD) is generally an expensive operation, and it is thus necessary to gauge its impact and effectiveness with reference to its stated aims. It has been claimed that much TPD is relatively ineffective, often because inappropriate models, such as one-off workshops based on information transmission theories of learning, are utilized (Yoon et al., 2007). Much is now known about the characteristics of effective TPD, and any evaluation should analyze the key elements, which have been identified in this body of research.

Van Veen, Zwart, and Meirink (2012) carried out a meta-review of research on TPD, and identified several indicators of successful TPD. They identified eight features:

1. *Design of TPD.* There is insufficient evidence to support the superiority of either traditional or innovative designs. What seems to matter most, according to empirical evidence, is that participating teachers see the TPD as being relevant to their classroom practice.

2. *Subject content focus.* This is a crucial aspect of TPD. Teachers need to acquire a deep understanding of the subject content, how to teach it, and how students learn it.

3. *Quality of content.* The content of the TPD should be high quality and challenging (with a robust theoretical and research base), with clear examples and ongoing access to the newly learned content and expert colleagues inside and outside the school.

4. *Active learning processes.* Within the TPD, whatever the design, active learning as opposed to passive learning (sitting and listening or information transmission) has been shown to improve teacher learning. Being given the opportunity to solve problems and inquire into relevant issues and scenarios is seen to enhance effectiveness.

5. *Collective participation.* Collaboration between learners can enhance teacher learning. Learning communities can also be highly effective, through which teachers can assume shared responsibility for their learning. If communities of learners have a voice in setting their own learning goals and choosing the design and content of the professional development, this can be advantageous.

6. *Duration and sustainability.* The duration of professional development needs to be such that pedagogical change can take place. There is no 'best duration,' however, because much depends on the goals of the professional development and the teachers involved. There has been research to suggest that at least 14 hours is needed, although some researchers have stated that 80 hours of sustained TPD is required for real change to occur.

7. *Coherence.* There needs to be coherence or consistency between what is taught in professional development and the curriculum, policies, and priorities of the school or district in question. It is also suggested that there should be coherence between the TPD and the participants' prior knowledge and beliefs.

8. *Theory of improvement.* A clear and explicit understanding of the relationship between the goals of the TPD and the design and features of the TPD is necessary when designing the TPD.

School organizational conditions such as leadership support, enough time being allocated for the teachers to apply the new learning, school policy and resources, and the organizational structure and culture of the school are also factors that can impact on the effectiveness of TPD (Van Veen, Zwart and Meirink, 2012).

Zepeda (2013) has also reviewed the literature, and echoes the findings of van Veen et al. (2012). She concludes that it is necessary for professional development to be successful to provide teachers with "follow-up support to ensure that lessons

learned in formal and informal professional development are being transferred into practice; the opportunity to learn from their actual work through job-embedded learning opportunities; and a learning community structure that is marked by trust, care, and concern for the members of the community" (Zepeda, 2013, p. 6).

She also states that it is also important for TPD to be carried out over time. It should promote reflection and inquiry in the participating teachers; encourage multiple modes of learning and active learning; and be based on student performance data.

With reference to organizational conditions, Ferguson (2006) has pointed out that there are certain conditions that encourage a culture that supports professional learning. First, participants must believe it is possible for them to succeed, and goals should be clearly defined and seem important to them. Second, the professional development experience should be enjoyable. Third, supervisors in the workplace should be both encouraging and insistent. Finally, supportive peers are needed.

It should be noted that Yoon, Duncan, Scarloss, and Shapley (2007) carried out a review of the TPD literature referring to the quality criteria set by the *What Works Clearinghouse*. Only a small percentage of evaluation studies met the strict inclusion criteria, indicating that the majority of TPD evaluation studies had limitations. Within the constraints and time limitations of the present study, the aim has been to evaluate the ELLN Digital TPD program using multiple methods, with a clear conceptual framing to maximize its validity.

Based on the literature review, a conceptual framework was developed to guide the study, as shown in Figure 1.
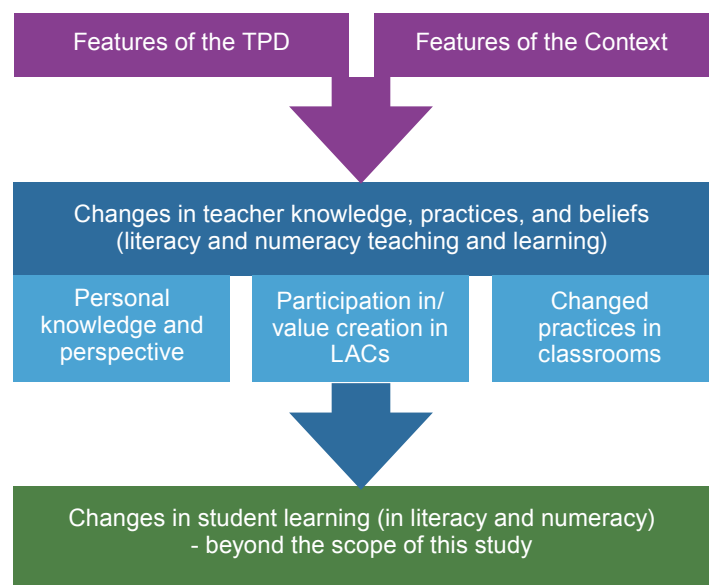
Figure 1. Conceptual framework guiding the study

IV. METHODOLOGY

4.1 Design

This study of the ELLN Digital course employed mixed methods (qualitative and quantitative), an effective means of evaluating interventions and carrying out evaluation research (Babbie, 2008). As well as completing pre- and post-course content and pedagogical knowledge (CPK) assessments, and a teacher strengths and needs assessment (TSNA), teachers were asked to participate in focus group discussions (FGDs), to discuss the operations and the value of the Learning Action Cells (LACs) and to reflect on how they thought their pedagogical practices had changed. School principals and LAC Facilitators, as well as course designers, participated in semi-structured interviews. Finally, an end-of-course satisfaction survey (ECS) was carried out.

4.1.1. Description of the ELLN Digital course. At the time of this study, the ELLN Digital course was composed of two main components, which together can be considered a blended learning model. The components were:

(1) A CD, which contains an interactive multimedia self-study course (the courseware); and

(2) A collaborative school-based learning component (community of practice) in the form of LACs

For a full overview of the course contents and schedule, see the Course Guide (Appendix 5).

In the next section of this report, we provide a detailed description of the course as it was intended to be run. It is described in the Methodology section because it is an intervention put into place to change teachers' knowledge, attitudes, and practices.

4.1.2. The courseware. The CD courseware included five modules with 15 lessons based on DepEd's 10-day face-to-face training course on early language, literacy, and numeracy instruction for K-3 teachers. Four of the modules were on literacy teaching, and the fifth module concerned numeracy teaching. The content in the ELLN Digital course was guided

Technology-Supported Teacher Professional Development in Early Literacy for K to 3 Teachers

Figure 2. Home page of the ELLN Digital courseware

by key features of the Philippines K-12 Curriculum, namely that education in schools should:

• be learner-centered, inclusive, and developmentally appropriate;
• be flexible, contextualized, relevant, and responsive;
• adhere to the principles of MTB-MLE; and
• employ spiral curriculum.

The four literacy modules in the courseware related to topics that are recognized internationally as important to literacy teaching in the early years of school. However, not all aspects of contemporary literacy theory and pedagogy, such as multiliteracies and play-based learning, were included. The titles of the literacy modules were:

Module 1 – Foundations of Early Language and Literacy Development and Instruction (3 lessons)
Module 2 – Literature-Based Instruction (3 lessons)
Module 3 – Developing Skills through Explicit Instruction (4 lessons)
Module 4 – Assessing Reading Performance (2 lessons)

The course focused on the 14 domains of literacy from the Philippines curriculum, although it should be noted that within the constraints of a relatively short course (12 literacy lessons and three numeracy lessons), most of the domains could not be covered in great detail or depth, and this may be seen as a limitation of the course.

The 14 domains in the Philippines curriculum are:

1. Oral language development
2. Book and print knowledge
3. Alphabet knowledge
4. Phonological awareness
5. Phonics and word recognition
6. Fluency
7. Spelling
8. Writing and composing
9. Grammar awareness and structure
10. Vocabulary development
11. Listening comprehension
12. Reading comprehension
13. Attitude toward language, literacy, and literature
14. Study strategies

The lessons within each module, designed for self-study, had the following features (see Figure 3, Figure 4, and Figure 5 for illustrations):

• a structured discussion of the lesson topic (i.e., the key concepts, principles, and teaching approaches and strategies);
• video and audio demonstrations and examples;
• exercises intended to develop mastery of the key concepts;
• handouts, templates, and worksheets; and
• activities and assignments for skills practice and application of the principles and strategies taught.

The courseware was designed with the intention that teachers would access each lesson in their own time in the week prior to the LAC session, with each lesson anticipated to take between one to two hours. The CD and a set of five storybooks (in the form of 'big books') were provided for each grade (Kindergarten, Grade 1, Grade 2, and Grade 3) to the school principal. For each lesson, teachers were required to complete an activity/assignment, which often involved the application of content in the classroom.
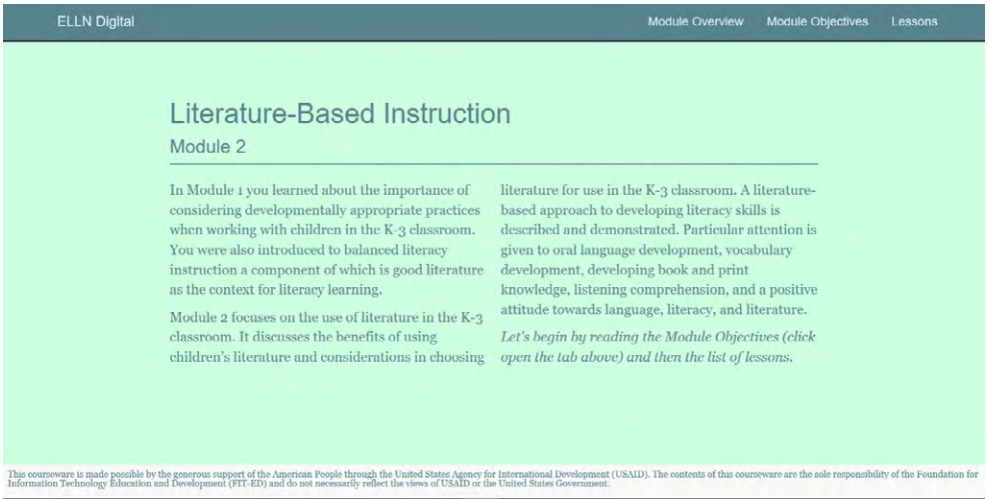

Literature-Based Instruction
Module 2

In Module 1 you learned about the importance of considering developmentally appropriate practices when working with children in the K-3 classroom. You were also introduced to balanced literacy instruction a component of which is good literature as the context for literacy learning.

Module 2 focuses on the use of literature in the K-3 classroom. It discusses the benefits of using children's literature and considerations in choosing literature for use in the K-3 classroom. A literature-based approach to developing literacy skills is described and demonstrated. Particular attention is given to oral language development, vocabulary development, developing book and print knowledge, listening comprehension, and a positive attitude towards language, literacy, and literature.

Let's begin by reading the Module Objectives (click open the tab above) and then the list of lessons.
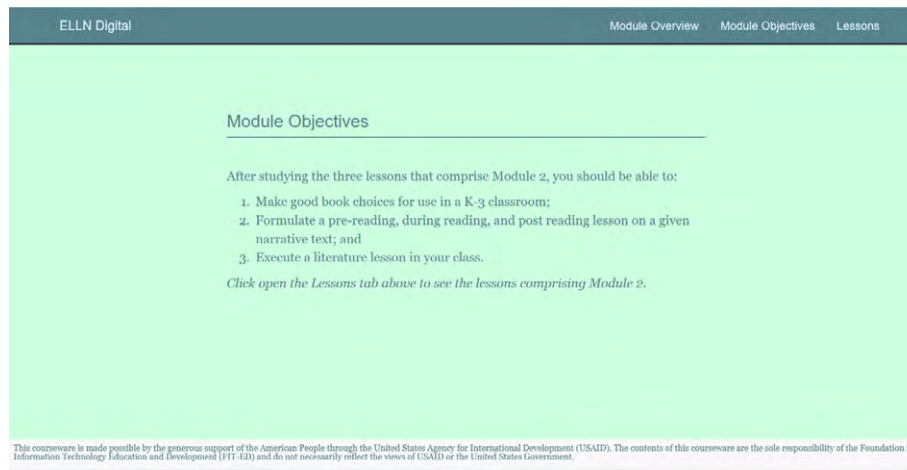
Figure 3. Overview of Module 2
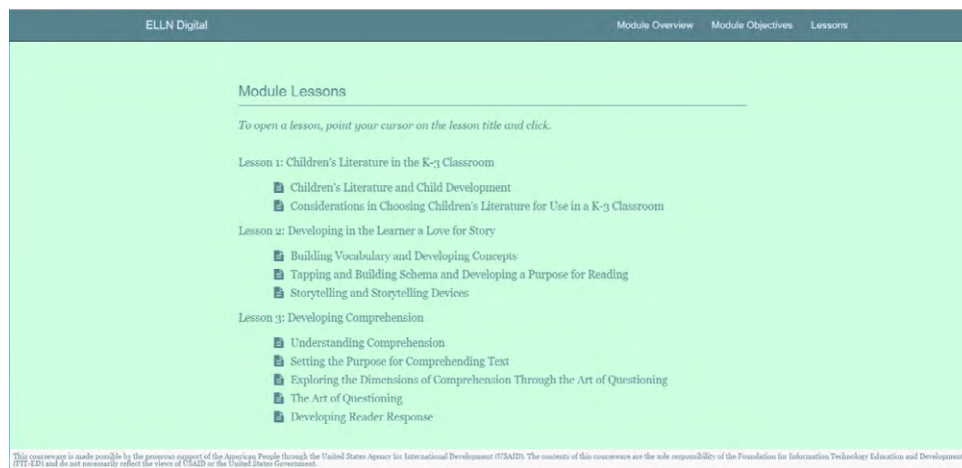
Figure 4. Objectives of Module 2

Figure 5. Lessons in Module 2

Module example: Module 2, 'Literature-Based Instruction,' included three lessons, with learning objectives for the module as well as specific learning objectives for each lesson being provided.

At the beginning of the module (Lesson 1), the teachers were asked to complete a pre-lesson activity which required them to read five statements about the use of children's literature in K-3 classrooms, and select either 'Agree' or 'Disagree' for each statement. The teachers were informed that they should keep the completed pre-lesson activity, as they were encouraged to return to their answers at the completion of the lesson to reflect on whether any changes in their perceptions or attitudes toward children's literature had occurred. The next activity involved listening to three short audio recordings, where the teachers were asked to identify which genre of children's literature were being read. A short summary of the benefits of incorporating these genres into their teaching was included. Next, a 30-second video showed a young child with pre-reading skills demonstrating understanding of book and print orientation.

Information was then presented on the benefits of teachers using wordless picture books and stories that pose questions. To consolidate this idea, six books were included as examples, e.g., *Uldok The War Hero* by Nemah Hermosa, along with information about how each book might develop students' inquisitiveness and interest in various fields of knowledge. Five other books were also briefly described to illustrate how children's literature can support social emotional development.

Following this, teachers were required to complete an activity involving the identification of different types of children's literature (e.g., poetry, prose, fiction, or non-fiction) available in their school. Teachers were asked to record the title, author, and illustrator of each text. A link was provided for teachers or LAC Facilitators to download and print the handout for teachers to complete a hard copy.

The second topic focus, 'Considerations in choosing children's literature for use in a K-3 classroom,' first presented information and two checklists focusing on why some children read and why some children do not. Once again, these checklists were

available to download and print so that teachers could complete the checklists on a hard copy. Each checklist included 10 statements, and teachers were asked to identify reasons why children at their school liked to read, or reasons why children at their school might not like to. Five factors that might affect a child's attitudes toward reading were then outlined: the readability of the text, the types of stories and texts that children would find interesting, helping the children understand what they are reading, promoting reading enjoyment, and creating an environment conducive to reading.
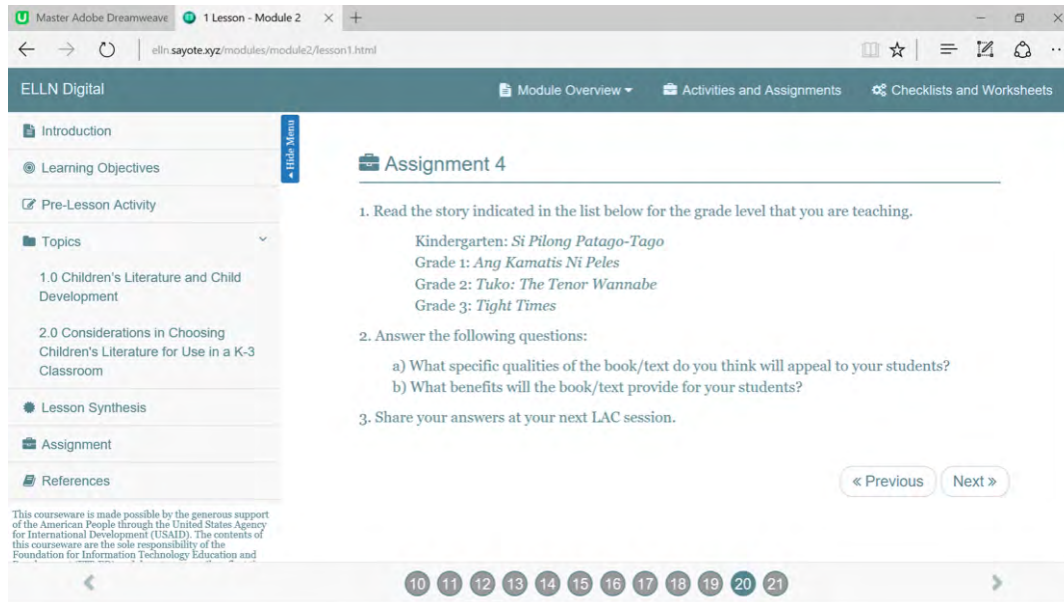

Figure 6. Assignment example

The next focus of the lesson was on the selection of texts for children to read. Teachers were asked to complete another checklist. This included 21 questions that teachers could use to guide them when choosing stories or narrative texts for use in the classroom. Again, this checklist was available to download and print. For this lesson assignment (see Figure 6), teachers were required to read a story from the list provided relevant to the grade they taught, and answer two questions:

• What specific qualities of the book/text do you think will appeal to your students?
• What benefits will the book/text provide for your students?

It was an expectation that the teachers complete this assignment and take their responses to share with colleagues during their next LAC session.

4.1.3. The LACs. The LAC sessions were intended to run at least once each week for 90 to 105 minutes with the purpose of promoting collaborative learning between the teachers while completing the courseware. LAC Facilitators were provided with a set of guidelines on how to facilitate each session, which should include elements of sharing, reflection, discussion, application of knowledge, as well as the development of action plans for practical implementation of the content in each teacher's own classroom. Three form-filling tasks were also set for teachers to complete at the end of each LAC session, which included the completion of a self-assessment form, peer assessment, and the completion of a Teacher Engagement Report (TER).

According to the DepEd ELLN Course Guide, LACs should have a minimum of two and a maximum of 15 members. The guide stated:

> LACs provide an opportunity for teachers and colleagues to come together, and talk about professional topics. LACs can also function as support groups for innovative practices that are envisioned to solve problems at school level. LACs serve as a safe environment aimed to promote collaboration and innovation, as LAC members review specific instructional concerns, and work together on action plans for identified problems in their locality. (DepEd, 2015, p. 1)

The ELLN Digital Course Guide recommended that LAC sessions should be structured as follows:

5 minutes	Getting started
25-30 minutes	Sharing and discussion in small groups
45-50 minutes	Big group/plenary discussion
5 minutes	Looking forward to the next session
10-15 minutes	Accomplish (fill in forms)

The extent to which the LACs run as intended, and teacher perspectives on the LACs, will be discussed in the Findings section of this report.

4.2 Participants

4.2.1. Test and survey respondents. From those (n = 4040) taking the ELLN Digital pilot course, a sample of 434 took pre- or post-course assessments (CPK and TSNA), with 420 teachers completing both the pre- and post-assessments. A total of 500 teachers were invited to participate in the tests. A total of 434 participants completed the end-of-course survey (ECS). More detail about the demographics of the participating teachers is provided in the Findings section of this report.

Table 2: Case study schools

Category	School	Province	Students enrolled (to the nearest 10)	Numbers of teachers at the school	Teachers enrolled in ELLN Digital	ELLN Digital LACs	LACs observed/ interviewed
Small urban	Northlake	Quezon Province	290	8	5	1	1
Small rural	East Park	Quezon Province	400	7	7	1	1
Medium urban	Lakeside	Misamis Oriental	1680	44	25	2	1
Medium rural	Central	Bukidnon	1490	35	35	2	2
Large urban	Southstar	Cabuyao	5650	149	78	8	2
Large rural	Westpoint	Misamis Oriental	6140	157	79	5	2

The sampling was carried out in three stages: at the division level (random, after ruling out two divisions that were sole divisions in a region); at the school level (random), and at the teacher level (random, among K-3 teachers). A total of 118 schools were selected, and the number of teachers invited from each school was proportionate to its size.

4.2.2. Case study participants. From within this larger sample of 118 schools, six case study schools were selected from four provinces, within two regions selected for convenience, Region 1 and Region 6. From the two regions, two small urban, two medium urban, and two large urban schools were selected (see Table 2). Depending on the size of the school, either one or two

LAC groups were selected at random to participate in FGDs and observations. In total, nine LAC groups participated in FGDs and observations. All teachers in LAC groups participating in FGDs and observations were invited to permit their pre- and post-course TSNA and CPK assessment scores to be accessed by the researchers for analysis.

After the main data collection phase, a further case study school with a low mean gain score on the CPK post-test was selected to participate in interviews. Six teachers, the LAC Facilitator, and the school principal were interviewed to find out if there were any challenges experienced at the school that were different from those identified in the other six case study schools.

4.3 Data collection

4.3.1 Quantitative

• Pre- and post-course teacher strength and needs assessment (TSNA) surveys were administered online. This survey was intended to ascertain the teachers' own assessments of their strengths and needs, and had already been developed and field-tested by a team commissioned by the course developers prior to the commencement of this study. The pre-test was administered prior to the course by the course administrators, with appropriate permissions from DepEd and informed consent from the teachers. Additional ethics permission and informed consent was secured for the researchers to access this data retrospectively for the purposes of this study.

• Pre- and post-course content and pedagogical knowledge (CPK) tests were administered. This instrument was developed by a team of experts in the Philippines. The pre-test was administered prior to and after the course by the course administrators. It was a timed online test (75 minutes) under supervised conditions. As with the TSNA, ethics permission was secured for the researchers to access this from consenting participants.

• An end-of-course satisfaction survey (ECS), which was developed by the researchers, was administered shortly after the end of the course.

4.3.2 Qualitative

• Semi-structured interviews with LAC Facilitators, school principals, and expert Learning Facilitators were conducted in approximately Week 4 to Week 6 of the course, and again at the end of the course in the six case study schools. These were approximately 30 to 45 minutes in duration. In one additional school, the interviews were held after the course had been completed.

• Focus group discussions (FGDs) with LAC participants were conducted mid-way through the course and at the end of the course. These were approximately one hour in duration.

• Observations of LAC sessions (using observational guides) took place once during the course.

Qualitative data were collected by two appropriately qualified research assistants from universities in the Philippines, although the lead researcher also conducted interviews, an FGD, and observations in one of the schools to ensure the instruments were appropriate and to better understand the context. The lead researcher communicated with the research assistants by email, and conducted a short orientation by Skype.

FGDs were selected as an appropriate means of discovering the perspectives of the LAC participants, as it was hoped that the group dynamics in the focus groups of intact LAC groups would lead to richer data. As pointed out by Rabiee (2004), focus groups can "provide information about a range of ideas and feelings that individuals have about certain issues, as well as illuminating the differences in perspective between groups of individuals" (p. 656). Further, it has been pointed out by Stewart (2007) that "focus groups provide a tool for testing the reality of assumptions that go into the design of services, programs, and products" (p. 110). The epistemological orientation taken was interpretivism, thus questions were designed to elicit experiences by the teachers of the course.

4.3.3 Information about the instruments used

• The CPK assessment was a 75-item multiple choice instrument, developed by a team of literacy and measurement experts in the Philippines. The items were tested for validity, resulting in an overall Cronbach's Alpha of 0.685. Sixty of the items related to literacy content and pedagogy and 15 related to numeracy content and pedagogy. The test was administered online under supervised conditions and had a time limit of 75 minutes.

• The TSNA instrument, administered online pre- and post-course, was also developed by a team of experts in the Philippines. This test had 47 items, 39 of which related to literacy teaching and 8 related to numeracy teaching. The Cronbach's Alpha was 0.980. More detail about these two tests can be obtained from FIT-ED, if required.

• The 55-item ECS was developed using concepts underpinning the research questions concerning the qualities of the course overall, the courseware, the LACs, and perceived changes in attitudes, practices, and culture. Due to the short timeframe available for this study, there was insufficient time to pilot-test this instrument or undertake rigorous validity and reliability procedures. The instrument used a five-point Likert scale. Some of the items were constructed with reference to the University of Western Australia's student unit reflective feedback (SURF) survey. Items (14) enquiring about the teachers' experiences with the course overall, the courseware (18), and the LACs (20) formed most of the survey. There were three (3) questions on how the ELLN Digital course may have influenced/been influenced by school-wide factors. The ECS is reproduced in Appendix 5.

• Interview questions and FGD questions were derived from the research questions and informed by the literature. The questions are available in the Appendix section of this report.

4.4 Data analysis

Thematic analysis of the qualitative data was undertaken with the use of NVivo. À priori codes were derived from the research questions, as is often the case in qualitative research (Coffey and Atkinson, 1996). Some audio recordings of interviews and FGDs were not transcribed due to time restrictions, and were thus analyzed directly from the audio recordings. Notes of the recordings were taken and key quotations were transcribed. Qualitative data were first sorted into the à priori codes, which included such codes as 'challenges,' 'supports,' and 'views on courseware.'

The second phase employed inductive analysis, where the content of the comments made by participants within each of these codes (called 'nodes' in NVivo) was examined to discover participants' views regarding the challenges, supports, and so on. Many of the themes were obvious as they were easily related to words and topics that recurred frequently in the data. In cases where themes are obvious, extremely detailed analysis is redundant (Stewart, 2007). Cross case analysis was carried out to the extent that similarities and differences between the six cases were sought.

Quantitative data were analyzed using several descriptive methods, including frequencies, t-tests, and one-way ANOVA. Methods used are given as annotations in the Findings section of this report.

4.5 Ethics

Informed consent[1] for pre- and post-course tests and surveys and all interviews and qualitative study of the LACs was secured from the participants. Although the pre- and post-course tests were part of the ELLN Digital course, teachers were invited to sign informed consent for the data to be released to the researchers with their ID numbers so that pre- and post-course data could be compared. They were given letters informing them that participation was voluntary and that they could withdraw from the research at any time prior to publication of results without prejudice, that confidentiality would be assured, and that all data would be stored securely for a period of seven years before being destroyed.

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[1] Ethics permission RA/4/1/8686 from The University of Western Australia

V. FINDINGS

Overall, the findings indicate that the ELLN Digital course was valued and enjoyed by the teachers. In terms of their learning, there was a small but significant overall improvement. In this section, the pre- and post-course CPK and TSNA test results are presented. Then, the ECS results are presented. Finally, findings from the FGDs, interviews, and observations in the case study schools are presented.

5.1 Pre- and post-course content and pedagogical knowledge (CPK) test results

Analysis of the pre-and post-course CPK tests indicated that, overall, there was significant improvement, with a mean pre-test score of 27.72 points and a mean post-test score of 28.84 (out of a maximum possible score of 60). Although this gain is small,
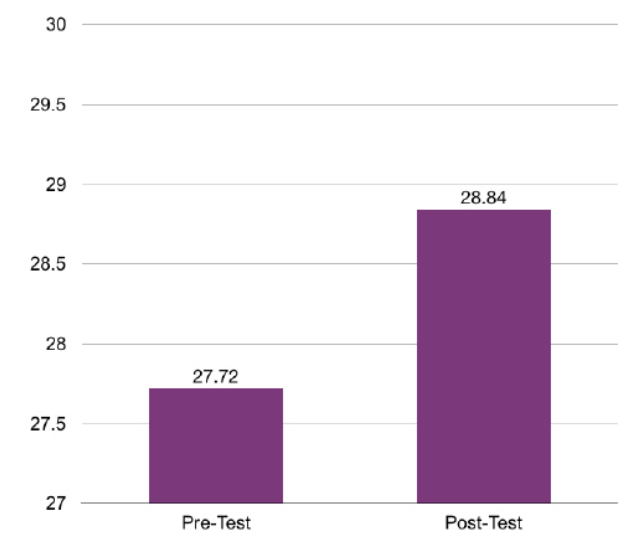
it is statistically significant. However, there were variations in learning gains according to teacher characteristics such as level of qualification. Teachers in rural schools improved significantly more than teachers in urban schools, despite having similar baseline scores. There were considerable variations in improvement scores within schools and some variation between schools. In a few of the schools, all/most of the teachers' post-test scores were no better (or worse) than the pre-test scores. In other schools, all/most of the teachers' scores improved. Figure 7 shows the overall CPK change score. Overall, the scores of the participants improved significantly from pre-test (M = 27.72, SD = 6.01) to post-test test (M = 28.84, SD = 8.24); (M = -1.12, SD = 7.84); $t(433)$ = -2.96, p = 0.003. Full details about the CPK assessment results are available in Appendix 6. An overview of a school in which the teachers did not improve is given later in this chapter.

5.2 CPK analysis by item

It was noted that teacher scores varied according to item, with some items appearing very difficult. An analysis of teacher improvement on the individual questions was thus conducted. This may assist the course developers in improving certain aspects of the course or the assessment. Full details are available in Appendix 7.

For the clear majority of questions, post-test scores were an improvement on pre-test scores. Where scores went down, a possible explanation has been offered in most cases. In some cases, the test may not have allowed for increased sophistication in teacher thinking. In the case of assessment, however, there were reductions in several of the items. This suggests that this is an area that might be improved in the ELLN Digital course.

Figure 7. CPK overall change score

5.3 Pre- and post-course teacher strength and needs assessment (TSNA) results

As with the CPK test, analysis of pre- and post-course TSNA results indicated a significant improvement overall. According to the teachers' own self-evaluation of their strengths and needs, the ELLN Digital course appeared to have a positive impact. Figure 8 shows that overall, the TSNA scores of the participants improved significantly from pre-test scores (M = 168.09, SD = 23.41) to post-test test (M = 188, SD = 22.72); (M = -19.91, SD = 29.17); t(433) = -14.22, p = 0.000. The highest possible score was 195. Many teachers were reasonably confident in their knowledge prior to the course, with a mean score of 168 out of 195. However, they may have been over confident in some regards as they may not have been aware of the gaps in their knowledge. Full details are available in Appendix 8.
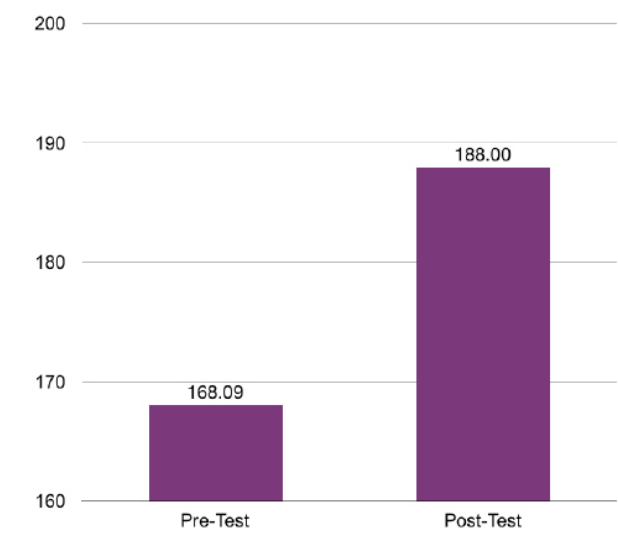

Figure 8. TSNA overall change schore

5.4 Effect sizes

Effect sizes for the two tests, CPK and TSNA, were calculated. Only those items with statistically significant differences were included in the effect size calculation. There were small or very small effect sizes for most components of the CPK. For the TSNA overall, there was a medium effect size, indicating teachers felt that they had improved in terms of strengths and needs. Full details are available in Appendix 9.

5.5 End-of-course survey (ECS) results

The teachers were overwhelmingly positive about the ELLN Digital course overall. They generally found the courseware clear and easy to navigate, and indicated that the LACs helped them learn. Full details are available in Appendix 10.

In terms of the individual items in the ECS, the mean teacher rating for each of the items asking about enjoyment and usefulness of the course overall (Items 1 to 14) was 4 or more out of 5, indicating a high level of satisfaction.

Items 15 to 21, which asked about the courseware, all received a mean rating of more than 4 out of 5, representing positive experiences of the courseware overall.

However, Item 22 also received a mean rating of more than 4 out of 5 (*"I could have learned the content just as easily from reading a textbook"*), indicating that the courseware was not seen to be any better than a textbook for many of the teachers. This is interesting, since qualitative data indicated that the videos in the courseware were useful for many of the teachers, and these could not have been accessed within a textbook. It is possible that respondents misunderstood this item as it was negatively worded. They may also not have reflected on the multimedia aspects of the courseware when answering this question.

For Item 23, the mean rating was 2.7 (*"The courseware was boring"*). This means that the courseware could possibly be modified to make it more engaging; 47.7% strongly disagreed or disagreed that it was boring.

Item 24 (*"The courseware helped me feel confident enough to participate in the LAC"*) received a mean rating of over 4, but Items 25 to 28 received mean ratings of between 3.75 and 4, indicating that some teachers were not able to complete all of the courseware each week in less than two hours (Item 25), were not able to do some of the courseware at home on their own computer (Item 26), often had to print out parts of the courseware so they could do it at home (Item 27), and only did the courseware at school in a timeslot allocated by the school (Item 28).

Item 29 (*"If I wanted to go back and review courseware content from previous weeks, I was able to do so"*) received a score of 3.98. Item 30 also had a mean rating of less than 4 out of 5 at 3.47 (*"I was able to skip parts of the courseware material if I already knew it"*). These responses indicate that some of the teachers were not able to use the courseware as a flexible, self-paced learning experience.

Items 31 to 37 about the LACs received a mean rating of more than 4 out of 5, representing a high level of satisfaction with the LACs. However, according to Item 38, there was a mean rating of 3.67 for the statement *"The LAC Facilitator did most of the talking during LACs,"* suggesting that there is a possibility that LAC Facilitators may need more training in leading discussion in the LACs rather than doing most of the talking themselves. Items 39 to 45 about the LACs received a mean rating of 4 out of 5 or more, indicating that teachers found the LACs useful and supportive. Item 46 (*"LACs were merely a repetition of the courseware"*) received a mean rating of 3.83, meaning that many teachers may have found the LACs a little repetitive of the courseware. It must be noted, however, that a degree of repetition was an intention of the course design. Item 47 (*"I had enough time to prepare for LACs"*) received a mean ranking of 3.88, indicating that teachers did not always feel they had adequate time to prepare for LACs. All the other items received a mean of 4 out of 5 or more, except for Item 50 (*"The length of each LAC session was too long"*), with a mean rating of 3.57, which indicates that many teachers found the sessions too long.

5.6 Qualitative findings: Case studies

This section describes the overall results from the six case study schools. The schools were selected based on size, in four of 81 provinces (from two regions) of the Philippines. Only two regions of the total 18 were selected due to the logistics of travelling around the country, which is composed of many islands. All schools are referred to by pseudonyms in this report. Please refer to Table 2 for details about the school size and location.

The six cases are not all described in this report because even though gain scores varied slightly between case study schools, there were no significant differences in scores between them in CPK and TSNA gains. As can be seen from the standard deviation scores, there was considerable variation of scores within schools. In addition to the six case study schools, an extra school is described as post-course scores were low. Details on scores from tests for each of the six schools are available in Appendix 11.

5.6.1 Themes across the six case study schools. Across all six cases, themes were identified. These are described with supporting evidence from the FGDs, interviews, and observations. The comments made by teachers in the six case study schools were overall very similar, indicating that in many ways, the perspectives and experiences of the teachers were similar regardless of the school. The findings from the qualitative data agree with the quantitative data. While there was a significant change in teacher scores pre- to post-test on the CPK and TSN assessments overall, there was no statistically significant difference in scores between the case schools, even between the urban and rural schools. The close alignment

between the quantitative and qualitative data indicates that although the participants were from different schools, regions, of different gender and ages, and with different levels of educational attainment, overall, their experiences during the ELLN Digital course were similar.

5.6.2 Changes in teachers' pedagogical and content knowledge of early literacy instruction. Analysis of qualitative data (interviews, FGDs, and observations of LACs) from case study schools indicated that all parties perceived valuable improvements in teachers' pedagogical and content knowledge, but with emphasis on the former. This does not mean that learning of content knowledge did not occur, but that the discussion of pedagogical knowledge and pedagogical content knowledge was more prominent in the FGDs.

The main aspects of pedagogical knowledge and pedagogical content knowledge that participants felt had improved were:

1. Knowledge about teaching strategies (explicit teaching strategies, strategies using concrete materials, literature-based strategies)
2. Knowledge about assessment techniques
3. Knowledge about differentiated instruction

An improved understanding of the importance of explicit teaching was a reported successful outcome of the ELLN Digital course, as stated by many of the teachers in the six case study schools, with a teacher at Northlake stating that: *"When we use explicit teaching or modelling, our students learn easier."* However, detailed information regarding when and how the teachers used explicit teaching and the actual strategies they used was not discussed in depth during any of the FGDs conducted. Classroom observations over a period would be required to accurately assess this kind of change.

A teacher from Southstar, in their second FGD, also stated that they had learned new strategies: *"I learned with ELLN, in our LAC sessions, methods and new strategies to employ to help the child to read."* Other teachers at Southstar commented that prior to the ELLN Digital course, they did not recognize nor understand the importance of storytelling, and consequently storytelling was often left out of their literacy teaching due to their focus on other parts of the curriculum. *"Because of the ELLN, personally, I realized the importance of storytelling, for it develops the kids' love of reading."* The teachers at this school noted a change in their students' attitude towards reading in the classroom, which is reflected in this comment: *"They ask me, 'Teacher what are we going to read today? Teacher?' They get really excited."*

Many teachers reported that because of the ELLN Digital course, they were moving away from the traditional or conventional teacher-centered teaching style to include more games, storytelling, and active student participation. The increased student participation, which one teacher from Central referred to

as 'learning by doing,' was reported to have had a positive impact on students in terms of their motivation, eagerness to learn, enjoyment, and overall participation. A recurring theme raised by many of the teachers was a conscious shift in perspective regarding thinking about their pupils' enjoyment of lessons and content. However, some of the teachers from Central commented that with this change, it *"can be hard at times to control the pupils."* One change in a teacher's attitude toward classroom noise was captured in their response during the first interview at Central when she stated: *"Let the noise be the hum of learning,"* with one teacher from Lakeside stating, *"No more chalk! More on talking, grouping, and sharing ideas."* During one FGD, a teacher from Westpoint suggested that the increased student participation during classes might even minimize pupil dropouts due to the increase in student enjoyment, motivation, and engagement at school.

"No more chalk! More on talking, grouping, and sharing ideas."

Pedagogical content knowledge of teaching reading also changed, with reports of teachers recognizing the importance and value of students using manipulatives and meaningful activities such as linking learning to storytelling using the 'big books.' One teacher provided the example of using clay to assist their pupils in learning letters.

Changes in teacher knowledge of early literacy instruction were reported mainly with respect to the teaching of writing and reading, with less emphasis on the teaching of oral language. It was noted that previously, the focus for teaching writing had been on the quality of the penmanship, not the process of writing in terms of the construction or expression of ideas. This was reflected in the comments made by the teachers at Westpoint, where one teacher stated that, previously, they had not *"put emphasis on the process of writing… I was amazed that we were being taught the process of writing, which is the most important part."* Another teacher from this school noted that in the past, they had categorized student penmanship into Emerging, Beginners, and Developing, and now could actually identify a student's writing ability. The course helped them recognize that: *"It is not only the writing skill alone, but the getting of ideas. We just realized this with this courseware."* She stated that because of the ELLN Digital course, they now taught their pupils how to write, and were learning how to assess different levels of student writing. A teacher from Southstar reported a similar sentiment when they reflected that, prior to their participation in the ELLN Digital course, they had only taught and assessed the students' quality of penmanship, and not the quality of the writing in terms

of children's expression of ideas or construction of sentences, grammar, or text type. This appears to be a major shift.

An increased understanding of how to teach comprehension strategies was also identified by one teacher as the most significant change because of the course. However, this teacher did not provide any specific information regarding which comprehension strategies they were using, or how they were teaching them to their students.

The ability of teachers to carry out more accurate assessment of their students' reading skills was a prominent theme raised in the FGDs, with teachers reporting that prior to the course, they had not been providing suitable activities to address the specific needs of their students due to a lack of knowledge of how to assess students and then group and differentiate instruction accordingly. Interestingly, the CPK test does not indicate that assessment knowledge increased overall. Rather, there was a decrease in scores. This decrease may have been due to limitations in the test, but it is possible that, since assessment is highly complex, the teachers needed even more instruction on this area in the course. It appears to have been a definite area of teacher need.

"I was amazed that we were being taught the process of writing, which is the most important part."

Better understanding and application of differentiated instruction was a change reported by many teachers from the six case study schools. The teachers from all schools reflected that, previously, they had taught to the whole class and had not considered or addressed differences in student abilities. Teachers at Northlake, for example, reported that they now recognized the importance of assessing student abilities and grouping students so that the tasks could be differentiated to match student needs. The teachers credited this change of pedagogy to the courseware of the ELLN Digital course that provided demonstrations, explanations, and suggestions on how to differentiate for their students. While some of the teachers acknowledged that differentiating for varying pupil abilities within the classroom can be time consuming due to the large class sizes and the creation of differentiated resources, they also recognized that the students enjoyed it when the activities or tasks were differentiated to match their abilities. It was also noted that classroom management during these differentiated tasks could be problematic and, again, large class sizes were suggested as a contributing factor to this.

Teachers at Westpoint stated that they were grouping students sometimes in groups of three to differentiate the learning activities. However, it was noted by one teacher at this school that the 'slow' learners were often hyperactive and needed more attention and that they were conscious that they were not always able to attend to the 'average' and the 'fast' learners. During the second interview, the teachers at Northlake commented that they had begun to group students into 'slow,' 'average,' and 'fast' learners, where it was also reported that the literacy levels of their students had increased because of the ELLN Digital course. These teachers also reflected that they now realized that they needed to know the different literacy levels of each child, with one teacher stating that they thought the greatest success of the ELLN Digital course was that they were *"able to learn how to divide the different abilities of the children. I'm referring to the differentiated instruction that is most applicable to my students."* A teacher from Northlake stated, during the first FGD, that: *"There are some changes in the kids. After we have addressed their needs, we are able to provide the right activities that would suit their individual differences."*

"After we have addressed their needs, we are able to provide the right activities that ... suit their individual differences."

One teacher from Westpoint reflected on differentiation during the second FGD interview by stating that the ELLN Digital course had helped them recognize that they needed to address individual student needs, as they had previously always taught to the whole class and did not differentiate. This view was also reflected in the following comment from a teacher at Westpoint during the same FGD interview: *"There is progress in their scores because the levelled activities are more suited now to their level."* There were many other statements from teachers about how they had acquired new knowledge. Only two questions on differentiation were in the CPK test, and in both these questions, teachers scored higher in the post-test. Differentiation appears to have been a definite area of teacher need, and from the data collected, teachers would benefit from being able to differentiate in a more sophisticated manner than grouping children into 'slow,' 'medium,' and 'fast' learners, which does not acknowledge that children may have different strengths and areas of need within the various elements of literacy and over time, necessitating ongoing fine-grained assessment and dynamic grouping.

It is apparent that the learning mentioned by participating teachers was in line with the intentions of the ELLN Digital course, although it is not possible to comment on the depth or quality of the learning. Further, the CPK assessment, although it indicated small but significant improvements overall, was a multiple-choice assessment that did not assess the depth or sophistication of learning. In terms of promoting student learning, it is important to note that it is not just the application of a range of recommended teaching strategies that improves teacher effectiveness; the frequency and quality of this also needs to be considered (e.g., Louden et al., 2008).

5.6.3 Changes in perspectives on early literacy instructional practices. Participants reported changes in their practice and knowledge, as described above. Changes in perspectives were often intertwined with these changes and were somewhat difficult to disentangle. However, perspectives are important because knowledge that does not align with a teacher's perspectives on how things should be done will often not be put into practice (Lim & Chai, 2008). Participating teachers indicated that through the ELLN Digital course, they recognized the importance of certain aspects of their new knowledge and practice. It appeared that, for many teachers, perspectives had changed with respect to their recognition of:

1. Importance of age-appropriate activities/strategies/materials
2. Importance of assessment
3. Importance of differentiation
4. Importance of literature-based instruction

The qualitative data indicated that teachers shifted their views on how literacy should be taught in K-3 classrooms, with participants saying that they were now more knowledgeable about using effective teaching strategies to improve their students' literacy levels, and that they were enthusiastic about the potential value of this new knowledge in improving their practice. Some teachers stated that they now recognized the value of teaching phonological awareness, with one teacher from Eastpark providing a specific example during the second FGD interview: *"You won't right away ask them to read 'this is a cat,' it should be sounds first."* This example is evidence of this teacher's understanding of the importance of teaching phonological awareness before teaching other pre-requisite reading skills such as blending and segmenting in the context of written words.

Teachers from Central reported that the ELLN Digital course improved their understanding of how to assess the reading abilities of their students and how to target their teaching to address the different needs and ability levels of their students. The assessment process and how this should inform their planning and teaching in literacy was a key theme raised by teachers as a positive outcome of their participation in the ELLN Digital course. It was clear that they now realized the fundamental importance of assessment in implementing targeted and differentiated teaching to help children learn. This recognition would comprise a good basis for further professional development in assessment and differentiation.

5.6.4 Changes in the teacher practices. Qualitative data indicated that teachers were motivated to try new pedagogical approaches in their classrooms. Indeed, the LAC activities required that they attempt to put their new learning into practice. This requirement appears to be a major strength of the course, although it is noted that there were often barriers to applying new learning. The changes in practices that teachers reported were closely related to the changes in pedagogical content, pedagogical knowledge, and changes in perspectives, as might be expected. The changes they are putting into practice or attempting to put into practice were:

1. Changes in literacy teaching strategies: a move away from didactic teaching
2. Changes in assessment strategies
3. Changes in differentiated teaching
4. Changes in classroom organization

The school principal at Central noted that teacher instruction was more interactive because of the ELLN Digital course, giving the example of teachers in the past focusing a lot on students copying *"from book to book without any explanation. But now, the teachers are very active in teaching."* The teachers were engaged and participated in the LAC sessions, as they identified that they were able to see the value in the course in terms of improving their knowledge, instructional practices, assessment, student participation and engagement, and increased teacher collaboration.

Examples of successful practical application of new learning (from the teachers' own perspectives) were assessing student abilities, grouping children according to their learning needs, and differentiating activities. It was evident from the participants' responses during the interviews that teachers from all the case study schools identified this as a major success and outcome of the ELLN Digital course.

During the second interview, the principal at Southstar noted that when they observed classes, the children were participating more and looked more attentive, which they attributed to the *"strategies that the teachers are now employing in their teaching."* During observations of Kindergarten classes, they also observed that teachers were applying the content from the courseware in their teaching, and that this had improved their teaching. Another important success credited to the ELLN Digital course by this principal was the improvement in the reading abilities of the students in their school. This principal suggested that the new strategies that the teachers were using to teach reading had made a noticeable improvement, as they had fewer students in the 'slow' ability reading category. This is a positive outcome of the course.

However, teachers reported that they were not always able to put the new learning into practice due to problems in resourcing. For example, sometimes they could not access the 'big books' needed for the literature-based activities, or they did not know how to confidently manage students in student-centered classrooms in which active learning and differentiated teaching with children in groups, and engaged in talking, was implemented.

5.6.5 The features of the ELLN Digital course and their effect on teacher learning. The ELLN Digital course has been described in detail in the Methodology section, in terms of its content and design. In this section, the impact of these features on the teachers is described. The positive and negative features of the courseware and LAC is summarized in Table 3.

Table 3: Summary of courseware and LAC features

Positive courseware features	Positive LAC features
• Relevant content • Logical sequence of content • Concepts clearly explained • Self-paced • Video demonstrations	• Safe venue for group reflection and clarification • Venue for peer support and collaboration • Closely linked to courseware • Helps teachers put knowledge into practice • Confident and collegial LAC Facilitator
Negative courseware features	**Negative LAC features**
• Too easy/repetitive for some teachers (note that a degree of repetition was built into the course to ensure learning) • Some teachers identified unrelatable video clips • Assignment (expense of printing the task from the course-ware and the time to complete) was identified as an issue by some teachers	• Sometimes duplicated courseware (note that it was the intention of the LAC to deepen/contextualize knowledge learned in courseware) • Sometimes the LAC Facilitators were not considered to be sufficiently knowledgeable (note that the facilitators were not intended to be authorities) • Some teachers thought that the LAC sessions were too long

Overall, participating teachers reported that their knowledge and teaching practices improved because of their participation in the ELLN Digital course. Participants at the six case study schools generally made favorable comments about the course overall and its features. They indicated that they found the courseware clear and logically sequenced, and that they valued the opportunities given in the LACs to discuss and clarify the courseware content.

The principal from Northlake liked the self-paced nature of the courseware, reporting that it was *"helpful and substantial in terms of helping the pupils,"* and that the teachers learned a lot. The school principal from Westpoint reported that participating teachers were 'refreshed' and gained knowledge about the 'best' strategies for their students from the ELLN Digital courseware and LAC sessions. The principal also noted the value of the collaboration that occurred during the LAC sessions, stating that teachers supported and encouraged each other and learned a lot.

"I liked the videos, and the explanations of the explicit teaching, and the differentiated learning."

The videos included in the courseware were often mentioned as a valuable component. Teachers commented that the discussions held during and after watching the videos allowed them to refine their understanding of the strategies, techniques, ideas, and approaches. This was even though some teachers thought the schools in which video recordings had been made were privileged socio-economically. A teacher from Westpoint stated: *"I liked the videos, and the explanations of the explicit teaching and the differentiated learning."* Another teacher from the same school stated that the step-by-step demonstrations in the videos were particularly useful, as they then tried to apply the same in their own classroom. A teacher from Southstar said that the courseware motivated them to try the different techniques shown on the videos in their own classroom.

The LAC sessions were consistently reported to be valuable, as the teachers reflected that they felt comfortable in these sessions to share their ideas, thoughts, and experiences with their colleagues as they had the opportunity to ask questions without the fear of being criticized. The teachers often compared the LAC sessions positively to other professional learning they have attended, where they either do not feel comfortable to speak and/or the opportunity is not available to speak to colleagues. Many teachers reported that they really enjoyed the collegial interaction, support, and personalization that the

LAC sessions provided, versus *"the traditional seminars where they just sit and watch,"* as stated by a teacher from Westpoint. Some teachers also commented that they are often embarrassed to ask a question during other professional learning seminars, yet during the LAC sessions they felt comfortable to contribute to the discussion as everyone was respectful and everyone participated. The teachers from all schools were confident in stating that the LAC sessions were more effective in terms of improving their knowledge and understanding than other professional learning formats they had previously experienced. A teacher from Northlake said: *"Compared to other professional learning, the LAC sessions were very useful and effective in improving their teaching skills in literacy."* In the cultural context concerned, where teachers show respect for others such as elders and superiors in the workplace, and thus may feel uncomfortable challenging or critiquing ideas presented to them, the LACs often allowed a safe space for discussion.

The teachers were generally appreciative of the LAC Facilitators. One LAC Facilitator who was acknowledged by the participants to be particularly effective was a facilitator from Lakeside. The facilitator was described by the observer as dynamic and resourceful with a good sense of humor, who put in 100% effort to ensure that the sessions were fun with a lot of active participation from the teachers. Both sessions observed of this LAC group were recorded to be one hour in duration with a lot of discussion, hands on activities, teacher demonstration, and support from the facilitator. The observer noted that the facilitator had used money of their own to prepare the resources for the LAC sessions, which the teachers appreciated. Interestingly, it was observed that at times the LAC Facilitator was not able to provide a clear or accurate definition of some of the terms. Although this did cause some confusion and argument during the second observation (as noted by the observer in their records), the teachers nevertheless appeared to respect the facilitator. The facilitator acknowledged at the beginning of this particular LAC session that they were not familiar with this specific content as they were a Kindergarten teacher, but they declared that they had studied the content well and encouraged the teachers to correct them or add information, if needed, during the session. This is an example of a LAC Facilitator not necessarily being more knowledgeable of the content than the rest of the group, yet being able to facilitate the LAC sessions effectively. This acceptance of the LAC Facilitator as a peer who did not know everything was not universal. In another school, a LAC Facilitator's inability to provide clarification was raised as an issue.

The observations of the LAC groups confirmed that the participants enjoyed the collaborative nature of the sessions, except for one group from Central, where it was noted during the first observation that the teachers were not engaging with the facilitator. It was recorded by the observer that the facilitator was new and that they lacked facilitating skills. Consequently, some of the teachers in the group questioned their ability to be the LAC

Facilitator. It was observed that they were shy and intimidated by the teachers during the first observation and that the LAC session was, "really silent and sometimes boring," as reported by the observer in anecdotal format. When the facilitator asked questions, the teachers would answer directly but when they asked for volunteers, the teachers would not respond. It was observed that the facilitator did most of the talking and that when one teacher gave an answer, the other teachers would agree with the answer given and not provide additional detail or further elaboration. To increase teacher participation during the observed LAC session, the facilitator asked the teachers to read the content/courseware in chorus. When the LAC Facilitator asked the teachers why they were not responsive during the session, they responded that they were only there at the command of their school principal. The teachers in this group also complained about the additional workload that was involved with the LAC sessions both during the LAC session and in their responses during the interviews. A contextual factor which needs to be considered in this case is that the teachers' personal computers were not working on this day, and they were required to look at a projector, which had small and blurry font on the screen. Unfortunately, a second observation was not conducted with this LAC group, therefore, information is not available about whether this interaction improved from an external viewpoint.

Overall, the teachers at the six case study schools were positive of the ELLN Digital course model, particularly the nature of the LAC sessions, where they felt comfortable to share their ideas, experiences, and resources, as well as practice modelling and implementation of the courseware with their colleagues. The courseware, in combination with the LAC sessions, was considered very effective in terms of improving the teachers' knowledge of different teaching strategies. However, a few teachers and the principal from Eastpark did report that some of the content was already known to them, and that it was simply a consolidation of prior knowledge or, in some cases, different terminology for familiar concepts. Many teachers commented that they liked the step-by-step demonstrations provided in the videos, especially teachers who were novices or with limited experience or confidence. A teacher from Northlake commented during the second interview that: *"The ELLN Digital course helped me a lot. From the courseware, we learned different techniques from those who are model teachers in the video presentations."*

When asked how the ELLN Digital course compared with other professional learning, during the first FGD, the teachers from all the participating schools were very complimentary. The teachers made comments about other professional learning that is often held in big seminars, where they said that they are ashamed to speak or ask questions in front of their peers in this context. A few comments were made regarding these large professional development seminars being boring and impersonal. All the teachers at the different schools reported that they liked the

"It was more personal. In traditional seminars, you just sit and watch."

ELLN Digital course and the LAC sessions because they found these interesting and they had the opportunity to collaborate and share with their colleagues in an informal context. Teachers from Lakeside said that they really liked the ELLN Digital model as they felt comfortable to participate in the LAC discussions, model different teaching strategies, ask questions, and share their thoughts and ideas. A teacher from Northlake identified a specific element of the LAC session that they found valuable: *"Compared to other professional learning, the LAC sessions were very useful and effective in improving their teaching skills in literacy."* Teachers from Central stated that the ELLN Digital course is the best professional learning they have had as they liked the practical activities such as the demonstrations on the videos and the opportunities to practice, ask questions, and share resources with their colleagues. One teacher commented that the ELLN Digital course provided more clarity than the other "big boring" seminars where they do not like to speak. Teachers at Lakeside commented that the LAC was more effective than other professional learning, while a teacher from Westpoint stated that they liked the ELLN Digital course because: "*It was more personal. In traditional seminars, you just sit and watch.*"

When interviewed, the school principals' opinions of the ELLN Digital course echoed that of the teachers, with the principal at Westpoint stating: *"The strength of the ELLN Digital professional learning program is that it meets the needs of the teachers… I think that this is a very big help to my teachers instead of conducting big seminars."* This principal felt that the interaction between colleagues during the LAC sessions was a big change in the school culture and professional learning, reflecting that in the past, teachers would only meet for a few minutes, if at all. When they did meet, it was not to discuss teaching.

The principal at Northlake liked the ELLN Digital course from the beginning, commenting during the first interview that: *"The strength of the ELLN Digital professional learning program is the way that the modules are paced. It is very clear, the step-by-step process. It is very easy to implement. Every time they have the LAC session, it is very easy for them to understand what they are doing and what they have to do."* This principal also noted that the teachers were applying what they learn at the LAC sessions in their classrooms every time they learn something new. During the second interview, the principal confirmed that they liked this model, where the LAC Facilitator was able to learn the content and then pass this onto the teachers during the LAC sessions. During the same interview, this principal stated that prior to

the ELLN Digital course, many of the teachers already knew the strategies in the course, but they were not familiar with the terminology, such as differentiated instruction. The principal also reflected that the teachers had become *"more innovative and motivated to teach the new way."* The principal suggested that the ELLN Digital course should be implemented in other schools because the teachers were able to learn at their own pace, which they identified as a strength of this professional learning model.

The principal at Central listed many positive outcomes, which they attributed to the ELLN Digital course during the second interview, including the following: improvements in teacher and student technology skills; stronger relationships between teachers and their students; improvements in teacher knowledge and application of instructional processes; more active teaching with more pupil activity and less teacher talk; improvements in teacher lesson preparation; more teacher focus on motivating students; increased use of visual aids during teaching; and flexibility in classroom seating and more facilitation of group discussion in the classroom. The principal also noted the importance of the collaborative nature of the LAC sessions for the participating teachers at the school.

All the principals agreed that the ELLN Digital course should be implemented in other schools, as they saw the value in the self-paced courseware and the collaborative nature of the LAC sessions. However, they all noted that additional resources such as 'big books' would be beneficial and much appreciated for effective future implementation.

5.6.6 Enabling/facilitative conditions

- Support and encouragement from school leadership
- Peer collegiality
- Good LAC Facilitator (with adequate knowledge and good facilitation skills)
- Availability of resources (LAC venue, technology, classroom resources, and snacks)

Support from the school leadership was cited as a supporting factor for the successful implementation of the course. The principal from Westpoint stated that they encouraged the teachers to attend the LAC sessions, and ensured that the computer laboratory was always open and that they were welcome to print and photocopy in their office. They stated: *"I really did everything I can to support them."* During the second interview, a teacher from Southstar reported that the principal was very supportive, telling them what to apply and then asking what they have learned.

Teachers reported that they were motivated by the teamwork and collegiality they experienced within their LACs and from the support they received from school leaders. The teachers, principals, and LAC Facilitators frequently identified that their favorite aspect of the ELLN Digital course was the sharing

of ideas and open communication during the LAC sessions. In some of the LAC sessions, the LAC Facilitators were also providing demonstrations and modelling for the teachers of what they had learned from the courseware, and this was always appreciated and valued by the teachers, who were able to see the content of the courseware being modelled by a colleague. This component of the ELLN Digital course was reported to be unique from other professional development events that the teachers had attended, which were reported to be transmission-style in presentation format. A teacher at Northlake stated that the school culture had changed *"as a result of the ELLN Digital professional learning"* and that the teachers became *"more innovative and motivated to teach."* The teachers at Central also reflected that they were becoming more patient with their students because of watching the teachers in the demonstration videos in the courseware.

Overall, the LAC Facilitators were reported to be helpful and supportive with the implementation and facilitation of the courseware. However, it was raised that further training and support be provided to the LAC Facilitators prior to implementation so that they have time to consolidate and refine their own understanding of the courseware prior to facilitating the LAC sessions. It was also suggested many times that more time is needed to be scheduled between accessing the courseware and the facilitation of the LAC sessions, to allow the facilitators themselves to become confident with the contents.

Some of the LAC Facilitators went to great lengths to ensure the success of their LAC sessions. One LAC Facilitator noted that they accessed the internet to do additional research related to the topic in the courseware module to either clarify the content prior to the LAC session or find another supporting resource to use in the LAC session. A LAC Facilitator from Eastpark stated that they sought additional research on the topic on the internet to present the content in a way that teachers could understand. Similarly, a facilitator from Southstar stated that they studied things that they did not know from the module, and then asked their colleagues questions for clarification. It is possible that LAC Facilitators learned more from the course than others, but they were not identified in the post-test data.

A LAC Facilitator from Eastpark reported during the second interview that they were very satisfied with the role and that teachers in their group were "*willing to listen and willing to give their time and put in effort. They submit their assignments on time, they do the activities, and they share their ideas with regard to the teaching process."* One LAC Facilitator at Central initially had some difficulties with the teachers in the LAC group because they were approaching retirement age and therefore not interested in using computers or the CD courseware. However, they were pleased that these teachers quickly changed their mind. They reported that the teachers were enjoying using the computers by the time of the first interview. Another LAC Facilitator at this school enjoyed sharing their knowledge and

understanding of different terminology used in the courseware with the teachers in their group; for example, providing examples to clarify the word 'charade' where it has a different meaning to some of the older teachers than how it was used in the context of the courseware. A LAC Facilitator from Lakeside reported that they felt that they had been successful in their role as the teachers were participating well during the LAC sessions.

When teachers had access to relevant resources, such as technology and teaching resources, they were able to access the new knowledge and put it into practice. However, resourcing was an issue for many teachers. This was more often raised as a negative issue by the participants and is discussed in more detail in the next section.

5.6.7 Challenges identified. Qualitative data analysis revealed several challenges associated with the implementation of the ELLN Digital course. The most prominent of these can be divided into issues relating to resourcing, training and organization. They are described in more depth below.

- Many teachers reported that required classroom materials were not adequately provided – resourcing
- Some teachers had difficulty accessing courseware at home or at school, leading to limited flexibility in terms of time/place – resourcing
- Some LAC groups were too large – resourcing/organization
- Some variability in quality of LAC Facilitator practices/knowledge – training
- Some LACs were didactic and did not closely follow the LAC guidelines – training
- Some teachers had insufficient time to learn content (modules not ready on time) – thus, learning was not always self-paced – organization/resourcing

"We don't have materials. That's really a challenge."

Insufficient resourcing was mentioned by many participants as a hindrance, with a shortage of essential teaching materials such as 'big books.' The 'big books' were popular with teachers. However, it was suggested that they needed additional copies to access rather than the one copy they said had been provided. The same was suggested regarding the CD courseware, as the teachers suggested it would have been beneficial to have more copies of the CDs for them to view at their own time and pace and to have the opportunity to revisit some of the courseware content for further consolidation or clarification. This issue could be ameliorated for some teachers with an online version of the course. Smartphone ownership is rapidly increasing in the Philippines and a mobile version of the course, or selected components of the course, could be considered.

The expense of creating resources was also an issue raised by some of the participants who were teaching at schools with limited budgets, as this resulted in some of the teachers funding resources themselves. Teachers at Westpoint stated there was not enough in the budget to always cover the supply of bond paper. This issue was also raised regarding the assignments, where teachers reported they were only given one copy and then had to reproduce at their own expense. Teachers at Southstar identified this costly reproduction of the assignment task as problematic.

Teachers often commented that the time commitment required to participate in the ELLN Digital course was an issue in terms of: attending the LAC sessions, preparing the assignments in between the scheduled LAC sessions, preparing the new resources to implement the content from the LAC session, and preparing the lessons to include the content learnt at the LAC session. This view was also expressed by the principal from Lakeside.

Some teachers mentioned that the video footage in the courseware did not reflect classrooms like their own. For example, a teacher from Eastpark focused on the amount of resources visibly available to the teacher in the video, commenting that: *"It seems like she has a lot of materials. The beauty of having materials for the teacher is that it's already ready. While we have to either come to work early or go home late from school in order to craft the materials. Sometimes we are able to make the materials, but just one."* In the same FGD, another teacher echoed this view, saying: *"We don't have the instructional materials that are already made. We don't have materials. That's really a challenge."*

It was suggested by many of the teachers that the videos should be filmed in public schools so they could relate more to the content and see the application of strategies in larger classes. A teacher from Southstar stated that if the videos were filmed in public schools, they could really see if the strategies and techniques would be effective in their own context. One teacher stated that because of the video's context, the teachers in her LAC sessions felt that the courseware was not relevant, and they were less inclined to implement the modelled strategies and techniques or seriously consider them as options for their own teaching.

"We cannot relate to the students in the videos. They have more resources than we have in our schools. The children are very clean, they are well groomed, the rooms, they all seem healthy, the seating, big classrooms, the facilities. Compared to our children, sometimes we have pupils that do not eat their breakfast. Then how can they focus on their learning? The teachers are also well spoken, really sweet, even if they get angry, they are still sweet. We are not angry, but we sound like we are angry."

The principals, LAC Facilitators, and teachers repeatedly requested additional resources, in particular more 'big books,' as they cited the lack of resources as a limitation on their current and future implementation of the ELLN Digital courseware. The principal at Lakeside reiterated the issue with resourcing, commenting: *"The program is already perfect, but maybe more materials, especially the big books."* The principals at Westpoint, Central, Northlake, and Southstar made the same request. The principal at Central also asked for more CDs, books, computers, and resources so they can improve their students' learning.

The principals at Eastpark and Northlake also noted that the teachers asked if all the materials could be provided in printed format so that teachers are not required to print them at home at their own expense. They noted that teachers had not anticipated the amount of materials that needed to be printed at home, including the assignments. The principal at Northlake emphasized the limited public school budget that they have and noted that it does not extend to purchasing extra materials and doing extra printing.

In some cases, there were also difficulties regarding communication between the school principals, Learning Facilitators, and LAC Facilitators, with some teachers reporting that their principal either knew very little about the study and what was required from the teachers. This was reported at Eastpark, where teachers stated that their principal had limited knowledge of the program due to not being able to attend the orientation program. Therefore, they were unsure of their role in the ELLN Digital course throughout the implementation. A similar situation was raised in the first LAC group interview at Central, where teachers stated that they had been unsure what ELLN Digital was, what their involvement would be, or how it would be beneficial for them.

It was often reported that the LAC sessions did not occur as originally planned due to one or a combination of the following factors: the courseware not arriving or being available on time; a suitable room or venue not being available; or scheduling problems with other meetings held at the same allocated time. At Northlake, Eastpark, and Southstar, it was noted that there were issues regarding the courseware not being sent or not being available on time. This was raised as an issue in the first FGD by the teachers, who felt that this influenced the LAC Facilitator's ability to become familiar with the content prior to the LAC sessions. *"The lesson should be given ahead of time so the facilitator can study more about it."* A similar view was also evident in a comment by a teacher at Southstar, who said: *"The facilitator should be an expert on the topic that is being discussed."*

Technical issues were raised regarding the opening of the courseware, and in some cases this was reported to have an impact on the timing or scheduling of the LAC sessions, and the preparation time for the LAC Facilitator. This was raised as an

issue many times by teachers at Eastpark during the first and second FGD interviews. It was suggested that the courseware be made available in booklet format so that teachers could access it at convenient times, such as when travelling in the jeepney, as suggested by a teacher at Southstar. The principal at Eastpark suggested that one way to avoid some of the technical difficulties experienced as well as the delay in the delivery of the modules would be to provide the entire program in another format.

The teachers commented that to access the courseware, they needed to have access to a laptop, which was challenging or simply not possible in many cases. The fact that the teachers were also watching the videos on one laptop during the LAC sessions at Westpoint was also an issue that was raised by some of the teachers. In some of the schools, such as Central, teachers reported that the monitor was not clear or readable, and that this had an impact on their engagement during the LAC sessions. The technical difficulties experienced in some schools were also reported to have a negative impact on teacher motivation, as noted by the principal at Eastpark during the second interview.

"We cannot relate to the students in the videos."

The time of day scheduled for the LAC sessions was a prominent issue raised by the teachers and the principal at Southstar, particularly when they were scheduled for after school, as well as the fact that these sessions often ran over the allocated time, in some cases going for two hours. In this case, teachers often complained that they were hungry and needed snacks to sustain their energy and attention. However, when the LAC sessions were organized during the day, teachers at Central stated that this was an issue because they worried about their students not being taught by their regular teacher during these periods.

Teachers at Westpoint, Southstar, and Lakeside reflected that the one hour scheduled at their school for the LAC sessions was often not long enough to go through the courseware and have time for discussion. The teachers at Central proposed some suggestions for when the LAC sessions could be run, including having longer LAC sessions during the day while their class was supervised, or during the school holidays, as suggested by teachers at both Central and Southstar. It seems that the blow-out in time needed for the LAC sessions was often due to teachers not being able to access the courseware prior to the sessions, thus having to view the CD during LAC sessions.

At Westpoint, participating teachers reported that they often did not have a room available to conduct the LAC session. During the second interview with the principal, they confirmed

this: *"Honestly, we don't have a vacant room for all their LAC sessions. This is a big school and there are a lot of LAC sessions. That is why the teachers need to find a place on their own, but if the computer laboratory is vacant, they can use it."* This school had five ELLN Digital LAC groups to organize, which was difficult logistically.

Participants often referred to the need for 'snacks' to keep them alert during the LAC sessions, which sometimes went for two hours after school. School principals stated that they had to fund these snacks from school funds, which they found difficult. It is noted that funds for snacks in the Philippines may be quite substantial.

> *"Honestly, we don't have a vacant room for all their LAC sessions. This is a big school and there are a lot of LAC sessions. That is why the teachers need to find a place on their own."*

Some teachers said that it was difficult to do the necessary study and attend LACs on top of their normal teaching duties, as they had many other demands on their time. It was suggested that more time be allocated for the LAC sessions, as the teachers reported that there were times when all of the content for the module was not covered due to the time it took to watch the video and have a discussion during the session. Clearly, in this case the course was not being implemented as intended, as the videos were not being viewed prior to the LAC. Indeed, one teacher noted that it would have been beneficial to have the opportunity to watch the relevant video/s prior to attending each LAC session, so that the time during the session could be maximized by discussing and analyzing the content rather than spending nearly half of the session watching the video.

Teachers at Westpoint found it difficult to watch the videos during the LAC sessions on a laptop (rather than on a projector screen) that was not suitable considering there were 14 teachers in each LAC group session at this school. Again, there is an indication here that the LAC was not being used as intended.

Although it was identified that the videos were a valuable component of the ELLN Digital model, the teachers consistently observed that the videos seemed to be filmed in private schools where the class numbers were significantly smaller than classes

by the teachers in this study. This was seen as problematic by the teachers interviewed, who often found it difficult to relate to the teachers in the video and its content, citing the differences between the behavior of children in private versus public schools, and the differences in parental involvement, resources, and even the cheery disposition of the teacher featured in the videos. The teachers from Lakeside were particularly vocal in expressing their concern that the videos were filmed in a private school and that Teacher Rica (in the video) had seemingly limitless access to resources with smaller classes and better-behaved students.

Overall, it can summarized that the teachers, principals, and LAC Facilitators recognized the relevance of the ELLN Digital courseware, and they appreciated the opportunities that the LAC sessions provided to ask questions, share experiences, and reflect on their own learning with their colleagues. It was reported repeatedly that one of the strengths and most enjoyable aspects of the ELLN Digital course was the increase in teacher collaboration. The ELLN Digital model was seen as a more effective and enjoyable mode of professional development than traditional professional development attended by the teachers in the past. The qualitative data also revealed that teachers felt there were changes in their instruction, knowledge, and perspectives on teaching early literacy, specifically in relation to: the purpose of assessment and assessment strategies and practices, assessment to inform differentiation, differentiation, the teaching of writing, using literature purposefully and effectively, more active student participation and enjoyment, and the use of concrete materials. While it is important to note that the terms differentiation and explicit teaching were often raised as positive changes by teachers in their teaching because of their participation in the ELLN Digital course, it was not evident in their responses exactly how they were teaching explicitly or what they were teaching. The same can be reported for differentiation. Given the fact that there was a small but significant change in the results between the CPK pre-test (M = 27.72, SD = 6.01) and post-test (M = 28.84, SD = 8.24), it can be reported that teacher knowledge improved slightly.

5.7 Mountain View School

When the mean gain scores for all schools were calculated, it became evident that teachers in several schools had very low or negative mean gain scores in some or all aspects of the CPK. It was therefore decided to obtain ethics permission to interview participants at one of these schools, Mountain View School. Mountain View was a medium-sized urban school in which teachers all recorded no gains or negative gains between the pre- and post-course CPK assessment. The semi-structured interview protocols used at the other six case study schools were used to find out if the school had experienced additional challenges that might account for the lower gain scores.

There were two LACs at Mountain View, one of which was run in the morning and one in the afternoon, held once a week. One of the LACs had 35 teachers and the other had 33 teachers. Both LACs were led by two LAC Facilitators each, who taught in a team. Since the LAC groups were far larger than the maximum recommended in the guidelines, this could be a partial explanation for low post-course scores. It was also not the intention to have more than one facilitator per LAC.

Despite the large LAC sizes, teachers indicated that they had found the LACs useful in that they were a venue for reviewing concepts that had been learned at an earlier time, and for learning from other LAC members. Tellingly, one teacher said, *"I learned from the lectures of our LACF [LAC Facilitator] and guests,"* implying that the LACs were operating to some extent as lectures. This was the case in many other schools. Having said this, teachers reported that in the LACs, they were able to ask questions pertaining to information in the courseware that they did not understand. The LAC Facilitators or another member of the group would help with the answer. One teacher said: *"We asked questions when we didn't understand, and the LAC Facilitator or a member of the LAC would help with the answer."* Teachers reported that they had found the LAC Facilitators knowledgeable and helpful. In addition, sometimes the district supervisor or school principal would help LAC members. LACs were also used to discuss the implementation of new knowledge in the classrooms, and teachers reported that they were able to learn *'what works'* in the classroom from each other. In terms of challenging their thinking, teachers at Mountain View said that the LACs helped them validate their existing knowledge. One teacher said: *"We discovered that there were a lot of things we were already doing that we didn't know the term for."* Teachers reported that they had also learned new strategies to try in their classrooms, and that their students were more engaged as a result. Compared to other modes of professional learning they had experienced, they responded that they found the LACs useful because it was clear what was expected of them, and they were able to ask questions about anything in the courseware that they needed to clarify.

In terms of support from the school and district, teachers made positive comments. However, they did have to adjust their school schedules to accommodate the LAC sessions. Sometimes, other commitments would conflict with program implementation. When asked, none of the teachers reported they had experienced any problems with the course, although they did note that there had been some technical problems when taking the online pre- and post-course CPK assessment. This could partially explain the test results. It was also suggested by some that the post-course assessment was scheduled too long after they had learned about the concepts covered in the early weeks of the course, indicating that they had not retained the learning. The school's post-test coincided with a seminar. Some teachers took the post-test while attending a seminar, which may have affected their results.

The participants reported that the course was mostly undertaken as intended at Mountain View, which included a program orientation at the school. This was conducted by the Learning Facilitator, the school principal, district supervisor, and schools division superintendent. However, as in some of the other case study schools, there were difficulties in accessing the courseware throughout the course. At Mountain View, the CD-based courseware was kept by the technology coordinator. Teachers took screenshots of pages from the courseware using cell phones. These screenshots were printed and distributed to the teachers as printed handouts. The courseware seemed to be accessed mainly during the LAC sessions, with teachers viewing the videos together and viewing PowerPoints presented by the LAC Facilitators. Thus, there was a low degree of self-paced learning and the LACs were not devoted to discussion and reflections, as intended.

There also seemed to be some confusion about how to access the 'big books.' Some teachers reported that they had not been able to access the five storybooks provided, although one participant recalled that the five books were kept by the Kindergarten teachers, and were available for borrowing/shared use. The books had not been distributed among the teachers of different grade levels, as instructed. The provision of more sets of books was suggested by the teachers as an improvement of the ELLN Digital course.

The teachers at Mountain View also suggested that more activities/strategies for teaching within the course would be an improvement to the content. To improve the ELLN Digital course so that it would work better for them, teachers suggested that they would also like printed manuals. This was a view that echoed teachers in the other six case study schools.

To summarize, it is not entirely clear why the teachers at this school did not achieve gains in their learning. In fact, many end-test results were considerably lower than pre-test scores. However, the LAC groups were much larger than recommended, with one being composed of 35 teachers and the other of 33 teachers. Each LAC had two facilitators rather than one. This may have inhibited the development of a LAC identity and the level of trust and sharing necessary for a well-functioning community of practice. In addition, it is evident that LACs were running more like traditional professional development sessions than LACs, although the LACs were not observed by a researcher as this school was not part of the original sample. As in other schools, participants said they would have liked more materials such as 'big books' so they could implement their learning in the classroom. Finally, teachers said that they had difficulties with the technology, both regarding accessing the courseware to study independently in a self-paced fashion, and in terms of doing the online assessment.

Overall, the teachers at this school experienced many challenges similar to teachers in the other case study schools, but it is possible they experienced more of them more often, or with more intensity. What was very different was the size of the LACs and having two LAC Facilitators for each of the LACs instead of one. This indicates that there was a significant misunderstanding about how the course should be implemented, which may explain the low gains.

The key themes identified from the qualitative data are summarized in Appendix 12.

5.8 Summary of findings

To conclude this section of the report, findings from the CPK, TSNA, ECS, and qualitative data from FGDs and interview data are synthesized and briefly outlined.

5.8.1. CPK. Overall, teachers' CPK scores improved significantly, with considerable variations between schools and within schools. Young teachers under 25 and those with only a college degree did not learn as much, according to the CPK results, as older and more qualified teachers. The mean score of teachers in rural areas increased more than that of teachers in urban areas. An item-by-item analysis of the CPK shows that assessment was an area in which mean scores regressed, indicating that there may be issues to address with the course or test. There were several other items in the CPK test in which mean scores regressed.

5.8.2. TSNA. TSNA scores were similar to CPK scores in that there was a significant increase in mean scores overall, with variations between schools and within schools. The mean score of teachers in rural schools increased more than that of teachers in urban areas. Teachers in all age groups, educational levels, teacher ranking, and years of teaching experience saw increases in their scores from pre- to post-test.

5.8.3. ECS. According to the ECS, satisfaction with the course and its elements was highly positive. Teachers found the courseware and the LACs useful and clear. However, they indicated that they were not always able to access the courseware at their own convenience. They also indicated that LAC Facilitators did most of the talking, which was not an intention of the course. Younger teachers in the 20-25 age group were more positive about the course than were older teachers.

5.8.4. Qualitative. Qualitative data analysis showed that the teachers and school principals overall had found the ELLN Digital course relevant and clear. For the most part, teachers found the courseware informative and relevant, although some had access problems, meaning they could not engage in flexible and self-paced learning. The LACs were well-received, and participating teachers were positive about the collaborative aspects of the LACs and the opportunities they received to discuss, clarify, and plan to apply their new learning. However, they were not always able to apply their new learning due to shortages of classroom materials such as 'big books.' Many also indicated that the LACs were too long. In some schools, LAC groups were too large.

An evaluation of the ELLN Digital course elements, using the key elements suggested by Van Veen, Zwart, and Meirink (2012), may be found in Appendix 13.

Although an attempt has been made in this study to assess the impact or outcomes of a blended learning model composed of courseware and a community of practice (CoP), in this case the LAC, it must be stated that there is much within a CoP that may not be measurable and may not even be on the agenda of, or recognized as important knowledge by, the people outside the CoP.

As Wenger-Traynor (2014) noted:

> Engagement in lived practice is too complex and dynamic to be a mere implementation of prescription or the simple application of research. There is local knowing in each practice, whether or not this local knowing is recognized as knowledge in the broader landscape. (p. 17).

It may also be the case that a CoP can diverge from its planned purpose, as the group builds its own identity and sense of direction in thinking about and improving practice. In this sense, the intentions of course designers and the intentions of the LAC may begin to bifurcate. This did not seem to be the case with the ELLN Digital LACs, because they had only been going a few weeks at the time of the study. In short, there may have been advantages and benefits of the LACs that were not captured in this research. In terms of blending the courseware with the LACs, the intention of the course design was not always realized because many teachers did not do the preparatory work due to limited access to the courseware. If the teachers had been able to work through the courseware in a flexible and self-paced manner as intended, it is possible that post-course assessment scores would have been higher.

VI. IMPLICATIONS AND RECOMMENDATIONS

In terms of the ELLN Digital course, the following recommendations are offered:

Courseware

* The courseware content could be better differentiated for a variety of teacher needs. Teachers in their first year of teaching or with a college degree made smaller gains than average in the post-course CPK test, indicating that the course may not have been geared to their needs. Some highly qualified teachers indicated that the course was not challenging enough, and their learning gains were below average, although their average baseline scores on the CPK test was not significantly different to the overall average score. The courseware pre-quiz could ascertain teacher strengths, needs, and knowledge, and direct to levelled lessons. This adaptive learning would extend more accomplished teachers.

* Some of the course content was not dealt with in great depth, which may have led to teacher confusion. It is recommended that supplementary learning resources be made available to assist teachers who require greater depth of knowledge/clarification of course content.

* Some teachers could not identify with the scenarios in the videos due to different types of schools. Video demonstrations from classrooms from a range of urban/rural/small schools should be featured, and from a range of cultural and socio-economic backgrounds.

* Some teachers could not access the courseware readily; it is recommended that they all have access to a CD and a computer, or access to the course via a mobile device.

LAC activities

* Some of the LAC Facilitators did most of the talking, or presented a lecture. Thus, the LAC guidelines were not implemented as intended. LAC Facilitators may need more training in encouraging active learning and open discussion.

* Some of the LAC groups were too large, with one LAC group reported as having 50 members. School leaders should be made aware that a LAC of more than 15 members will not work as intended.

* Some of the teachers were unprepared for the LACs because they were unable to access resources/courseware on time. They could not access the course online, and schools only had one CD to share. It is recommended that each teacher have access to a CD of their own or access to the course via a mobile device.

* Some teachers felt that the LAC Facilitators did not have enough expertise to clarify the content and answer questions. It is not the role of the LAC Facilitator to know all the answers, so LAC members may need a redesigned orientation to help them understand the intended function of the LAC and the roles of the members and the facilitator.

Resourcing

Physical resources

* Teachers indicated they would like to have their own copy of the courseware CD to access it at their own convenience. The course was not self-paced for many teachers as groups of teachers were watching the CD together, sometimes on a large blurry screen.

* Some of the materials could be delivered via mobile devices (the whole course online or text attachments) or other methods for teachers who do not have computers at home.

* Computers in schools need to be in working order and available to teachers when they are free to engage in self-paced learning.

* Teachers indicated that they needed more copies of recommended classroom materials such as 'big books.'

* Teachers felt they were time-pressured, and that it took longer to complete the courseware than indicated. It is recommended that the course duration be longer to give teachers more time to engage with the content and to put it into practice.

* Teachers needed to print a considerable amount of material at their own expense at home. It is recommended that print-outs should not be required in LACs unless necessary, or that the school facilities be used for printing.

Human resources

- Well trained technical support personnel should be made available for teachers accessing courseware in schools.

- Teachers may need additional training in classroom management/behavior management to support the implementation of less didactic teaching approaches.

- School principals need to be knowledgeable about the course, the way it runs, the content, and the requirements of the teachers and LAC Facilitators.

Assignments and assessment

- Although the courseware has some self-check activities, assessment of teacher learning and meaningful formative feedback within the course may not have been sufficient to allow teachers to monitor their own progress (assessment for learning).

- The pre- and post-assessment CPK may not be sufficient to give a complete picture of teacher learning (assessment of learning).

VII. CONCLUSION

The findings suggest that, overall, the ELLN Digital course was beneficial to teachers in many ways, and that the blended model of self-paced courseware and communities of practice (CoP) in the form of LACs was effective. There were undoubtedly some resourcing issues that hindered the effectiveness of the ELLN Digital TPD pilot. For example, not all teachers could access the courseware in a timely and suitable way so they could engage in self-paced learning as intended, and some found the content unchallenging and unrelatable. Teachers also indicated that they needed the classroom resources that were suggested in the course to put their new learning into practice and be able to reflect on its effectiveness in subsequent LACs. Many teachers found the time commitment difficult on top of their normal teaching load, although they indicated that they were willing to participate in further TPD of this kind.

There is some evidence that the LACs were not always implemented as intended. They were sometimes run largely in 'presentation style' by the LAC Facilitator, with less discussion, reflection, and problem solving by the teachers than intended. Although communities of practice were developed in the LACs, their maximum potential may not have been reached because there was still a degree of information transmission style learning (lectures).

A further issue identified by the researchers was that the assessment of teacher learning could be strengthened. More formative assessments such as quizzes and activities with corrective feedback could be available in the courseware, and clearer criteria against which teachers can self-assess and peer-assess could be provided.

This study was not without limitations. One of the more important limitations was the limited data available to gauge teacher learning. The pre- and post-course CPK and TSNA instruments, although tested for validity by the development team, were only able to assess learning in a relatively superficial way, as they were multiple choice tools that may not have tapped into deeper, more sophisticated learning. The self-reports of teacher learning (TSNA) also have well-documented limitations. The weekly assignments were not assessed, other than being subject to discussion in the LACs. Because of this limited assessment data, it was not possible to investigate many cases where teacher CPK

scores regressed or jumped a great deal. In terms of qualitative data, it was not possible to carry out as many observations of LACs as would have been desirable to detect changes in the relationships, roles, attitudes, and knowledge of the LAC members.

There is sufficient evidence to suggest that the ELLN Digital pilot was, overall, fairly successful. However, to maximize the effectiveness of the course, the LACs need to be implemented as intended, and teachers need to be provided with the materials they need, including easy access to the courseware, to fully engage in the course.

Once the course is implemented as intended, it would be desirable for teacher practice to be observed in the classroom to identify changes. This would supplement the self-reported changes to practice that have been identified through this study. Classroom observation was unfortunately beyond the scope and budget of this study. It was also beyond the scope of this study to assess the impact of the ELLN Digital course on student learning, although participating teachers and principals reported improvements in student engagement in learning. A further study to ascertain impact on student learning, once the course has been fine-tuned, would be advantageous.

"There is sufficient evidence to suggest that the ELLN Digital pilot was, overall, fairly successful. However, to maximize the effectiveness of the course, the LACs need to be implemented as intended, and teachers need to be provided with the materials they need, including easy access to the courseware, to fully engage in the course."

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APPENDICES

Appendix 1. ELLN Digital CPK pre-test

ELLN DIGITAL PRE-TEST

ELLN DIGITAL CONTENT PEDAGOGICAL KNOWLEDGE TEST

<u>*Example question*</u>

The full test cannot be reproduced here.

*14 **Which behavior shows a child's print awareness? The child**

_____.

○ A. spells correctly

THE UNIVERSITY OF WESTERN AUSTRALIA

ELLN DIGITAL EVALUATION

<u>End of Course Survey</u>

This survey relates only to the <u>LITERACY</u> modules of the course.

Informed consent: I acknowledge that I have read the Information Letter and I consent to participate in this research (please tick). I understand that participation is voluntary. □

Teacher ID number: _____
Name of School: _____
LAC ID: _____
Number of years teaching experience: _____
Type of teaching qualification: _____

Please tick one of the boxes for each statement.

SD means 'strongly disagree'; D means 'disagree'; N means 'neutral'; A means 'agree' and SA means 'strongly agree'. There are no correct answers. Just give your honest opinion.

The course overall	SD	D	N	A	SA
1. The course objectives were clear.					
2. The course content was relevant to my needs as a teacher.					
3. Overall, I enjoyed the course.					
4. My views about how to teach literacy have changed as a result of this course.					
5. The course challenged my thinking.					
6. I have changed my teaching practices as a result of taking this course.					
7. I believe that the changes in my classroom practices (as a result of this course) have led to learning improvements for the children in my class.					
8. I would recommend the course to other teachers.					
9. The assessment requirements were clearly stated.					
10. The assessments helped me learn.					
11. The course was well organised.					
12. I was always able to access all the resources and materials I needed to complete the course.					

	SD	D	N	A	SA
13. I was always able to access all the resources and materials I needed to put my new learning into practice.					
14. I feel that my time was well spent.					
The courseware (or the computer-based component)	**SD**	**D**	**N**	**A**	**SA**
15. Overall, the courseware explained the lessons/topics clearly.					
16. I learned a lot from the courseware lessons.					
17. The courseware was easy to navigate (I could find my way through the screens and sections easily).					
18. The courseware had an attractive 'look and feel'.					
19. I was able to work through the courseware at my own pace.					
20. I was able to access a suitable computer to do the courseware when I needed to.					
21. The videos in the courseware were useful.					
22. I could have learned the content just as easily from reading a textbook.					
23. The courseware was boring.					
24. The courseware helped me feel confident enough to participate in the LAC.					
25. I was generally able to complete the weekly courseware in less than two hours.					
26. I did some of the courseware at home on my own computer.					
27. I often printed out parts of the courseware so that I could do it at home.					
28. I only did the courseware lessons at school during a timeslot allocated by the school.					
29. If I wanted to go back and review courseware content from previous weeks, I was able to do so.					
30. I was able to skip some of the courseware material if I already knew it.					
The LAC Sessions	**SD**	**D**	**N**	**A**	**SA**
31. I learned a lot from my colleagues in the LAC sessions.					
32. The LAC sessions helped me understand the courseware content.					
33. Each LAC session was closely linked to the courseware lesson.					
34. I participated actively in the LAC sessions (for example, by sharing my assignment and insights, asking questions, and giving feedback on what colleagues shared.)					
35. I interacted with several different people during each LAC session.					
36. I felt that everyone's contribution was valued during the LAC sessions.					

37. The LAC Facilitator encouraged LAC members to interact with each other.					
38. The LAC Facilitator did most of the talking during the LACs.					
39. The LAC helped me put theory into practice.					
40. The LAC encouraged me to change my classroom practice.					
41. I was able to discuss teaching issues in depth during the LAC.					
42. I helped my peers in the LAC.					
43. Sometimes the discussions we had in the LAC session were continued by LAC members outside the LAC (for example, in the staff room, in classrooms, etc.)					
44. I would like to continue to be part of a LAC for my other professional learning needs.					
45. I came to trust my peers in the LAC – I was not afraid to share my ideas and concerns.					
46. The LACs were merely a repetition of the courseware.					
47. I had enough time to prepare adequately for each LAC.					
48. The LAC Facilitator effectively managed the discussion during the LACs.					
49. I received useful feedback on my assignments during the LACs.					
50. The length of each LAC session was too long.					
51. The LAC helped me develop confidence as a professional.					
The outcomes of the course at the school level	SD	D	N	A	SA
52. The school leaders were supportive of the ELLN-Digital course.					
53. The course has changed the way teachers at the school interact with each other as professionals.					
54. The school culture has changed as a result of the course.					

Thank you for doing this course evaluation survey

Appendix 3. School principal interview questions

Interview with School Principal

1) Tell me how you think the ELLN Digital professional learning is going / has gone at your school.
2) From your perspective, *what are the strengths* of the ELLN Digital professional learning program?
3) As a school leader, *what have you had to do* to maximise the success of the ELLN Digital professional learning program at your school?
4) What *challenges* have you and the teachers experienced as a result of the ELLN Digital professional learning program?
5) In terms of *resources*, including human resources, have there been any difficulties in running the program? (Ask this question if it has not been covered in the response to question 4).
6) What value do you think the *LACS* add to the teachers' learning through the courseware?
7) What are your views on the content of the *courseware*?
8) What improvements in the teachers' *practices* have you noticed or been told about as a result of the ELLN Digital professional learning, if any?
9) What kinds of changes in the school *culture* have you noticed or been told about as a result of the ELLN Digital professional learning, if any?
10) What kinds of changes in *children's learning* have you observed or been told about as a result of the ELLN Digital professional learning, if any?
11) Do you think that this professional learning should be rolled out to more schools? Why do you think so?
12) What *advice* would you give to the ELLN Digital team to improve the program?

Thank you very much for participating in this interview. Your responses will be very useful to the evaluation.

ELLN-Digital Focus Group Questions (FGD1)

You should spend approximately FIVE minutes on each question.

1)   What are the strengths and successes of your LAC?
2)   How does the LAC help you and your colleagues learn about teaching literacy?
3)   How does the LAC help you and your colleagues get the most from the courseware?
4)   How does the LAC help you and your colleagues implement their new knowledge in the classroom?
5)   How has the LAC challenged the thinking of you and your colleagues about teaching literacy?
6)   How does the LAC compare with other professional learning you have had?
7)   How do you think the LAC has contributed towards changes in the way things are done at the school?
8)   Tell me about the outcomes that have resulted from the LAC.
9)   What changes or improvements might you recommend to improve the functioning of the LAC?
10)   Tell me about any contextual factors, such as the school administration, that support or hinder the LAC?
11)   Is there anything else you would like to tell me about the benefits or limitations of your LAC?

Technology-Supported Early Literacy Teacher Professional Development Program for K to 3 Teachers (ELLN Digital)

Course Guide

Welcome to ELLN Digital, a blended course on early literacy and numeracy instruction for Kindergarten to Grade 3 (K to 3) teachers in the Philippines. The course is a teacher professional development (TPD) initiative in support of the Department of Education's Early Language, Literacy, and Numeracy (ELLN) program under the Every Child a Reader Program (ECARP).

The course has two main components:
1. self-study of an interactive multimedia courseware; and
2. collaborative learning in school-based learning action cells (LACs).

These course components are described in the relevant sections of this course guide.

1.0 Course Objectives

After completing the course, you should be able to:
1. Explain the principles of early language and literacy development and instruction;
2. Discuss the components of balanced literacy instruction; and
3. Plan and implement balanced literacy instruction for K to 3 learners.

Achieving these course objectives should enable you to develop in young (K to 3) learners the ability to read and write and, equally important, an abiding interest in reading and writing.

2.0 Course Modules and Lessons

ELLN Digital consists of 15 lessons grouped into five modules that are based on DepEd's 10-day live-in training course on early language, literacy, and numeracy instruction for K to 3 teachers.

The modules and lessons are as follows:

Module 1 - Foundations of Early Language and Literacy Development and Instruction
    Lesson 1 - The K-3 Learner in the Context of K-12: Who Are We Teaching?
    Lesson 2 - The Domains of Literacy: What Do We Teach?
    Lesson 3 - Early Literacy Instruction: How Do We Teach?

Module 2 - Literature-Based Instruction
    Lesson 1: Children's Literature in the K-3 Classroom
    Lesson 2: Developing in the Learner a Love for Story
    Lesson 3: Developing Comprehension

Module 3 - Developing Skills through Explicit Instruction Lesson
    Lesson 1: Teaching Language
    Lesson 2: Teaching Phonics
    Lesson 3: Teaching Writing
    Lesson 4: Teaching the Content Areas

Module 4 - Assessing Reading Performance
    Lesson 1: Informal Assessment
    Lesson 2: Planning for Specialized Instruction

Module 5 - Early Numeracy Instruction
    Lesson 1: Concept Development in Math
    Lesson 2: How to Effectively Teach Math
    Lesson 3: Math Assessment

3.0 Course Materials

The modules and lessons listed above are presented in the form of a CD-ROM-based interactive multimedia courseware.

Each lesson in the courseware has the following features:
- a structured discussion of the lesson topic (i.e. the key concepts, principles, and teaching approaches and strategies);
- video and audio demonstrations and examples;
- exercises to develop mastery of the key concepts;
- handouts, templates, and worksheets; and
- activities and assignments for skills practice and application of the principles and strategies taught.

The courseware is designed for self-study. That is, you can go through each lesson on your own, without a trainer or instructor to assist you. Each lesson is self-contained and can be completed in 1-2 hours of study time. You can study a lesson in one sitting, or in several short sessions over the week (studying the lesson one topic at a time). You can also go through the lesson or parts of the lesson more than once, or as often as necessary for you to master the lesson.

Some of the lessons in the courseware will require you to use a storybook. A set of four storybooks (one for Kindergarten, Grade 1, Grade 2, and Grade 3) has been given to your school principal, along with the courseware, for your use in connection with this course.

Course Activities and Schedule

Assignments

You are expected to complete an assignment at the end of each lesson in the courseware. The assignment is an activity where you will apply, in your own context, the key concepts and pedagogical principles and/or strategies discussed in the lesson. Section 5 of this course guide provides details about the assignment for each lesson.

Collaborative learning in LACs

While you can study the lessons in the courseware and complete the assignments on your own, you have an opportunity to engage in collaborative learning with your colleagues who are also enrolled in the ELLN Digital course. This collaborative learning shall take place through ELLN Learning Action Cells (LACs) that you and your colleagues will constitute at the start of the course.

Your ELLN Digital LAC should meet once each week for an hour and 30-45 minutes, following the schedule agreed upon by all LAC members and the LAC Facilitator (LacF, pronounced as *Lac-F*) during the Getting Organized meeting at the start of the course.

During each LAC session, you will:
a) Share your assignments with each other and discuss what you have learned;
b) Reflect on the ideas discussed and insights shared and how you can apply them in your classroom; and
c) Formulate personal and group action plans based on the discussion, for implementation after the LAC session.

At the end of each LAC session, you will:
a) Accomplish an assignment self-assessment form;
b) Assess the assignment of a colleague using an assignment peer assessment form; and
c) Accomplish the teacher engagement report (see Annex 1 of this course guide).

You are expected to implement your personal and group action plans after the LAC session, and be ready to share insights gained at the next LAC session.

Guide Table 1 (*next page*) describes the components of each LAC session.

Assessment of learning and program monitoring and evaluation

To measure the effectiveness of the course as a means of developing teacher knowledge of and skills in early literacy and numeracy instruction, you will be asked to do the following:

Before the course begins and at the end of the course:
-   take a test focusing on early literacy and numeracy instruction content and pedagogical knowledge (this is called the CPK Test)
-   complete a self-assessment of your strengths and needs in relation to the content covered by the course (this is called the TSNA)

1. During the course:
-   participate in guided self- and peer assessment of your assignments
-   provide feedback on each LAC session through a teacher engagement report

2. After the course:
-   participate in course evaluation activities, including a post-course survey and an FGD and/or an interview

These assessment and evaluation activities are intended to collect information that will guide you, your school head, and the course facilitators to better direct and support your professional development in early literacy instruction. The results will not affect your teaching performance rating.

Guide Table 1: Components of the LAC session

Component	Time Allotment	What happens
Getting started	5 minutes	1. The LACF will lead a quick review of the topic discussed and action steps agreed upon in the previous LAC session. 2. The LACF will introduce the topic for the current LAC session.
Sharing and discussion of assignments (in small groups)	25-30 minutes	1. In pairs or triads, LAC members will share their assignment outputs. The LACF will pose guide questions for the small group discussion. 2. Each pair or triad will select one assignment to share during the big group/plenary discussion. NOTE: If the LAC group is small (i.e. with five members or less), you can proceed immediately to the big group or plenary discussion where all LAC members can share their assignment outputs.
Big group / Plenary discussion	45-50 minutes	1. Small group representatives will take turns to briefly present the selected assignment based on the guide questions. (NOTE: If there are more than three small groups, the LACF can select 2-3 groups to share their selected assignment. The LACF should make sure that the rest will get a chance to share or present in later sessions.) 2. After the presentation of selected assignments, the LACF will invite LAC members to share their insights on the lesson and sharing of assignments, including insights on how to apply the knowledge gained in their classroom. 3. Working by grade level or in pairs, LAC members will come up with resolutions or action points based on what they learned from the lesson (for example, they can resolve to integrate what they learned in their lesson plans, modify activity sheets, or plan a lesson together).
Looking forward to the next session	5 minutes	The LACF will introduce the next lesson and clarify assignments.
Accomplish forms	10-15 minutes	The LAC members will accomplish the Teacher Engagement Report and submit the completed forms to the LACF. The LACF should accomplish the LAC Session Report.
Total Time	90-105 minutes	

Schedule of course activities

The schedule of course activities in Table 2 below is intended to serve as a guide for you to successfully complete the course. As shown, there should be one LAC session per week. You should agree on the day and time (and the venue) for your weekly LAC sessions with other LAC members and your LAC Facilitator during the Getting Organized session in Week 1.

Guide Table 2: Schedule of ELLN Digital LAC Sessions

Week No.	Inclusive Dates	ELLN Digital Module and Lesson focus
	until 3-5 November 2016	ELLN Digital pre-test for participating teachers
		Distribution of ELLN Digital course package to participating schools and teachers
1	7-11 November 2016	LAC Session 1: Getting Organized
2	14-18 November 2016	LAC Session 2: Module 1 Lesson 1
3	21-25 November 2016	LAC Session 3: Module 1 Lesson 2
4	28 November - 2 December 2016	LAC Session 4: Module 1 Lesson 3
5	5-9 December 2016	LAC Session 5: Module 2 Lesson 1
6	2-6 January 2017	LAC Session 6: Module 2 Lesson 2
7	9-13 January 2017	LAC Session 7: Module 2 Lesson 3
8	16-20 January 2017	LAC Session 8: Module 3 Lesson 1
9	23-27 January 2017	LAC Session 9: Module 3 Lesson 2
10	30 January- 3 February 2017	LAC Session 10: Module 3 Lesson 3
11	6-10 February 2017	LAC Session 11: Module 3 Lesson 4
12	13-17 February 2017	LAC Session 12: Module 4 Lesson 1
13	20-24 February 2017	LAC Session 13: Module 4 Lesson 2
14	27 February - 3 March 2017	LAC Session 14: Module 5 Lesson 1
15	6-10 March 2017	LAC Session 15: Module 5 Lesson 2
16	13-17 March 2017	LAC Session 16: Module 5 Lesson 3
17	20-24 March 2017	ELLN Digital post-test

Assignment Guide

The assignments for Module 1 Lessons 1-3 and Module 2 Lessons 1-3 are reproduced below (from the courseware).

Note once again that you must **study the courseware lesson before doing the assignment**, and that you must **accomplish each assignment before the LAC session for each lesson**.

As mentioned, at the end of the LAC session, you will complete an assignment self-assessment form, as well as do a peer assessment of each other's assignments. The assignment self- and peer assessment form will be distributed just before or during the LAC session. It will be a simple form where you will be asked to rate particular aspects of your assignment and reflect on what you can improve on or revise.

Assignment 1 (for Module 1 Lesson 1)

1. Download and study the checklist of developmental behaviors for the grade level that you teach
2. Observe and describe the developmental behaviors of one of your students using the checklist and answer the following questions:
   a) Which behaviors does your student exhibit?
   b) Which of your student's behaviors do you think shows the greatest evidence of being literate?
3. Discuss your observations with your colleagues during your first LAC session.

NOTE: You may observe more than one student in your class and apply the checklist to describe the development behaviors that you observe in each student.

Assignment 2 (for Module 1 Lesson 2)

Watch the demonstration video (*embedded in assignment page on the courseware*) and observe the activities that the teacher and students are doing.

And then answer the following questions:
a) What activities did the teacher have with the students?
b) Which of the literacy domains discussed were targeted in each activity?
c) Does one activity address only one domain at a time? Is it necessary to have one activity for each domain?

Assignment 3 (for Module 1 Lesson 3)

Recall a class session that you taught recently OR take turns with a colleague in observing each other's class. Based on your recollection of your class session or your observation of your colleague's class, answer the questions below by ticking Yes or No.

If your answer to a question is yes, write a specific example from the class session you chose to recall or observe for this activity. If your answer to a question is no, write a specific example that you can implement in your next class.

1. Do you give your students opportunities to talk to each other?
2. Do you give your students opportunities for self-talk?
3. Do you give your students opportunities to practice or apply literacy skills?
4. Do you use play as a tool for learning?
5. Do you plan what to teach first and organize what to teach?
6. Do you apply explicit instruction?

Assignment 4 (for Module 2 Lesson 1)

1. Read the story indicated in the list below for the grade level that you are teaching. (*Note: Your school has been given one copy of each of these storybooks.*)

   Kindergarten: *Si Pilong Patago-Tago*
   Grade 1: *Ang Kamatis Ni Peles*
   Grade 2: *Tuko: The Tenor Wannabe*
   Grade 3: *Tight Times*

2. Observe and describe the developmental behaviors of one of your students using the checklist and answer the following questions:
   a) Which behaviors does your student exhibit?
   b) Which of your student's behaviors do you think shows the greatest evidence of being literate?

3. Discuss your observations with your colleagues during your first LAC session.

Assignment 5 (for Module 2 Lesson 2)

In this assignment you will do a read aloud or shared reading session with your class. You can do this individually or with colleagues. Follow the steps below.

A. Preparing for the read aloud or shared reading session (NOTE: You can do steps 1 and 2 and even step 3 with colleagues who are teaching the same level.)

1. Re-read the story you chose for Activity 2 and Activity 3.

2. Plan the pre-reading session for the purpose of preparing your students for the story. That is, identify the difficult words and concepts and plan how you will unlock them with your students. Formulate your motivation question and motive question.

Practice reading the story aloud. Apply what we have discussed with regard to enlivening the story and plan what questions to pose to monitor comprehension.

B.   Doing the read aloud or shared reading session

3.   Implement in your class the pre-reading activity you prepared in your class.
4.   Do the read aloud or shared reading session with your class.

(OPTIONAL) Ask a colleague who is also studying this module to observe your read aloud session and give you feedback based on what you have learned in this lesson. If you worked with a group in preparing for the read aloud or shared aloud session, then you can agree to be each other's observer/s. If you worked on steps 1-3 by yourself, you can still pair up with a colleague who is studying this module (he/she does need not be teaching the same grade level) and observe and give feedback on each other's sessions.

C.   Reflecting on your read aloud or shared reading session

5.   Reflect on your experience using the following questions as a guide:
     a)   What do you think worked well in your read aloud or shared reading session? Why did it work well?

b)   What did you find challenging or difficult about the activity? Why?
c)   What would you do differently if you were to do this activity again? Why?

6.   Share your observations and reflections at your next LAC session.

Assignment 6 (for Module 2 Lesson 3)

For the story you selected in Activity 2, plan a GPU discussion by formulating a set of literal, inferential, critical, application or integrative, and creative questions about the story.

On the GPU template (*which can be downloaded from the courseware*), write your discussion questions in logical sequence, write the possible answers to each question, and identify the type of question. Don't forget to base your discussion plan on the expressive and instructional objectives that you have set out to achieve.

Annex 1. Teacher Engagement Report

General Directions: Fill in one copy of this form immediately after each LAC session.

Name of Teacher:	Grade Level Taught:
School:	Division/District
Date of LAC Session:	ELLN Digital Module No. _____ Lesson No. _____

Part A

Please indicate the extent to which you agree with each of the following statements by ticking the appropriate box. (SA = Strongly agree; A = Agree; N = Neutral; D = Disagree; SD = Strongly Disagree)

	SD	D	N	A	SA	Comments / Remarks (For example, if you disagree or strongly disagree, please indicate why.
The Courseware						
1. The courseware discussed the lesson/topic clearly.						
2. The courseware lesson was relevant to my needs as a teacher.						
3. I learned a lot from the courseware lesson.						
The LAC Session						
4. I learned a lot from my colleagues in this LAC session.						
5. The LAC session helped me understand the courseware content.						
6. My perspective on the topic/s covered has changed as a result of the LAC session.						
7. I participated actively in the LAC session by sharing my assignment and insights, asking questions, and giving feedback on what colleagues shared						
8. I interacted with different people during the LAC session.						
Action Plan						
9. I feel motivated to apply in my classroom what I have learned in this lesson.						
10. I intend to apply what I have learned from the lesson in my classroom.						

Part B

Please provide the information requested.

1. I need further clarification and/or resources on the following topics:

2. I encountered the following problems or challenges:

3. Other comments/suggestions:

Appendix 6. CPK results

A total of 434 participants were included in the analysis. Missing data were imputed using expectation maximization imputation strategy. Please see notes under each figure for teacher demographics for each analysis.

Demographics with two groups (e.g., gender, sampling group) were analyzed using independent sample t-test while demographics with more than two groups (e.g. age, educational attainment, etc.) were analyzed using one-way ANOVA.

CPK change score based on sampling group: urban/rural

CPK change score based on gender
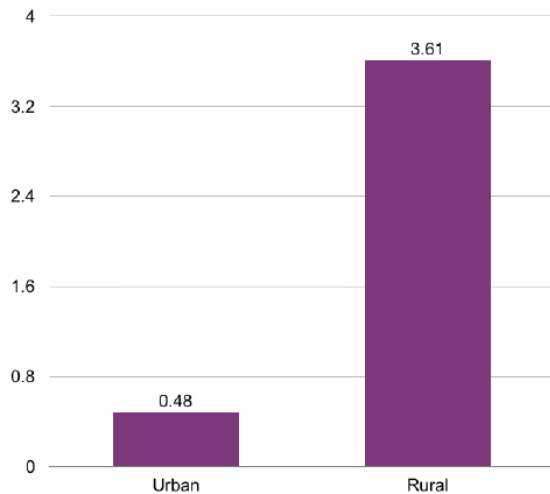
Note: Urban (n=346); Rural (n=88)

Results: Participants in the urban and the rural areas improved. However, participants from the rural areas (M = 3.61, SD = 6.62) improved significantly more than the participants from the urban areas (M = 0.48, SD = 8.01); t(158.31) = -3.79, p = 0.001

Baseline scores:
- Rural (M = 27.67)
- Urban (M = 27.74)

* There was no significant difference in baseline scores.
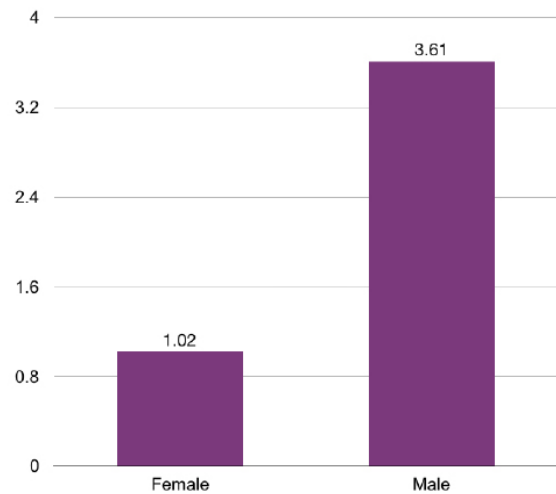
Note: Female (n=422); Male (n=10)

Results: Both female and male participants' scores improved. However, despite the high mean score of male participants (M = 4.80, SD = 5.18) compared to female participants (M = 1.02, SD = 7.89), there was no significant difference between genders; t(430)= -1.51, p = 0.133

Baseline scores:
- Female (M = 27.75)
- Male (M = 27.80)

* There was no significant difference in baseline scores.

CPK change score based on age
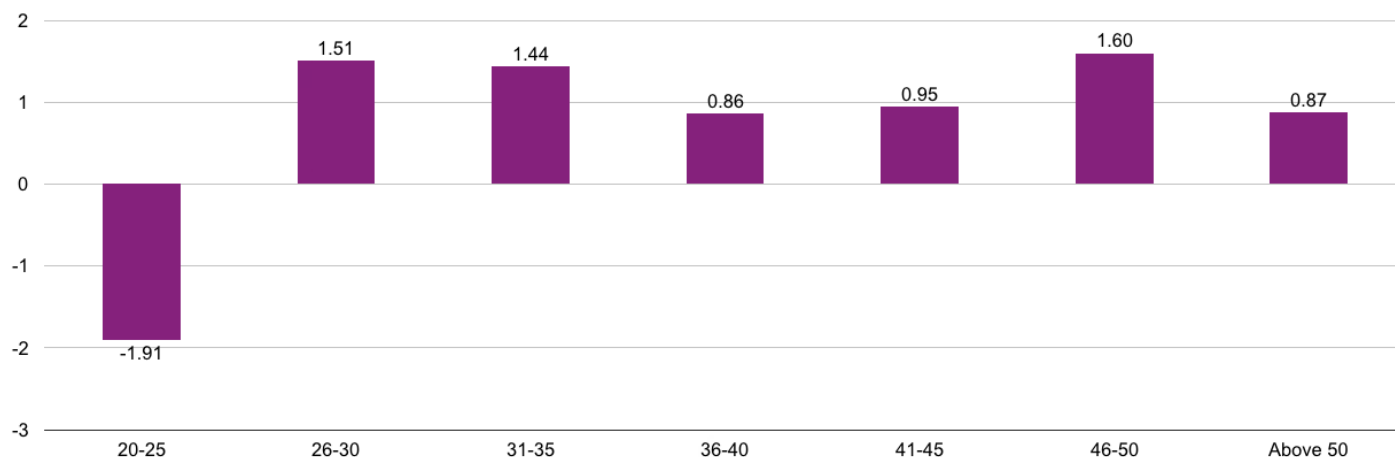
Note: 20-25(n=21); 26-30(n=52); 31-35(n=70); 36-40 (n=85); 41-45 (n=63); 46-50(n=64); Above 50 (n=77)

Results: There were no significant differences between the change scores among age groups (F = 6, 425) = 0.205, *p* = 0.975. However, participants under the age group of 20-25 had lower scores after the training.

20-25 (M = -1.91, SD = 7.99) (BS: M = 29.33)
26-30 (M = 1.51, SD = 8.53) (BS: M = 29.28)
31-35 (M = 1.44, SD = 6.88) (BS: M = 29.09)
36-40 (M = 0.86, SD = 9.09) (BS: M = 27.99)
41-45 (M = 0.95, SD = 8.12) (BS: M = 27.83)

46-50 (M = 1.59, SD = 7.21) (BS: M = 26.50)
Above 50 (M = 0.87, SD = 7.24) (BS: M = 25.78)

* No significant difference among baseline scores.

CPK change score based on highest educational level attainment:
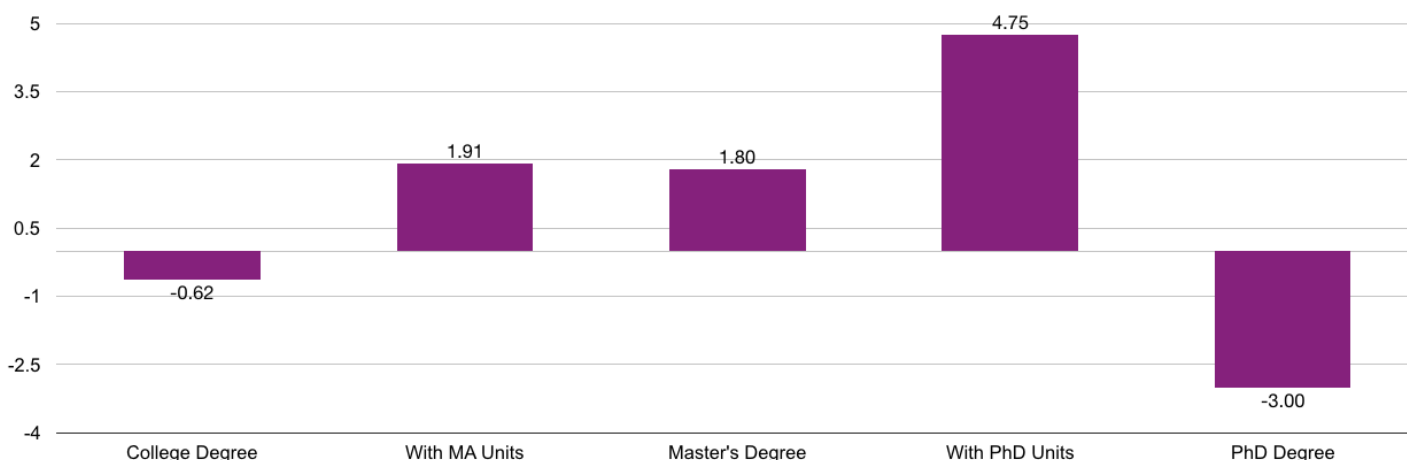
Note: College Degree (n=140), With MA units (n=223), With Master's degree (n=59), With PhD units (n=8), With PhD Degree (n=2)

Results: There was a significant difference among the change scores among groups based on their highest educational level/ attainment (F=4, 427) =3.01, p=.018. Participants with a college degree and PhD degree had lower scores after the training. Note that there were only two teachers with PhD, however.

College Degree (M = -0.6029, SD = 7.84) (BS: M = 27.18)
With MA Units (M = 1.91, SD = 7.86) (BS: M = 27.95)
Master's Degree (M = 1.80, SD = 7.64) (BS: M = 27.56)
With PhD Units (M = 4.75, SD = 5.87) (BS: M = 33.25)
PhD Degree (M = -3.00, SD = 1.41) (BS: M = 29.50)

* A negative sign indicates that they regressed. A positive sign indicates that they improved.

* There was no significant difference among baseline scores.

CPK change score based on teacher ranking
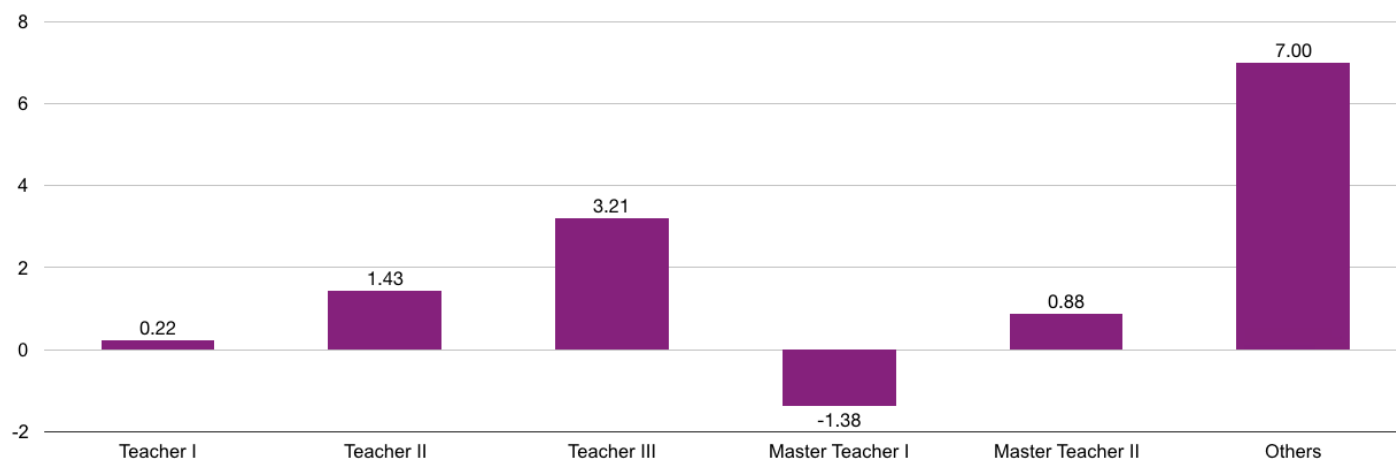
Note: Teachers in the Philippines are assigned rankings, based on their experience, qualifications, leadership potential or leadership achievement, and performance. Rankings are: Teacher I, Teacher II, Teacher III, Master Teacher I and Master Teacher II. In the results shown here, there was a small group of teachers who had nominated 'other' as their ranking. These teachers were mainly Special Education teachers, teachers whose ranking came from the provincial school board and teachers who were not ranked, possibly because they had only recently been hired.

Teacher I (n=257), Teacher II (n=44), Teacher III (n=106), Master Teacher I (n=13), Master Teacher II (n=8), Others (n=4)

Results: There was a significant difference among the change of scores between groups based on teacher ranking (F = 5, 426) = 2.96, p = 0.012. However, participants with a ranking of Master Teacher I scored lower in the post-test.

Teacher I (M = 0.22, SD = 7.85) (BS: M = 27.85)
Teacher II (M = 1.43, SD = 9.86)(BS: M = 27.18)
Teacher III (M = 3.21, SD = 6.78) (BS: M = 27.08)
Master Teacher I (M = -1.38, SD = 6.73) (BS: M = 31.31)
Master Teacher II (M = 0.88, SD = 7.22) (BS: M = 32.00)

Others (M = 7.00, SD = 4.16) (BS: M = 25.25)

* Teachers 1, II, and III had significantly lower baseline scores than Master Teachers I and II.

CPK change score based on teaching experience (number of years teaching)
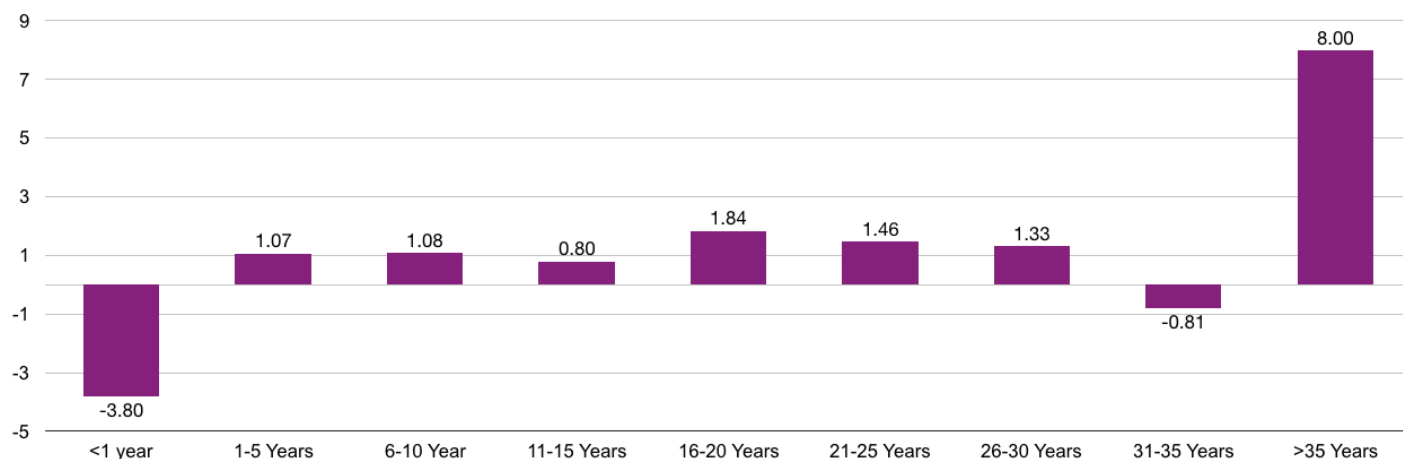
Note: Less than one year (n=5), 1-5 years (n=103), 6-10 years (n=106), 11-15 years (n=61), 16-20 years (n=56), 21-25 years (n=46), 26-30 years (n=37), 31-35 years (n=16), more than 35 years (n=2)

Results: There was no significant difference in the change of scores between groups based on their number of years of teaching experience (F = 8, 423) = 0.639, *p* = 0.745. However, participants with a ranking of less than a year scored lower in the post-test. There were only 5 teachers in this category, however. Teachers with over 35 years of experience seemed to gain a lot from the course, but there were only two teachers in this category.

Less than a year (M = -3.80, SD=10.64) (BS: M=28.40)
1-5 Years (M=1.07, SD=8.40) (BS: M=28.28)
6-10 Years (M=1.08, SD=8.39) (BS: M=27.99)
11-15 Years (M= -.80, SD=6.83) (BS: M=29.46)
16-20 Years (M= 1.84, SD=8.09) (BS: M=26.61)
21-25 Years (M= 1.46, SD=7.56) (BS: M=27.63)
26-30 Years (M= 1.33, SD=6.28) (BS: M=25.75)
31-35 Years (M= -.81, SD=7.47) (BS: M= 25.63)
More than 35 Years (M= 8, SD= 5.66) (BS: M=22.50)

* Teachers with (1-5 Years), (6-10 Years), and (11-15 Years) of teaching experiences had higher baseline scores than teachers with (26-30) years of experience. In addition, teachers who had (11-15 Years) of experience also had a higher baseline score than teachers who had (16-20 Years) and (31-35 Years) of experience.

Appendix 7. CPK item by item analysis

CPK (literacy component) is composed of 60 items. These items are categorized into three dimensions: 1) Foundational knowledge (7 items); 2) Content/pedagogical knowledge (38 items); and 3) Approaches (15 items).

This report provides an item-by-item analysis to determine the changes of the scores if it improved or retrogressed in the post-test. Item results are presented per dimension to also give a view of which dimensions had improved or retrogressed the most. Total scores per item and percentage were computed by getting the sum of correct responses over the total number of participants.

Only 420 participants who completed both pre- and post-test, and provided informed consent are included in the item by item analysis.

FOUNDATIONAL KNOWLEDGE

(Dimensions: K-3 Curriculum, Learning, and Assessment)

K-3 Curriculum: Item #1 under this dimension had percentage reduction of correct responses while Item 2 and 3 improved from pre-test to post-test
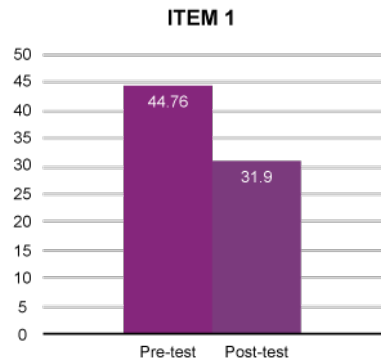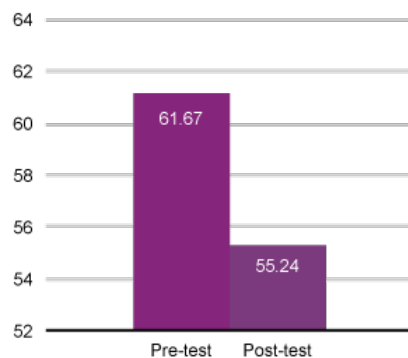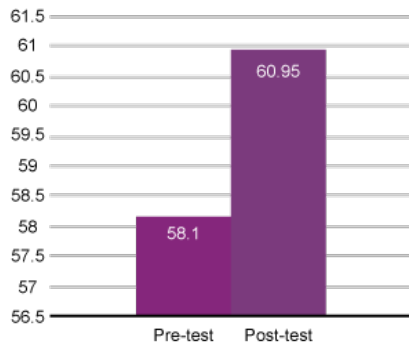

Item: The question, on home languages, cannot be reproduced in this report.

Result: There was a percentage reduction in the number of correct responses for item number 1 from pre-test to post-test.
Pre-test: 188 out of 420 (44.76%) participants got the correct answer.
Post-test: 134 out of 420 (31.90%) participants got the correct answer.
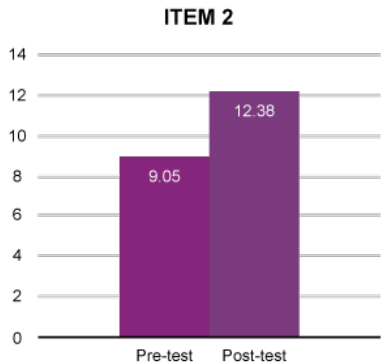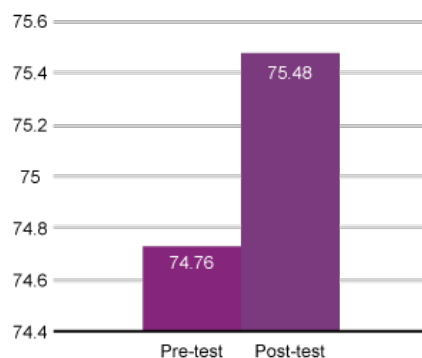

Item: The question, on the use of mother tongue languages, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 2 from pre-test to post-test.
Pre-test: 38 out of 420 (9.05%) participants got the correct answer.
Post-test: 52 out of 420 (12.38%) participants got the correct answer.
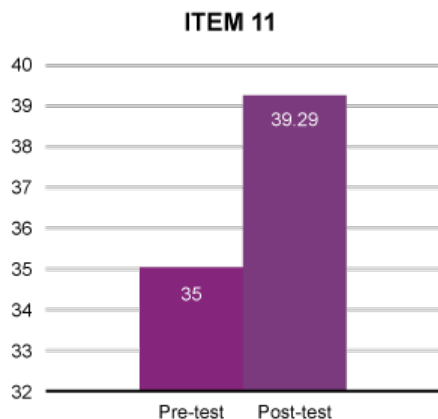
ITEM 3

Item: The question, on domains of literacy, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 3 from pre-test to post-test.
Pre-test: 63 out of 420 (15%) participants got the correct answer.
Post-test: 88 out of 420 (20.95%) participants got the correct answer.

Learning: The item (#4) under this dimension had percentage improvement from pre-test to post-test.
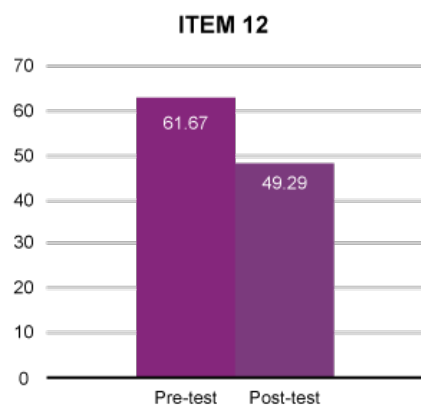

ITEM 4
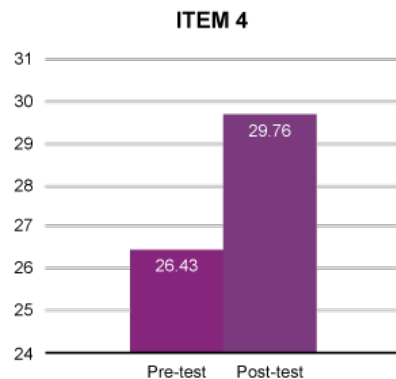
Item: The question, on development of literacy, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 4 from pre-test to post-test.
Pre-test: 111 out of 420 (26.43%) participants got the correct answer.
Post-test: 125 out of 420 (29.76%) participants got the correct answer.

Assessment: Two items from this dimension had a score reduction while the other item had no change of score from pre-test to post-test.
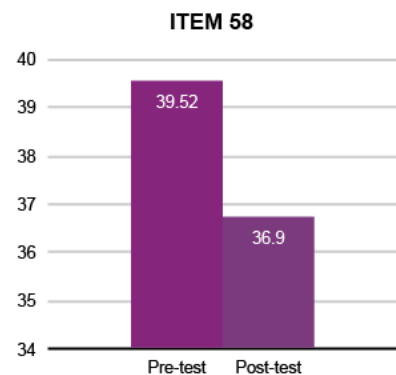
ITEM 58

Item: The question, on assessment, cannot be reproduced in this report.

Result: There was a percentage reduction in the number of correct responses for item number 58 from pre-test to post-test.
Pre-test: 166 out of 420 (39.52%) participants got the correct answer.
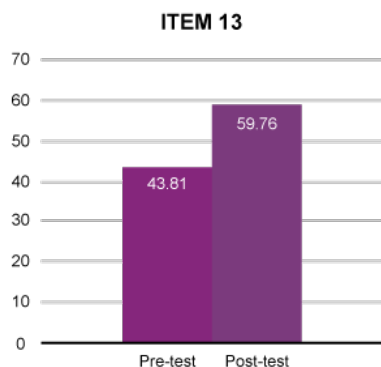**Post-test:** 155 out of 420 (36.9%) participants got the correct answer.
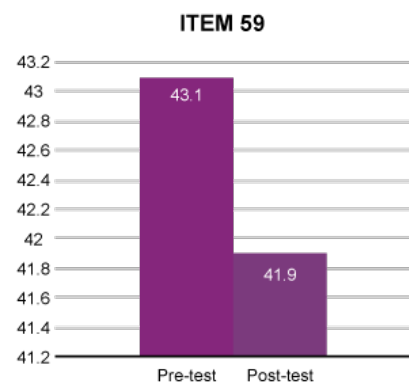
ITEM 59

Item: The question, on assessment, cannot be reproduced in this report.

Result: There was a percentage reduction in the number of correct responses for item number 59 from pre-test to post-test.
Pre-test: 181 out of 420 (43.1%) participants got the correct answer.
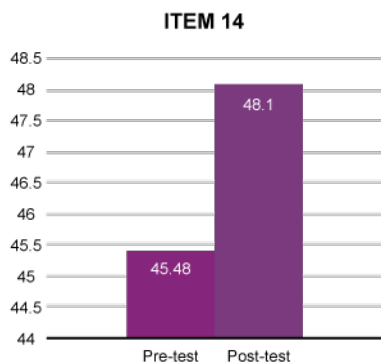**Post-test:** 176 out of 420 (41.9%) participants got the correct answer.
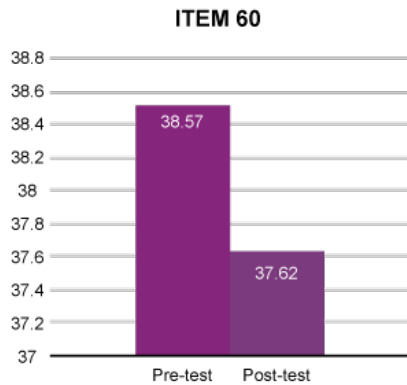
ITEM 60

Item: The question, on assessment, cannot be reproduced in this report.

Result: There was a percentage reduction in the number of correct responses for item number 60 from pre-test to post-test.
Pre-test: 160 out of 420 (38.57%) participants got the correct answer.
Post-test: 158 out of 420 (37.62%) participants got the correct answer.

It can be seen from the analysis above that *assessment* may be an area to improve in the ELLN Digital course, although it may also be the case that the CPK test was flawed or misaligned with the contents of the course.

CONTENT/PEDAGOGICAL KNOWLEDGE

(Dimensions: Oral Language, Phonological Awareness, Book and Print Knowledge, Alphabet Knowledge, Phonics and Word Recognition, Spelling, Fluency, Grammar Awareness, Composing Skills, Vocabulary Development, Listening Comprehension, Reading Comprehension, Attitude Towards LLL, and Study Strategies)

Oral Language: One item had a percentage reduction (#5) while the other item (#6) had no change in score from pre-test to post-test.

ITEM 5
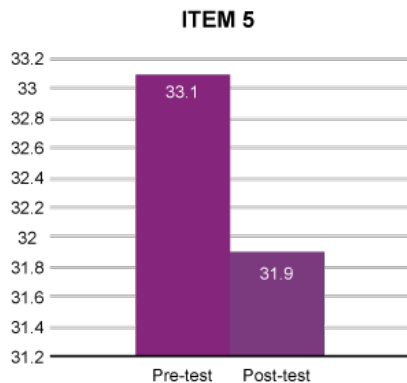
Item: The question, on literacy development, cannot be reproduced in this report.

Result: There was a percentage reduction in the number of correct responses for item number 5 from pre-test to post-test.
Pre-test: 139 out of 420 (33.1%) participants got the correct answer.
Post-test: 134 out of 420 (31.9%) participants got the correct answer.
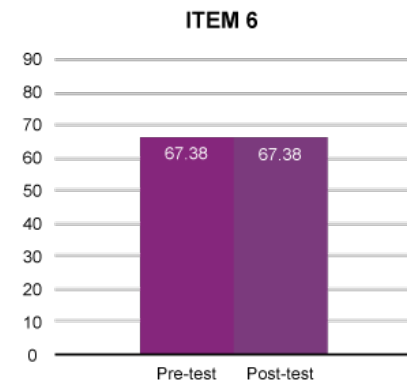
ITEM 6

Item: The question, on reading, cannot be reproduced in this report.

Result: There was NO percentage difference in the number of correct responses for item number 6 from pre-test to post-test.
Pre-test: 283 out of 420 (67.38%) participants got the correct answer.
Post-test: 283 out of 420 (67.38%) participants got the correct answer.

Phonological Awareness: Three items (#7, 9, & 10) had a percentage improvement while Item 8 reduced from pre-test to post-test.

ITEM 7
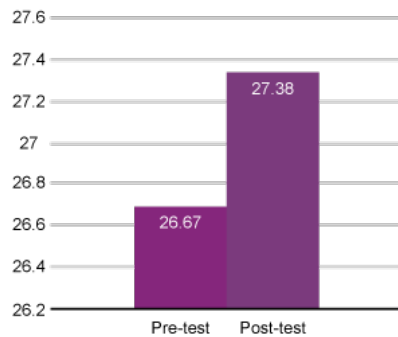
Item: The questions, on phonological awareness, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 6 from pre-test to post-test.
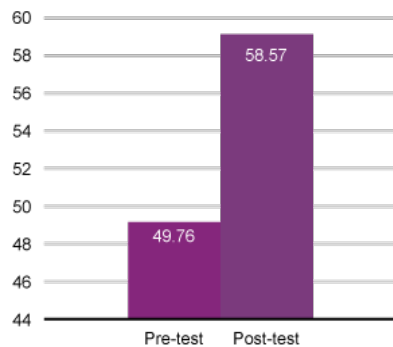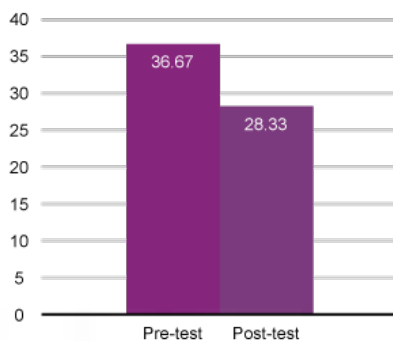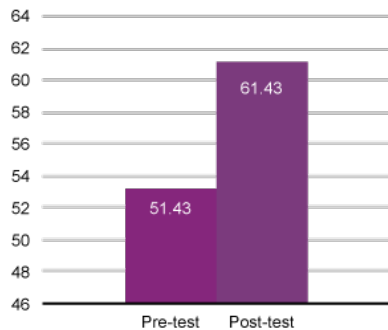**Pre-test:** 112 out of 420 (26.67%) participants got the correct answer.
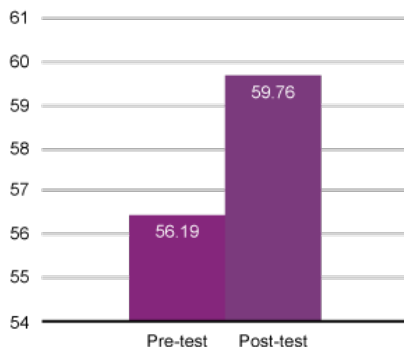**Post-test:** 115 out of 420 (27.38%) participants got the correct answer.

ITEM 8

Item: The question, on literacy teaching strategies, cannot be reproduced in this report.

Result: There was a percentage reduction in the number of correct responses for item number 8 from pre-test to post-test.
Pre-test: 259 out of 420 (61.67%) participants got the correct answer.
Post-test: 232 out of 420 (55.38%) participants got the correct answer.

ITEM 9

Item: The question, on teaching foundational skills, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 9 from pre-test to post-test.
Pre-test: 244 out of 420 (58.1%) participants got the correct answer.
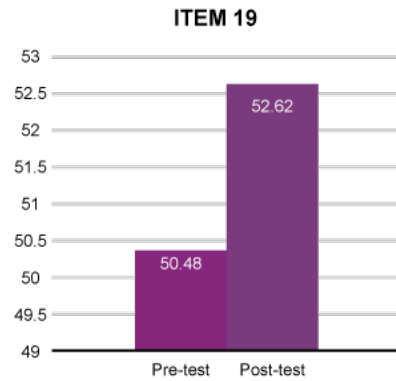**Post-test:** 256 out of 420 (60.95%) participants got the correct answer.
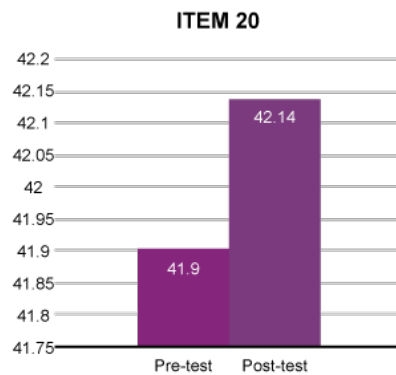
ITEM 10

Item: The question, on alphabetics, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 10 from pre-test to post-test.
Pre-test: 314 out of 420 (74.76%) participants got the correct answer.
Post-test: 317 out of 420 (75.48%) participants got the correct answer.

Book and Print Knowledge: One item had percentage improvement (#11) while the other item (12) reduced from pre-test to post-test

ITEM 11

Item: The question, on concepts about print, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 11 from pre-test to post-test.
Pre-test: 147 out of 420 (35%) participants got the correct answer.
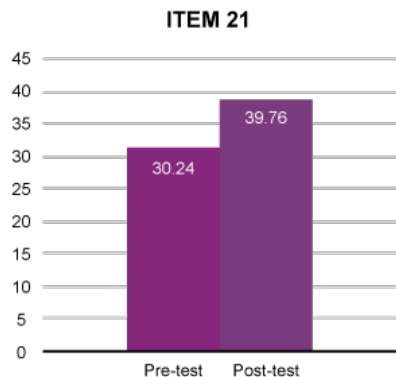**Post-test:** 165 out of 420 (39.29%) participants got the correct answer.

ITEM 12

Item: The question, on concepts about print, cannot be reproduced in this report.

Result: There was a percentage reduction in the number of correct responses for item number 12 from pre-test to post-test.
Pre-test: 259 out of 420 (61.67%) participants got the correct answer.
Post-test: 207 out of 420 (49.29%) participants got the correct answer.

Alphabet Knowledge: Both items #s 13 and 14 had percentage improvement from pre-test to post-test.
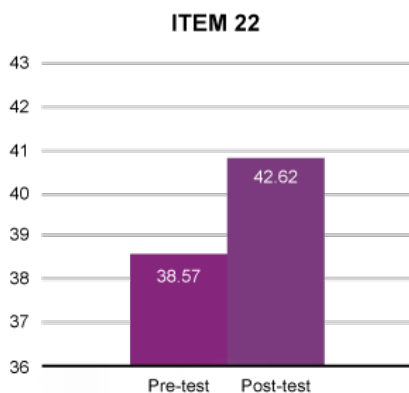
ITEM 13

Item: The question, on alphabetics, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 13 from pre-test to post-test.
Pre-test: 184 out of 420 (43.81%) participants got the correct answer.
Post-test: 251 out of 420 (59.76%) participants got the correct answer.

ITEM 14

Item: The question, on teaching alphabetics, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 14 from pre-test to post-test.
Pre-test: 191 out of 420 (45.48%) participants got the correct answer.
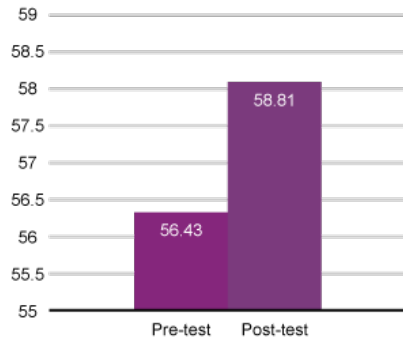**Post-test:** 202 out of 420 (48.1%) participants got the correct answer.

Phonics and Word Recognition: Three items (#s 15, 17, & 18) had percentage improvement while one item (#16) had reduction from pre-test to post-test.

ITEM 15

Item: The question, on teaching word identification, print, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 15 from pre-test to post-test.
Pre-test: 209 out of 420 (49.76%) participants got the correct answer.
Post-test: 246 out of 420 (58.57%) participants got the correct answer.

ITEM 16

Item: The question, on teaching word identification, cannot be reproduced in this report.

Result: There was a percentage reduction in the number of correct responses for item number 16 from pre-test to post-test.
Pre-test: 154 out of 420 (36.67%) participants got the correct answer.
Post-test: 119 out of 420 (25.33%) participants got the correct answer.

ITEM 17

Item: The question, on high frequency word recognition, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 17 from pre-test to post-test.
Pre-test: 216 out of 420 (51.43%) participants got the correct answer.
Post-test: 258 out of 420 (61.43%) participants got the correct answer.

ITEM 18

Item: The question, on word identification, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 18 from pre-test to post-test.
Pre-test: 236 out of 420 (56.19%) participants got the correct answer.
Post-test: 251 out of 420 (59.76%) participants got the correct answer.

Spelling: One item (#19) had score improvement while the other item had no change (#20) of score from pre-test to post-test.
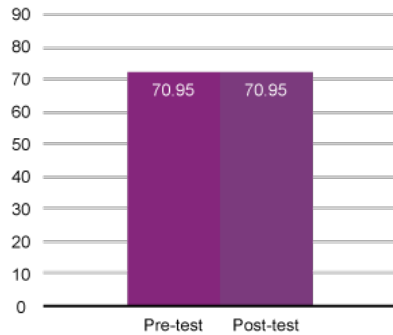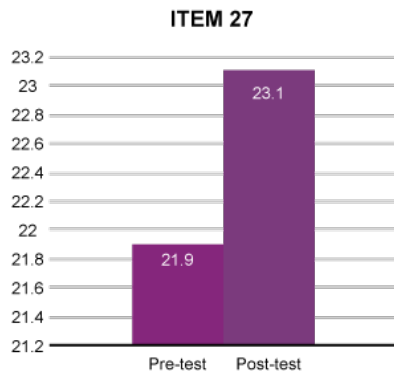
ITEM 19

Item: The question, on segmenting, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 19 from pre-test to post-test.
Pre-test: 212 out of 420 (50.48%) participants got the correct answer.
Post-test: 221 out of 420 (52.62%) participants got the correct answer.

ITEM 20

Item: The question, on the broad area of writing, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 20 from pre-test to post-test.
Pre-test: 176 out of 420 (41.90%) participants got the correct answer.
Post-test: 177 out of 420 (42.14%) participants got the correct answer.

Fluency: Four items (# 21, 22, & 23) had percentage improvement, items #25 & 26 had percentage reduction, while item 24 had no percentage difference.
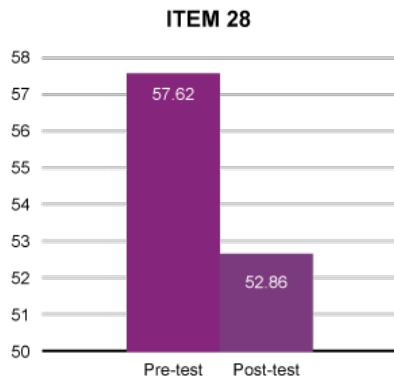
ITEM 21

Item: The question, on reading, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 21 from pre-test to post-test.
Pre-test: 127 out of 420 (30.24%) participants got the correct answer.
Post-test: 167 out of 420 (39.76%) participants got the correct answer.

ITEM 22

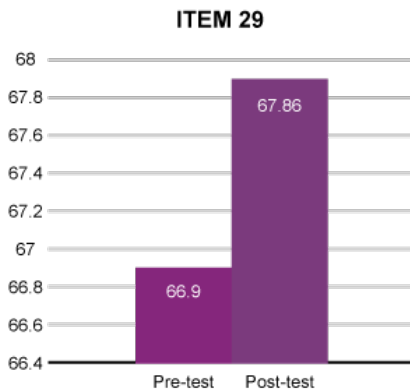**Item:** The question, on reading, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 22 from pre-test to post-test.
Pre-test: 162 out of 420 (38.57%) participants got the correct answer.
Post-test: 179 out of 420 (42.62%) participants got the correct answer.
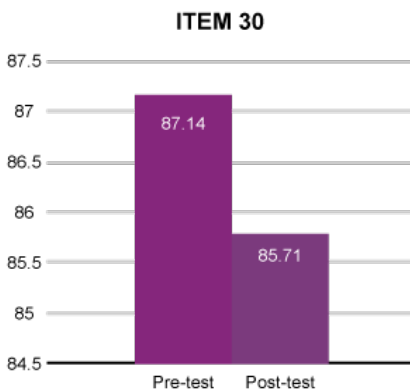
ITEM 23

Item: The question, on reading, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 23 from pre-test to pos-ttest.
Pre-test: 237 out of 420 (56.43%) participants got the correct answer.
Post-test: 247 out of 420 (58.81%) participants got the correct answer.

ITEM 24

Item: The question, on reading, cannot be reproduced in this report.

Result: There was no percentage difference in the number of correct responses for item number 24 from pre-test to post-test.
Pre-test: 237 out of 420 (70.95%) participants got the correct answer.
Post-test: 298 out of 420 (70.95%) participants got the correct answer.

ITEM 25
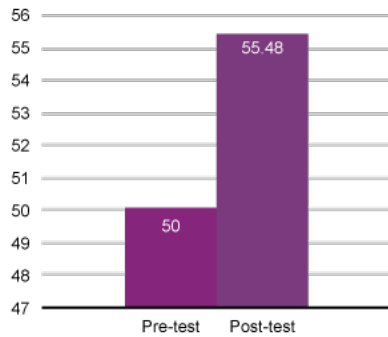
Item: This question, on reading, cannot be reproduced in this report.

Result: There was a percentage reduction in the number of correct responses for item number 25 from pre-test to post-test.

There was a reduction in the number of correct responses for item 25. It is conceivable that the teachers learned about the concept in depth in the course, which may have made the 'correct' answer seem oversimplified.

Pre-test: 305 out of 420 (72.62%) participants got the correct answer.
Post-test: 294 out of 420 (70%) participants got the correct answer.

ITEM 26

Item: The question, on reading, cannot be reproduced in this report.

Result: There was a percentage reduction in the number of correct responses for item number 26 from pre-test to post-test.

There was a reduction in correct scores for item 26. Since the concept is contested in the literature, teachers' more sophisticated level of understanding may have led them to select a different answer.

Pre-test: 159 out of 420 (37.86%) participants got the correct answer.
Post-test: 151 out of 420 (35.95%) participants got the correct answer.

ITEM 27
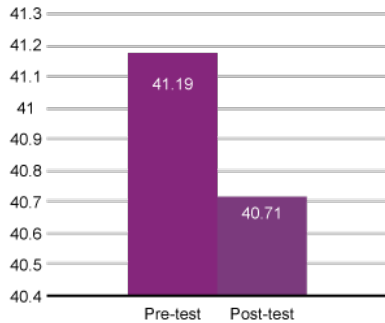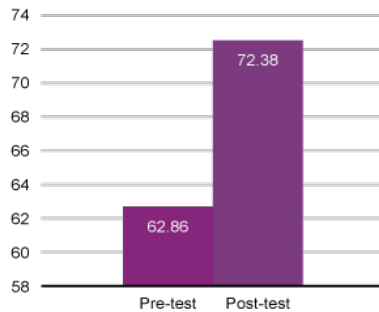

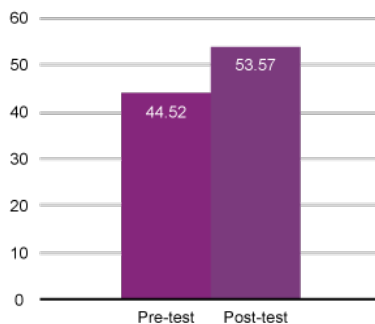**Item:** The question, on stories, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 27 from pre-test to post-test.
Pre-test: 92 out of 420 (21.9%) participants got the correct answer.
Post-test: 97 out of 420 (23.1%) participants got the correct answer.

ITEM 28

Item: The question, on teaching grammar, cannot be reproduced in this report.

Result: There was a percentage reduction in the number of correct responses for item number 28 from pre-test to post-test.

It is unclear as to why item 28 may have been difficult for the teachers after the course.

Pre-test: 242 out of 420 (57.62%) participants got the correct answer.
Post-test: 222 out of 420 (52.86%) participants got the correct answer.

Composing Skills: Item 29 had percentage improvement from pre-test to post-test.

ITEM 29

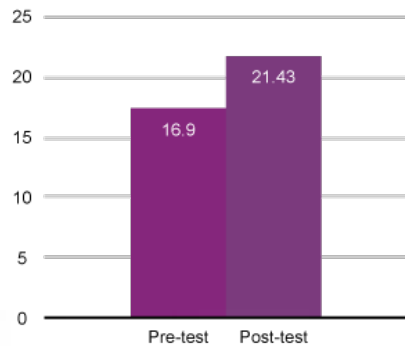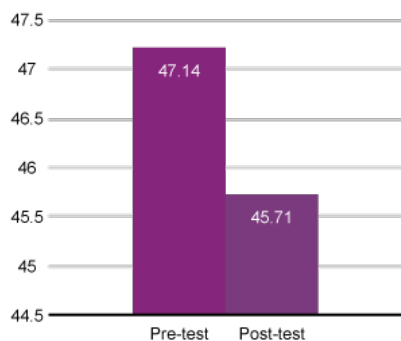**Item:** The question, on writing, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 29 from pre-test to post-test.
Pre-test: 281 out of 420 (66.9%) participants got the correct answer.
Post-test: 285 out of 420 (67.86%) participants got the correct answer.

Vocabulary Development: Items 30 & 32 had percentage reduction while items 31 & 33 reduced from pre-test to post-test.

ITEM 30

Item: The question, on vocabulary development, cannot be reproduced in this report.

Result: There was a percentage reduction in the number of correct responses for item number 30 from pre-test to post-test.

One of the distractors could also be a correct answer. This may be a flaw in the CPK test that may have influenced the apparent regression in teacher CPK.

Pre-test: 366 out of 420 (87.14%) participants got the correct answer.
Post-test: 360 out of 420 (85.71%) participants got the correct answer.

ITEM 31

Item: The question, on vocabulary development, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 31 from pre-test to post-test.
Pre-test: 210 out of 420 (50%) participants got the correct answer.
Post-test: 233 out of 420 (55.48%) participants got the correct answer.

ITEM 32

Item: The question, on vocabulary development, cannot be reproduced in this report.

Result: There was a percentage reduction in the number of correct responses for item number 32 from pre-test to post-test.
Pre-test: 173 out of 420 (41.19%) participants got the correct answer.
Post-test: 171 out of 420 (40.71%) participants got the correct answer.

ITEM 33

Item: The question, on vocabulary development, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 33 from pre-test to post-test.
Pre-test: 264 out of 420 (62.86%) participants got the correct answer.
Post-test: 304 out of 420 (72.38%) participants got the correct answer.

Listening Comprehension: Item 34 had percentage improvement from pre-test to post-test.

ITEM 34

Item: The question, on listening comprehension, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 34 from pre-test to post-test.
Pre-test: 187 out of 420 (44.52%) participants got the correct answer.
Post-test: 225 out of 420 (53.57%) participants got the correct answer.

ITEM 35

Item: The question, on reading, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 35 from pre-test to post-test.
Pre-test: 71 out of 420 (16.9%) participants got the correct answer.
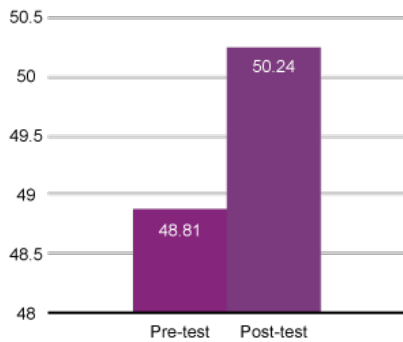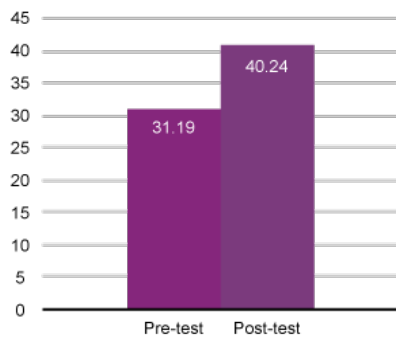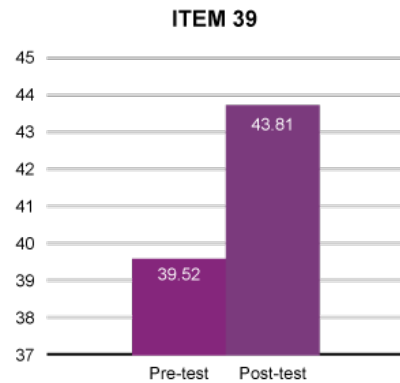**Post-test:** 90 out of 420 (21.43%) participants got the correct answer.

ITEM 36

Item: The question, on comprehension, cannot be reproduced in this report.

Result: There was a percentage reduction in the number of correct responses for item number 36 from pre-test to post-test.
Pre-test: 198 out of 420 (47.14%) participants got the correct answer.
Post-test: 192 out of 420 (45.71%) participants got the correct answer.

ITEM 37

Item: The question, on comprehension, cannot be reproduced in this report.
Answer: A. Literal

Result: There was a percentage improvement in the number of correct responses for item number 37 from pre-test to post-test.
Pre-test: 205 out of 420 (48.81%) participants got the correct answer.
Post-test: 211 out of 420 (50.24%) participants got the correct answer.

ITEM 38

Item: The question, on literary response, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 38 from pre-test to post-test.
Pre-test: 131 out of 420 (31.19%) participants got the correct answer.
Post-test: 169 out of 420 (40.24%) participants got the correct answer.

Attitude Towards LLL: Both items 39 & 40 had percentage improvement in the number of correct responses from pre-test to post-test.
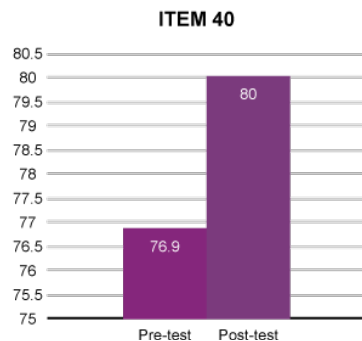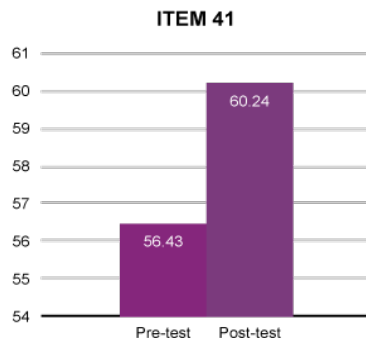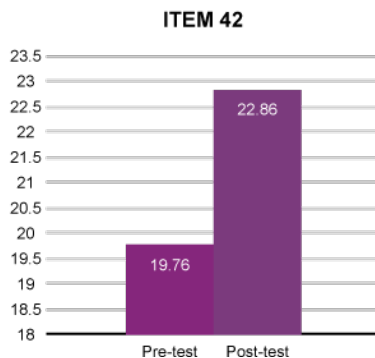
ITEM 39

Item: The question, on attitude, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 39 from pre-test to post-test.
Pre-test: 166 out of 420 (39.52%) participants got the correct answer.
Post-test: 184 out of 420 (43.81%) participants got the correct answer.

ITEM 40

Item: The question, on attitude to reading, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 40 from pre-test to post-test.
Pre-test: 323 out of 420 (76.9%) participants got the correct answer.
Post-test: 336 out of 420 (80%) participants got the correct answer.

Study Strategies: Both items 41 & 42 had percentage improvement in the number of correct responses from pre-test to post-test.

ITEM 41

Item: The question, on study strategies, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 41 from pre-test to post-test.
Pre-test: 237 out of 420 (56.43%) participants got the correct answer.
Post-test: 253 out of 420 (60.24%) participants got the correct answer.

ITEM 42

Item: The question, on study skills, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 42 from pre-test to post-test.
**Pre-test:** 83 out of 420 (19.76%) participants got the correct answer.
Post-test: 96 out of 420 (22.86%) participants got the correct answer.

APPROACHES

(Dimensions: Literature-based, Explicit Instruction, Play, Integration, and Differentiated Instruction)

Literature-based: 6 out of the 7 items (43, 45, 46, 47, 48, & 49) under this dimension had score improvement while item 44 reduced from pre-test to post-test.
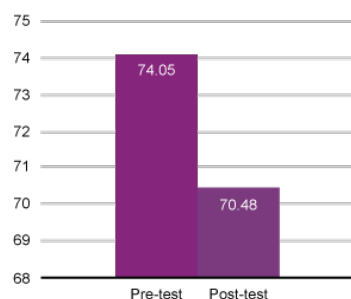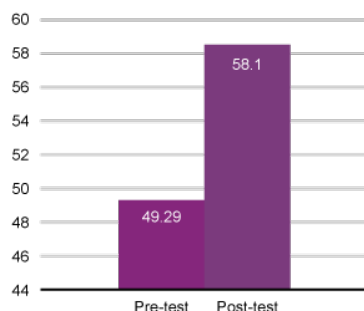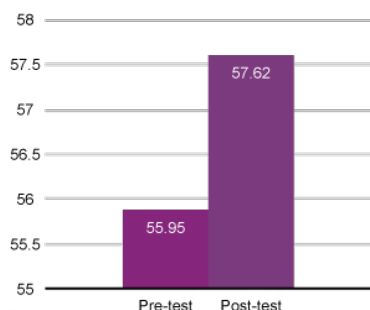
ITEM 43
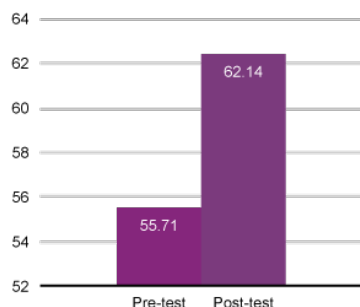
Item: The question, on pedagogical approaches, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 43 from pre-test to post-test.
Pre-test: 234 out of 420 (55.71%) participants got the correct answer.
Post-test: 261 out of 420 (62.14%) participants got the correct answer.

ITEM 44

Item: The question, on pedagogical approaches, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 44 from pre-test to post-test.
Pre-test: 311 out of 420 (74.05%) participants got the correct answer.
Post-test: 296 out of 420 (70.48%) participants got the correct answer.
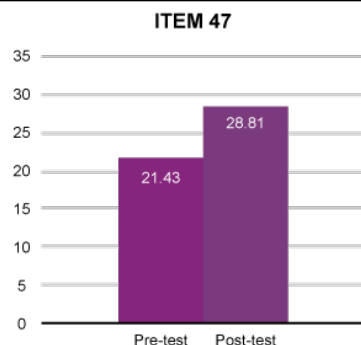
ITEM 45

Item: The question, on pedagogical approaches, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 45 from pre-test to post-test.
Pre-test: 207 out of 420 (49.29%) participants got the correct answer.
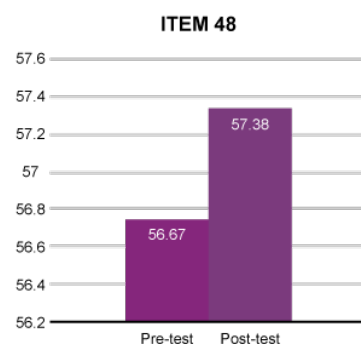**Post-test:** 244 out of 420 (58.1%) participants got the correct answer.

ITEM 46

Item: The question, on pedagogical approaches, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 46 from pre-test to post-test.
Pre-test: 235 out of 420 (55.95%) participants got the correct answer.
Post-test: 242 out of 420 (57.62%) participants got the correct answer.
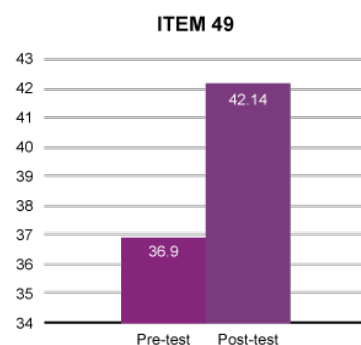
ITEM 47

Item: The question, on pedagogical approaches, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 47 from pre-test to post-test.
Pre-test: 90 out of 420 (21.43%) participants got the correct answer.
Post-test: 121 out of 420 (28.81%) participants got the correct answer.

ITEM 48

Item: The question, on pedagogical approaches, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 48 from pretest to posttest.
Pre-test: 238 out of 420 (56.67%) participants got the correct answer.
Post-test: 241 out of 420 (57.38%) participants got the correct answer.
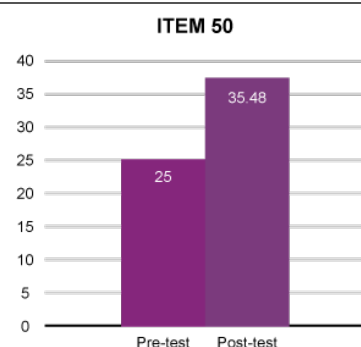
ITEM 49

Item: The question, on pedagogical approaches, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 49 from pretest to posttest.
Pre-test: 155 out of 420 (36.9%) participants got the correct answer.
Post-test: 177 out of 420 (42.14%) participants got the correct answer.

Explicit Instruction: All items (#50, 51, & 52) under this dimension had percentage improvement in the number of correct responses from pre-test to post-test.
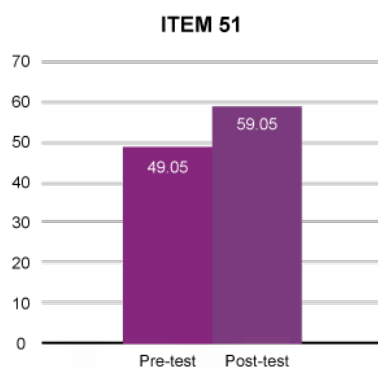
ITEM 50

Item: The question, on instructional strategies, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 50 from pretest to posttest.
Pre-test: 105 out of 420 (25%) participants got the correct answer.
Post-test: 149 out of 420 (36.48%) participants got the correct answer.
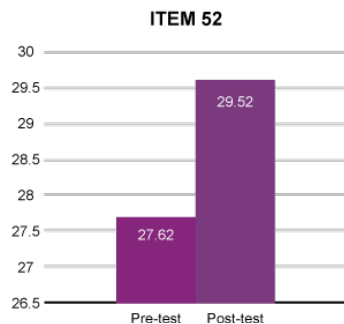
ITEM 51

Item: The question, on instructional strategies, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 51 from pre-test to post-test.
Pre-test: 206 out of 420 (49.05%) participants got the correct answer.
Post-test: 248 out of 420 (59.05%) participants got the correct answer.
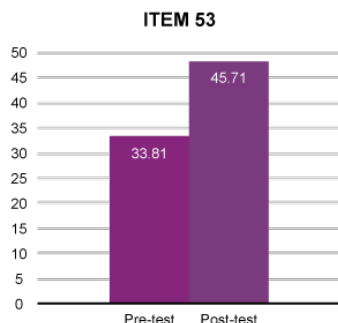
ITEM 52

Item: The question, on pedagogy, cannot be reproduced in this report

Result: There was a percentage improvement in the number of correct responses for item number 52 from pre-test to post-test.
Pre-test: 116 out of 420 (27.62%) participants got the correct answer.
Post-test: 124 out of 420 (29.52%) participants got the correct answer.

Play: Item 53 under this dimension had percentage improvement in the number of correct responses from pre-test to post-test.
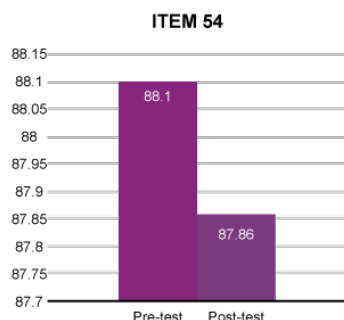
ITEM 53

Item: The question, on pedagogical approaches, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 53 from pre-test to post-test.
Pre-test: 142 out of 420 (33.81%) participants got the correct answer.
Post-test: 192 out of 420 (45.71%) participants got the correct answer.

Integration: Item 54 had percentage reduction in the number of correct responses while item 55 improved from pre-test to post-test.
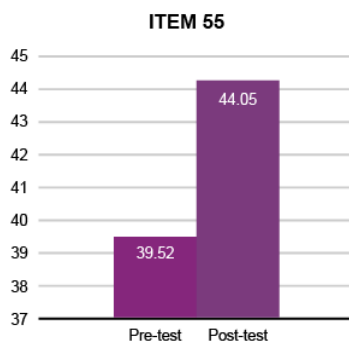
ITEM 54

Item: The question, on literacy across the curriculum, cannot be reproduced in this report.

Result: There was a percentage reduction in the number of correct responses for item number 54 from pre-test to post-test.
Pre-test: 370 out of 420 (88.1%) participants got the correct answer.
Post-test: 369 out of 420 (87.86%) participants got the correct answer.
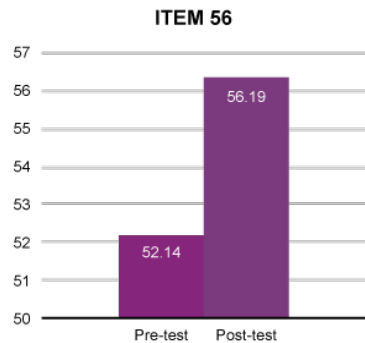
ITEM 55

Item: The question, on pedagogical approaches, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 55 from pre-test to post-test.
Pre-test: 166 out of 420 (39.52%) participants got the correct answer.
Post-test: 185 out of 420 (44.05%) participants got the correct answer.

Differentiated Instruction: Both items 56 & 57 under this dimension had percentage improvement in the number of correct responses from pre-test to post-test.

ITEM 56

Item: The question, on differentiation, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 56 from pre-test to post-test.
Pre-test: 219 out of 420 (52.14%) participants got the correct answer.
Post-test: 236 out of 420 (56.19%) participants got the correct answer.

ITEM 57

Item: The question, on differentiation, cannot be reproduced in this report.

Result: There was a percentage improvement in the number of correct responses for item number 57 from pre-test to post-test.
**Pre-test:** 94 out of 420 (22.38%) participants got the correct answer.
Post-test: 97 out of 420 (23.1%) participants got the correct answer.

Appendix 8. TSNA results

All 434 participants were included in the analysis. Missing data were imputed using expectation maximization imputation strategy. This report shows whether the participants' TSNA scores improved or regressed from pre-test to post-test, and whether there is a difference between the change of scores based on their demographics.

Demographics with two groups (e.g., gender, sampling group) were analyzed using independent sample t-test while demographics with more than two groups (e.g., age, educational attainment, et al.) were analyzed using one-way ANOVA.

TSNA change score based on sampling group (urban/rural)

TSNA change score based on gender
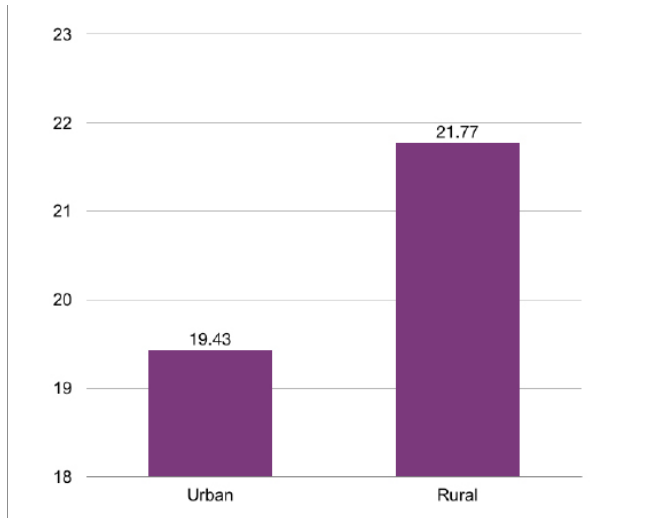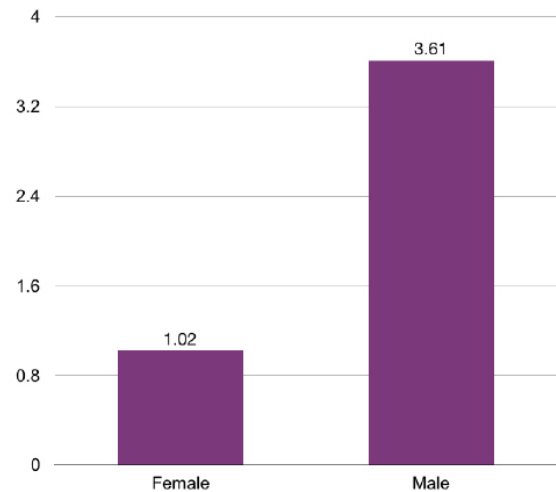

Note: Urban (n=346); Rural (n=88)

Results: Participants from the rural area (M = 21.77, SD = 26.74) scored significantly higher than the participants from the urban area (M = 19.43, SD = 29.77); t(432) = -0.671, *p* = 0.503

Baseline scores:
- Rural (M = 167.11)
- Urban (M = 168.34)

* There was no significant difference among baseline scores.

Note: Female (n=422); Male (n=10)

Results: Both female and male participants' scores improved. However, despite the high mean score of male participants (M = 23.90, SD = 33.35) compared to female participants (M = 19.88, SD = 29.14); there was no significant difference between gender.
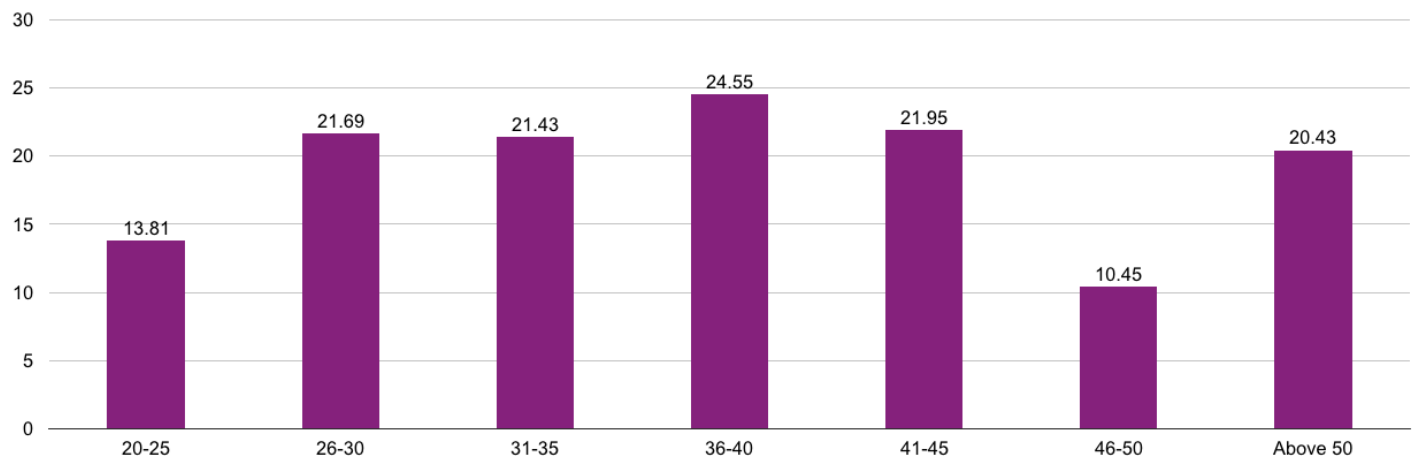
Baseline scores:
- Female (M=167.92)
- Male (M=172.30)

* There was no significant difference among baseline scores.

TSNA change score based on age

Note: 20-25(n=21); 26-30(n=52); 31-35(n=70); 36-40 (n=85); 41-45 (n=63); 46-50(n=64); Above 50 (n=77)

Results: There was no significant difference between the change scores among age groups (F = 6, 425) = 1.77, *p* = 0.105. However, participants under the age group of 46-50 had lower scores after the training.

20-25 (M = 13.81, SD = 28.96) (BS: M = 172.67)
26-30 (M = 21.69, SD = 26.35) (BS: M = 169.06)
31-35 (M = 21.43, SD = 23.81) (BS: M = 167.20)
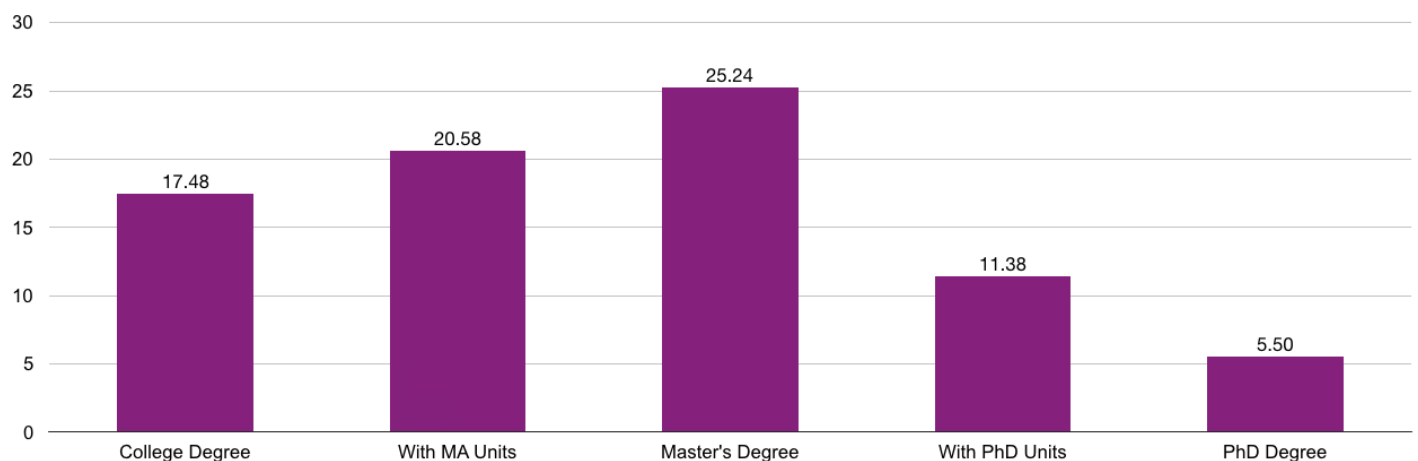36-40 (M = 24.55, SD = 30.20) (BS: M = 162.76)
41-45 (M = 21.95, SD = 30.59) (BS: M = 167.90)

46-50 (M = 10.45, SD = 33.20) (BS: M = 173.34)
Above 50 (M = 20.43, SD = 28.88) (BS: M = 168.28)

* There was no significant difference among baseline scores.

TSNA change score based on highest educational level attainment

Note: College Degree (n=140), With MA units (n=223), With Master's degree (n=59), With PhD units (n=8), With PhD Degree (n=2)

Results: There was a significant difference among the change scores among groups based on their highest educational attainment (F = 4, 427) = 1.05, *p* = 0.38. Participants with a college degree and PhD degree had lower scores after the training.

College Degree (M = 17.48, SD = 31.81)(BS: M = 166.31)
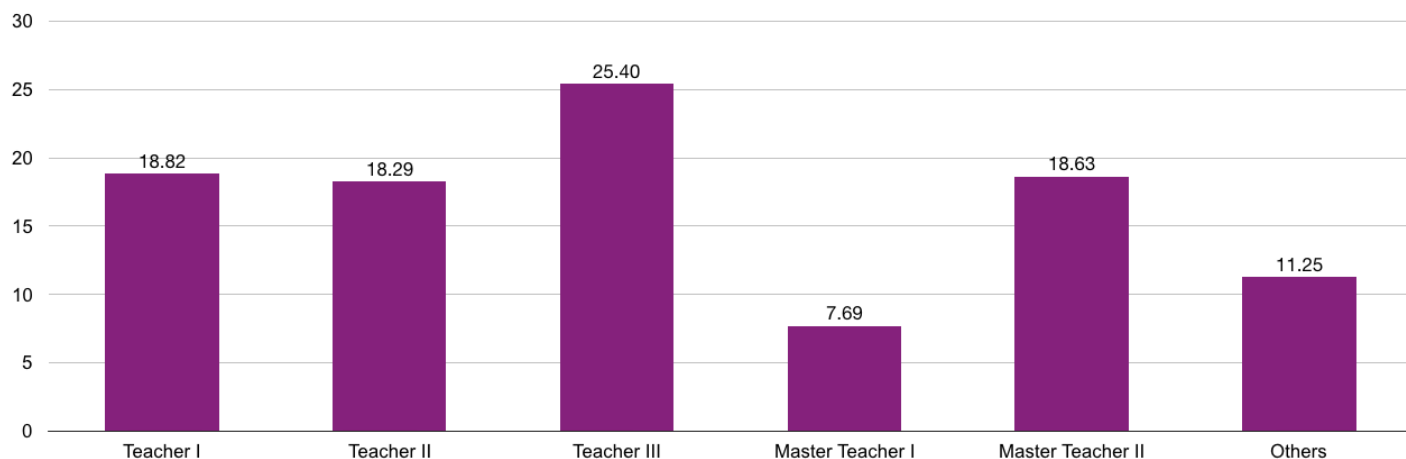With MA Units (M = 20.58, SD = 26.36) (BS: M = 169.30)
Master's Degree (M = 25.24, SD = 28.37) (BS: M = 167.41)
With PhD Units (M = 11.38, SD = 53.91) (BS: M = 152.38)

PhD Degree (M = 5.50, SD = 47.38) (BS: M = 189.50)

* There was no significant difference among baseline scores.

TSNA change score based on teacher ranking

Note: Teacher I (n=257), Teacher II (n=44), Teacher III (n=106), Master Teacher I (n=13), Master Teacher II (n=8), Others (n=4)

Results: There was no significant difference among the change of scores between groups based on their teacher ranking (F = 5, 426) = 1.38, p = 0.23. However, participants with a ranking of Master Teacher I scored lowest in the post-test.

Teacher I (M = 18.82, SD = 28.89) (BS: M = 169.08)
Teacher II (M = 18.29, SD = 27.13) (BS: M = 169.23)
Teacher III (M = 25.40, SD = 29.45) (BS: M = 164.12)
Master Teacher I (M = 7.69, SD = 34.26) (BS: M = 176.23)

Master Teacher II (M = 18.63, SD = 38.98) (BS: M = 163.63)
Others (M = 11.25, SD = 15.73) (BS: M = 172.25)

* There was no significant difference between baseline scores.

TNSA change score based on teaching experience (number of years teaching)
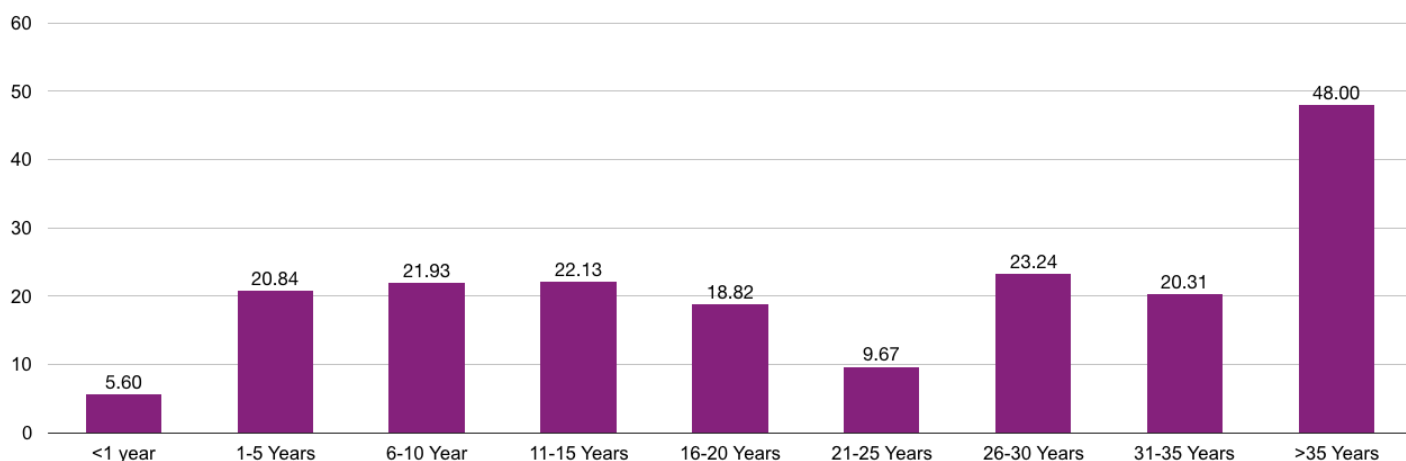
Note: Less than a year (n=5), 1-5 years (n=103), 6-10 years (n=106), 11-15 years (n=61), 16-20 years (n=56), 21-25 years (n=46), 26-30 years (n=37), 31-35 years (n=16), more than 35 years (n=2)

Results: There was no significant difference among the change of scores between groups based on their number of years of teaching experience (F = 8, 423) = 1.29, p = 0.25.

Less than a Year (M=-5.6, SD=23.16) (BS: M=180.60)
11-15 Years (M= 22.13, SD=30.41) (BS: M=164.89)
1-5 Years (M=20.84, SD=22.87) (BS: M=168.87)
16-20 Years (M=18.82, SD=30.82) (BS: M=171.86)
6-10 Years (M=21.93, SD=31.58) (BS: M=163.13)
21-25 Years (M=9.67, SD=30.55) (BS: M=175.31)

26-30 Years (M=23.24, SD=31.75) (BS: M=168.71)
31-35 Years (M=20.31, SD=28.10) (BS: M=169.31)
More than 35 Years (M=48, SD=31.11) (BS: M=150.50)

* There was no significant difference among baseline scores.

	CPK	TSNA
Overall	Significant change	Significant change
Urban/rural	Significant change	Significant change
Gender	NSC	NSC
Age group	NSC	NSC
Highest educational attainment	Significant change	Significant change
Teacher ranking	Significant change	NSC
Years of teaching experience	NSC	NSC

Appendix 9. Effect size calculations

All Cohen's d values were calculated by the following formula:
- Effect sizes are presented in Cohen's d, r, or partial eta-squared where appropriate.
- All effect sizes were calculated using an Excel file effect size calculator downloaded from the website: http://stat-help.com/spreadsheets.html
- Partial Eta squared was calculated using SPSS under generalised linear model (univariate) and was used in comparing three or more groups.
- Cohen's d guidelines: Small = 0.2; Medium = 0.5; Large = 0.8
- Partial eta-squared: Small =.01; Medium = .06; Large = .14

* Only with significant differences were calculated for Cohen's d/partial eta-squared and effect size values.

CPK effect sizes

Description	Cohen's d calculation	Effect size r	Mean	Standard Deviation	Interpretation
Overall improvement from pre- to post-test in the CPK test	0.140	-0.07	Pre-test: 27.72 Post-test: 28.48	Pre-test: 6.01 Post-test: 8.24	Very small effect size
The CPK test is further divided into the following:					
Overall differences in Content/ Pedagogical Knowledge	0.153	-0.076	Pre-test: 0.49 Post-test: 0.51	Pre-test: 0.11 Post-test: 0.14	Very small effect Size
• Alphabet Knowledge	0.199	0.099	Pre-test: 0.49 Post-test: 0.51	Pre-test: 0.37 Post-test: 0.36	Very small effect size
• Phonics and Word Recognition	0.104	-0.052	Pre-test: 0.49 Post-test: 0.52	Pre-test: 0.28 Post-test: 0.27	Very small effect size
• Vocabulary Development	0.106	-0.053	Pre-test: 0.60 Post-test: 0.64	Pre-test: 0.23 Post-test: 0.26	Very small effect size
• Listening Comprehension	-139	-0.069	Pre-test: 0.45 Post-test: 0.54	Pre-test: 0.50 Post-test: 0.50	Very small effect size
• Reading Comprehension	0.103	-0.052	Pre-test: 0.36 Post-test: 0.39	Pre-test: 0.25 Post-test: 0.28	Very small effect size
Overall differences in approaches	0.254	-0.126	Pre-test: 0.44 Post-test: 0.59	Pre-test: .17 Post-test: .19	Small effect size
• Literature-based	0.137	-0.068	Pre-test: 0.50 Post-test: 0.54	Pre-test: .22 Post-test: .23	Very small effect size
• Explicit Instruction	0.201	-0.100	Pre-test: 0.34 Post-test: 0.41	Pre-test: 0.31 Post-test: 0.31	Small effect size
• Play	0.196	-0.098	Pre-test: 0.34 Post-test: 0.46	Pre-test: 0.47 Post-test: 0.50	Very small effect size
Differences in the CPK test between urban vs rural groups	0.274	0.109	Urban: 0.48 Rural: 3.61	Urban: 8.01 Rural: 6.62	Small effect size

Description	Partial eta-squared	Mean	Standard Deviation	Interpretation
Educational level of attainment	0.025	College degree: -0.60 W/ MA units: 1.91 Master's degree: 1.80 W/ PhD units: 4.75 PhD Degree: -3.00	College degree: 7.84 W/ MA units: 7.86 Master's degree: 7.64 W/ PhD units: 5.87 PhD Degree: 1.41	Small effect size
Teacher Ranking	0.025	Teacher I: 0.22 Teacher II: 1.43 Teacher III: 3.21 Master Teacher I: 1.38 Master Teacher II: 0.88 Others: 7.00	Teacher I: 7.85 Teacher II: 9.86 Teacher III: 6.78 Master Teacher I: 6.73 Master Teacher II: 7.22 Others: 4.16	Small effect size

TSNA effect sizes

Description	Cohen's d calculation	Effect size r	Mean	Standard Deviation	Interpretation
Overall improvement in TSNA scores from pre to post-test	0.683	3.23	Pre-test: 168.09 Post-test: 188	Pre-test: 23.41 Post-test: 22.72	Medium effect size
Differences in TSNA scores for Urban vs Rural groups	-0.08	-0.0322	Urban: 19.43 Rural: 21.77	Urban: 29.77 Rural: 26.74	Very small effect size

Description	Partial eta-squared	Mean	Standard Deviation	Interpretation
Differences in TSNA scores for those with different levels of educational attainment	0.010	College degree: 17.48 W/ MA units: 20.58 Master's degree: 25.24 W/ PhD units: 11.38 PhD Degree: 5.50	College degree: 31.81 W/ MA units: 26.36 Master's degree: 28.37 W/ PhD units: 53.91 PhD Degree: 47.38	Small effect size

Appendix 10. ECS digital end of course survey

No. of Items. 54

Dimensions. The course overall, the courseware, the LAC sessions, and the outcomes of the course at the school level.

* 8 participants were excluded in the analysis for items 1 to 46 since they were not able to answer the survey, while 10 participants were excluded for items 47 to 54 in the analysis (n= is in brackets in the table).

Note. Item response: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

End-of-course survey results

Dimension: The Course Overall							
No.	**Question**	**Percentage per Response**					**Average**
		1	**2**	**3**	**4**	**5**	
1	The course objectives were clear.	1.38 (6)	0.46 (2)	6.45 (28)	53.69 (233)	36.18 (157)	4.25
2	The course content was relevant to my needs as a teacher.	1.15 (5)	0.92 (4)	3.92 (17)	49.54 (215)	42.63 (185)	4.34
3	Overall, I enjoyed the course.	0.92 (4)	0.46 (2)	9.44 (41)	58.06 (252)	29.26 (127)	4.16
4	My views about how to teach literacy have changed as a result of this.	0.46 (2)	0.92 (4)	5.76 (25)	62.67 (272)	28.34 (123)	4.20
5	The course challenged my thinking.	1.15 (5)	0.69 (3)	4.84 (21)	54.38 (236)	37.10 (161)	4.28
6	I have changed my teaching practices as a result of taking this course.	0.69 (3)	0.23 (1)	5.99 (26)	62.90 (273)	28.34 (123)	4.20
7	I believe that the changes in my classroom practices (as a result of this course) have led to learning improvements for the children in my class.	0.69 (3)	0.69 (3)	5.07 (22)	55.76 (242)	35.94 (156)	4.28
8	I would recommend the course to other teachers.	0.46 (2)	0.69 (3)	5.53 (24)	55.30 (240)	36.18 (157)	4.28
9	The assessment requirements were clearly stated.	0.69 (3)	0.69 (3)	6.68 (29)	60.14 (261)	29.95 (130)	4.20
10	The assessments helped me learn.	0.69 (3)	0.69 (3)	4.14 (18)	55.99 (243)	36.64 (159)	4.29
11	The course was well organised.	0.69 (3)	0.23 (1)	11.52 (50)	57.14 (248)	28.57 (124)	4.15
12	I was always able to access all the resources and materials I needed to complete the course.	0.46 (2)	1.84 (8)	16.13 (70)	59.91 (260)	19.82 (86)	3.99

No.	Question	1	2	3	4	5	Average
13	I was always able to access all the resources and materials I needed to put my new learning into practice.	0.69 (3)	1.84 (8)	13.59 (59)	63.59 (276)	18.43 (80)	3.99
14	I feel that my time was well spent.	0.92 (4)	0.92 (4)	9.45 (41)	60.60 (263)	26.27 (114)	4.12

Total Average 4.20

Dimension: The Courseware (or the computer-based component)

No.	Question	Percentage per Response					Average
		1	2	3	4	5	
15	Overall, the courseware explained the lessons/topics clearly.	0.69 (3)	1.84 (8)	7.83 (34)	59.45 (258)	28.34 (123)	4.15
16	I learned a lot from the courseware lessons.	0.69 (3)	0.46 (2)	5.99 (26)	59.68 (259)	31.34 (136)	4.23
17	The courseware was easy to navigate (I could find my way through the screens and sections easily).	0.69 (3)	1.38 (6)	11.06 (48)	64.29 (279)	20.74 (90)	4.05
18	The courseware had an attractive 'look and feel'.	0.46 (2)	0.92 (4)	10.60 (46)	66.59 (289)	19.59 (85)	4.06
19	I was able to work through the courseware at my own pace.	0.69 (3)	1.61 (7)	12.90 (56)	60.14 (261)	22.81 (99)	4.04
20	I was able to access a suitable computer to do the courseware when I needed to.	0.46 (2)	3.00 (13)	15.67 (68)	60.83 (264)	18.20 (79)	3.98
21	The videos in the courseware were useful.	0.69 (3)	1.38 (6)	9.45 (41)	54.38 (236)	32.26 (140)	4.18
22	I could have learned the content just as easily from reading a textbook.	0.46 (2)	2.53 (11)	11.75 (51)	63.36 (275)	20.05 (87)	4.02
23	The courseware was boring.	19.82 (86)	27.88 (121)	21.20 (92)	20.05 (87)	9.22 (40)	2.70
24	The courseware helped me feel confident enough to participate in the LAC.	0.46 (2)	0.46 (2)	9.91 (43)	64.52 (280)	22.81 (99)	4.11
25	I was generally able to complete the weekly courseware in less than two hours.	1.15 (5)	4.38 (19)	19.35 (84)	58.76 (255)	14.52 (63)	3.83
26	I did some of the courseware at home on my own computer.	0.92 (4)	4.61 (20)	19.82 (86)	54.61 (237)	18.20 (79)	3.86
27	I often printed out parts of the courseware so that I could do it at home.	0.23 (1)	2.76 (12)	18.66 (81)	57.37 (249)	19.12 (83)	3.94
28	I only did the courseware lessons at school during a timeslot allocated by the school.	2.99 (13)	4.38 (19)	16.59 (72)	58.99 (256)	15.21 (66)	3.81
29	If I wanted to go back and review courseware content from previous weeks, I was able to do so.	0.46 (2)	1.84 (8)	14.06 (61)	64.98 (282)	16.82 (73)	3.98
30	I was able to skip some of the courseware material if I already knew it.	3.92 (17)	12.67 (55)	26.73 (116)	43.09 (187)	11.75 (51)	3.47

Total Average 3.90

Dimension: The LAC Sessions

No.	Question	Percentage per Response					Average
		1	2	3	4	5	
31	I learned a lot from my colleagues in the LAC sessions.	0.92 (4)	0.46 (2)	5.76 (25)	54.38 (236)	36.64 (159)	4.28
32	The LAC sessions helped me understand the courseware content.	0.92 (4)	0.92 (4)	4.15 (18)	60.14 (261)	32.03 (139)	4.24
33	Each LAC session was closely linked to the courseware lesson.	0.92 (4)	0.46 (2)	5.99 (26)	63.13 (274)	27.65 (120)	4.18
34	I participated actively in the LAC sessions (for example, by sharing my assignment and insights, asking questions, and giving feedback on what colleagues shared.)	0.92 (4)	0.46 (2)	5.07 (22)	56.45 (245)	35.25 (153)	4.27
35	I interacted with several different people during each LAC session.	0.92 (4)	1.15 (5)	7.37 (32)	62.21 (270)	26.50 (115)	4.14
36	I felt that everyone's contribution was valued during the LAC sessions.	0.92 (4)	0.46 (2)	5.76 (25)	58.06 (252)	32.94 (143)	4.24
37	The LAC Facilitator encouraged LAC members to interact with each other.	0.69 (3)	0.69 (3)	5.99 (26)	55.30 (240)	35.48 (154)	4.27
38	The LAC Facilitator did most of the talking during LACs.	1.38 (6)	12.90 (56)	21.89 (95)	42.40 (184)	19.59 (85)	3.67
39	The LAC helped me put theory into practice.	0.92 (4)	0.69 (3)	6.68 (29)	67.28 (292)	22.58 (98)	4.12
40	The LAC encouraged me to change my classroom practice.	0.92 (4)	0.69 (3)	8.29 (36)	65.21 (283)	23.04 (100)	4.12
41	I was able to discuss teaching issues in depth during the LAC.	1.15 (5)	0.23 (1)	11.06 (48)	67.74 (294)	17.97 (78)	4.03
42	I helped my peers in the LAC.	0.92 (4)	0.92 (4)	6.45 (28)	65.67 (285)	24.19 (105)	4.13
43	Sometimes the discussions we had in the LAC session were continued by LAC members outside the LAC (for example, in the staff room, in classrooms, etc.).	0.92 (4)	1.38 (6)	10.37 (45)	65.90 (286)	19.59 (85)	4.04
44	I would like to continue to be part of a LAC for my other professional learning needs.	0.69 (3)	0.92 (4)	10.60 (46)	63.13 (274)	22.81 (99)	4.08
45	I came to trust my peers in the LAC - I was not afraid to share my ideas and concerns.	1.15 (5)	1.15 (5)	5.30 (23)	64.29 (279)	26.27 (114)	4.15

Total Average 4.13

Dimension: The outcomes of the course at the school level

No.	Question	Percentage per Response					Average
		1	**2**	**3**	**4**	**5**	
46	The LACs were merely a repetition of the courseware.	0.92 (4)	3.92 (17)	18.89 (82)	61.29 (266)	13.13 (57)	3.83
47	I had enough time to prepare adequately for each LAC.	0.69 (3)	2.76 (12)	18.66 (81)	61.06 (265)	14.52 (63)	3.88
48	The LAC Facilitator effectively managed the discussion during the LACs.	0.69 (3)	0.92 (4)	9.45 (41)	60.37 (262)	26.27 (114)	4.13
49	I received useful feedback on my assignments during the LACs.	0.69 (3)	1.15 (5)	9.44 (41)	65.21 (283)	21.20 (92)	4.08
50	The length of each LAC session was too long.	2.76 (12)	8.76 (38)	30.18 (131)	41.94 (182)	14.06 (61)	3.57
51	The LAC helped me develop confidence as a professional.	0.92 (4)	0.69 (3)	5.99 (26)	63.13 (274)	26.96 (117)	4.17
52	The school leaders were supportive of the ELLN Digital course.	1.38 (6)	0.69 (3)	8.29 (36)	54.15 (235)	33.18 (144)	4.20
53	The course has changed the way teachers at the school interact with each other as professionals.	0.69 (3)	0.46 (2)	8.06 (35)	63.36 (275)	25.12 (109)	4.14
54	The school culture has changed as a result of the course.	0.46 (2)	0.69 (3)	9.68 (42)	65.90 (286)	22.97 (91)	4.09

Total Average 4.01

**Grand Total Response Average 4.06**

ECS results

As shown below, there were few differences in responses according to demographics.

Note. 434 participants were included in the analysis. Missing data were imputed using expectation maximization imputation strategy.

Demographics with two groups (e.g., gender, sampling group) were analyzed using independent sample t-test while demographics with more than two groups (e.g., age, educational attainment, et al.) were analyzed using one-way ANOVA.

Overall Liking of the Course
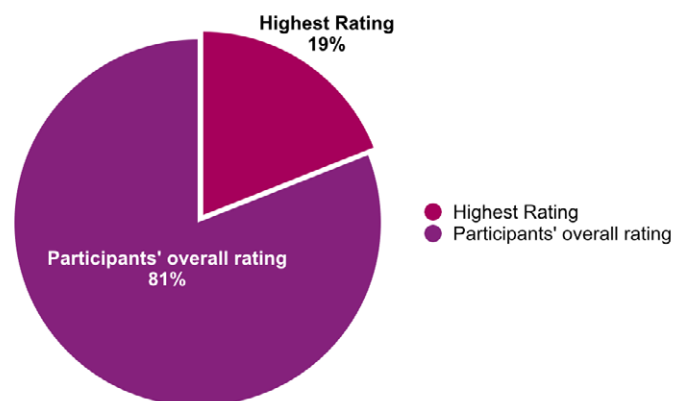
Results: Overall, the participants indicated that they liked the course. The mean rating was (M=4.06, SD= .49) out of the highest rating of 5.

Based on sampling group
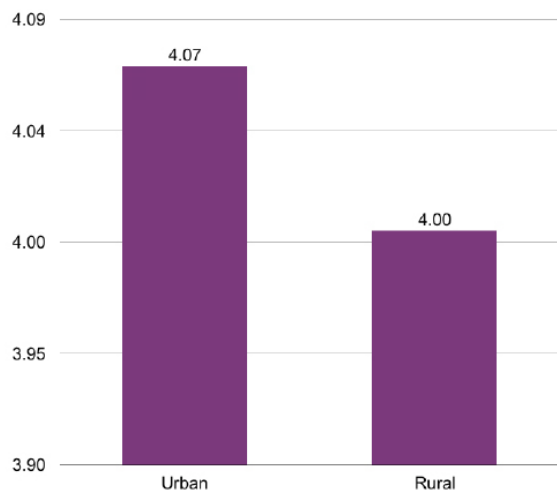
Note: Urban (n=346); Rural (n=88)

Results: Both participants in the urban and rural area seemed to like the course. However, despite the slight increase of rating by the participants in the urban area (M = 4.07, SD = 0.50) from the rural area (M = 4.00, SD = 0.48), there was NO significant difference between their rating in terms of their sampling group $t_{(432)} = 1.16$, $p = 0.245$.
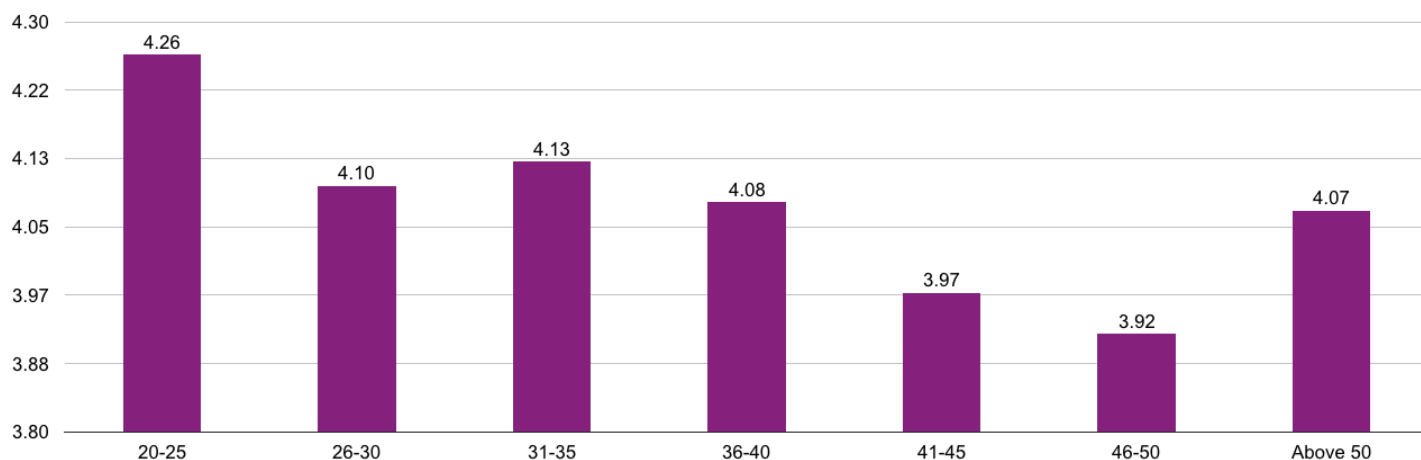
Based on gender
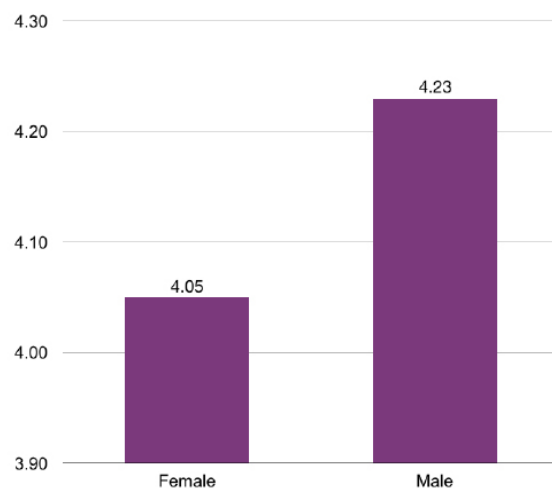
Note: Female (n=422); Male (n=10)

Results: Both female and male participants seemed to like the course. However, despite the increase of mean rating of male participants (M = 4.23, SD = 0.36) compared to female participants (M = 4.05, SD = 0.50); there was NO significant difference between their rating in terms of their gender $t_{(430)} = -1.13$, $p = 0.259$.

Based on age

Note: 20-25(n=21); 26-30(n=52); 31-35(n=70); 36-40 (n=85); 41-45 (n=63); 46-50(n=64); Above 50 (n=77)

Results: There was a significant difference among age groups in terms of their liking of the course $(F = 6, 425) = 2.12$, $p = 0.05$. Participants in the age range of 20-25 liked the course significantly more than the participants in the age range of 41-45 years old. Participants in the age range of 46-50 gave a rating significantly lower than the participants in the age ranges of 20-25, 31-35, and 36-40 years old.

20-25 (M = 4.26, SD = 0.51)
26-30 (M = 4.10, SD = 0.41)
31-35 (M = 4.13, SD = 0.40)
36-40 (M = 4.08, SD = 0.42)

41-45 (M = 3.97, SD = 0.52)
46-50 (M = 3.92, SD = 0.63)
Above 50 (M = 4.07, SD = 0.53)

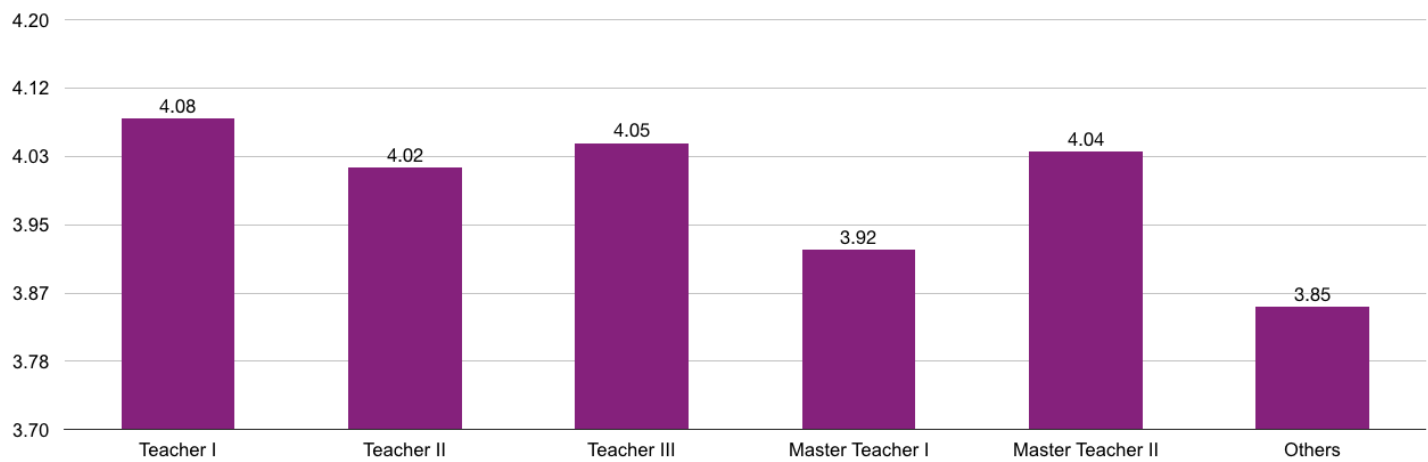**Based on highest educational level attainment**
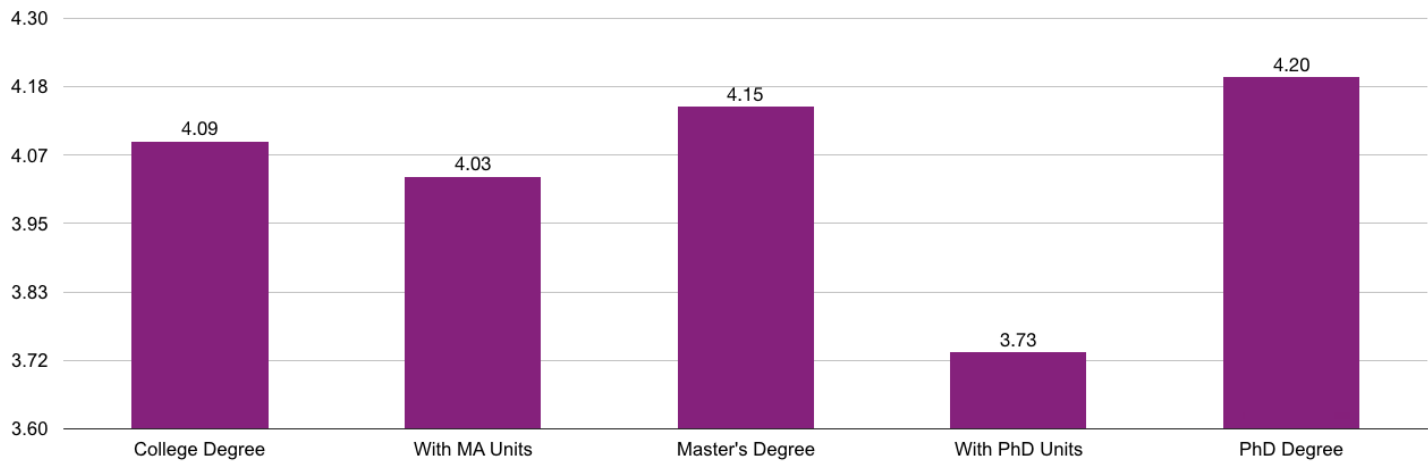
Note: College Degree (n=140), With MA units (n=223), With Master's degree (n=59), With PhD units (n=8), With PhD Degree (n=2)

Results: There was NO significant difference among the groups' liking of the course based on their highest educational attainment $(F = 4, 427) = 1.72$, $p = 0.14$.

College Degree (M = 4.09, SD = 0.43)
With MA Units (M = 4.03, SD = 0.55)
Master's Degree (M = 4.15, SD = 0.38)

With PhD Units (M = 3.73, SD = 0.47)
PhD Degree (M = 4.20, SD = 0.73)

Based on teacher ranking

Note: Teacher I (n=257), Teacher II (n=44), Teacher III (n=106), Master Teacher I (n=13), Master Teacher II (n=8), Others (n=4)

Results: There is NO significant difference among the groups' liking of the course based on their highest educational attainment $(F = 5, 426) = 0.532$, $p = 0.752$.

Teacher I (M = 4.08, SD = 0.53)
Teacher II (M = 4.02, SD = 0.44)
Teacher III (M = 4.05, SD = 0.44)

Master Teacher II (M = 4.04, SD = 0.370)
Master Teacher I (M = -3.92, SD = 0.43)
Others (M = 3.85, SD = 0.08)

Based on teaching experience
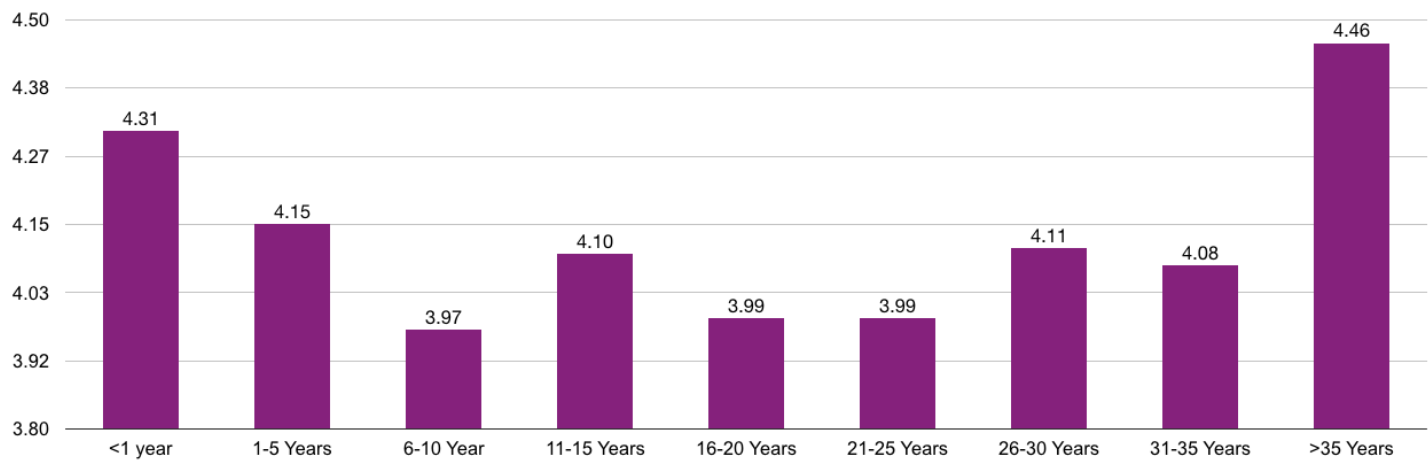
Note: Less than a year (n=5), 1-5 years (n=103), 6-10 years (n=106), 11-15 years (n=61), 16-20 years (n=56), 21-25 years (n=46), 26-30 years (n=37), 31-35 years (n=16), more than 35 years (n=2)

Results: There was NO significant difference among the groups' liking of course based on their number of years of teaching experience $(F=8, 423) =1.65, p=.108$.

Less than a Year (M = 4.31, SD = 0.46)   21-25 Years (M = 3.99, SD = 0.37)
1-5 Years (M = 4.15, SD = 0.40)   26-30 Years (M = 4.11, SD = 0.51)
6-10 Years (M = 3.97, SD = 0.59)   31-35 Years (M = -4.08, SD = 0.56)
11-15 Years (M = 4.10, SD = 0.43)   More than 35 Years (M = 4.46, SD = 0.65)
16-20 Years (M = 3.99, SD = 0.56)

CPK change of scores based on school (case study schools only)
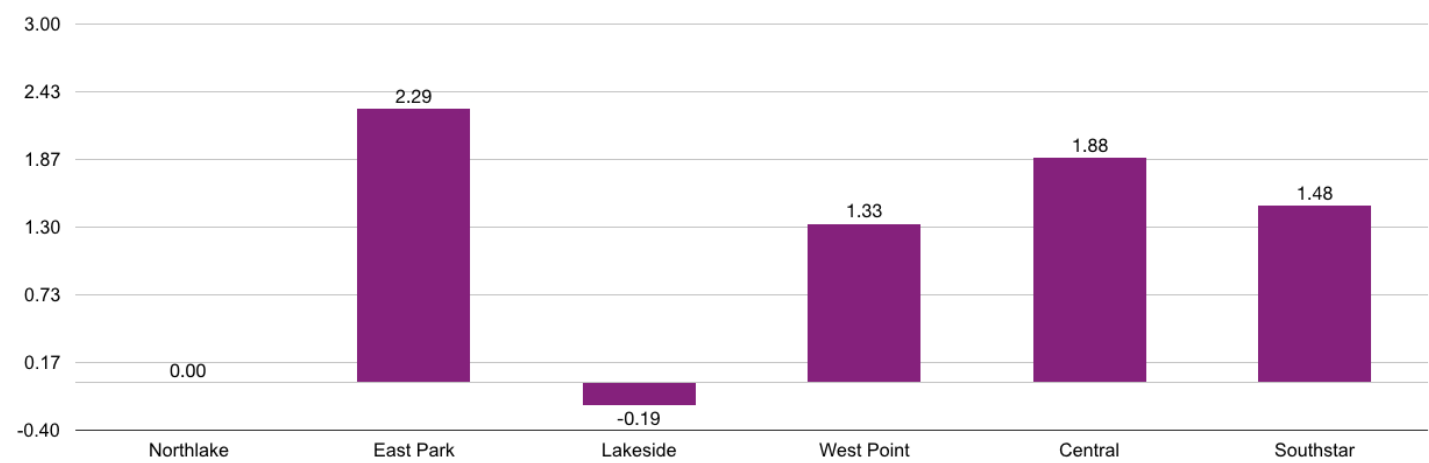
Note: Northlake (n=5), East Park (n=7), Lakeside (n=25), West Point (n=28), Central (n=17), Southstar (n=31)

Results: While scores improved across all groups, there was no significant difference among the change of scores between groups based on the school (F = 6, 427) = 0.197, *p* = 0.978.

Northlake (M = 0, SD = 3.67) (BS: M = 27.40)
East Park (M = 2.29, SD = 2.93) (BS: M = 26.43)
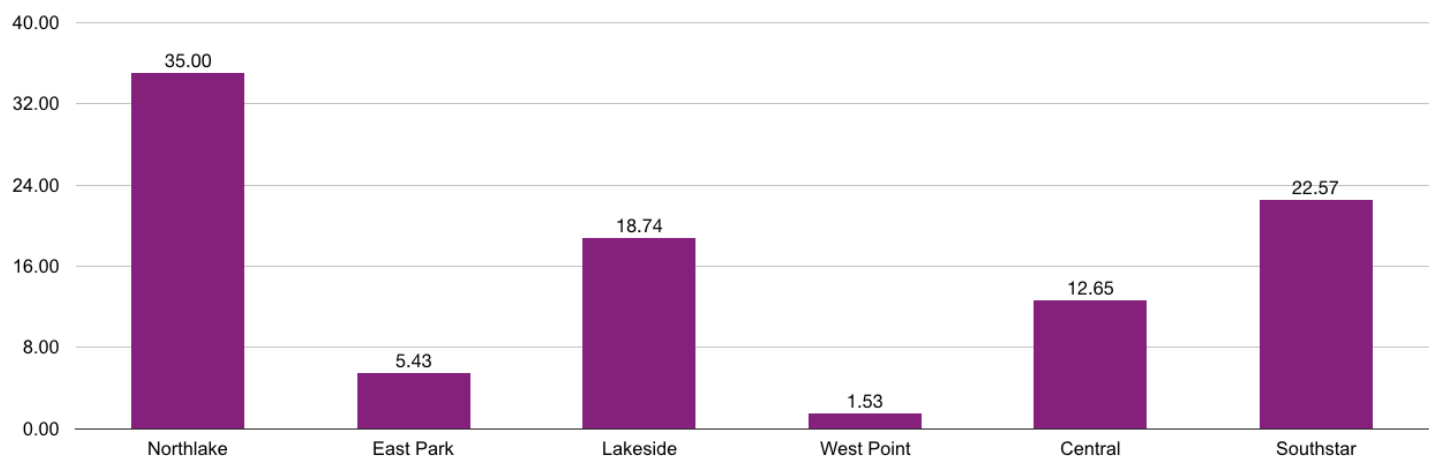Lakeside (M = -0.19, SD = 4.98) (BS: M = 28.19)
West Point (M = 1.33, SD = 9.70) (BS: M = 29.36)
Central (M = 1.88, SD = 7.29) (BS: M = 25.35)

Southstar (M = 1.48, SD = 5.31) (BS: M = 28.01)

* There was no significant differences among teachers' CPK baseline scores (BS) in the different case study schools.

TSNA change of scores based on school (case study schools only)

Note: Northlake (n=5), East Park (n=7), Lakeside (n=25), West Point (n=28), Central (n=17), Southstar Elementary (n=31)

Results: While scores improved across all groups, there was no significant difference among the change of scores between groups based on the school (F = 6, 427) = 0.197, *p* = 0.978.

Northlake (M = 35.00, SD = 14.70) (BS: M = 166.00)
East Park (M = 5.43, SD = 19.28) (BS: M = 169.86)
Lakeside (M = 18.74, SD = 15.65) (BS: M = 164.34)
West Point (M = 1.53, SD = 31.62) (BS: M = 182.89)
Central (M = 12.65, SD = 32.03) (BS: M = 176.12)

Southstar (M = 22.57, SD = 27.70) (BS: M = 166.37)

*West City Central participants had significantly higher TSNA baseline scores (BS) than Lakeside and Southstar elementary.

Appendix 12. Key themes identified in the qualitative analysis

Summary of prominent themes from interviews, observations and FGDs	
	Key Themes
Changes in teachers' pedagogical and content knowledge of early literacy instruction	*Knowledge about teaching strategies* • Explicit teaching strategies • Strategies using concrete materials • Literature-based strategies *Knowledge about assessment techniques* *Knowledge about differentiated instruction*
Changes in perspectives on early literacy instructional practices	*Importance of age-appropriate activities/strategies/materials* *Importance of assessment* *Importance of differentiation* *Importance literature based instruction*
Changes in practices in early literacy instruction	*Changes in literacy teaching strategies* *Changes in assessment strategies* *Changes in differentiated teaching* *Changes in classroom organisation*
Features of the ELLN Digital TPD program and their effect on teacher learning	*Positive courseware features* • Relevant content • Logical sequence of content • Concepts clearly explained • Self-paced • Video demonstrations *Positive LAC features* • Safe venue for group reflection and clarification • Venue for peer support and collaboration • Closely linked to courseware • Helps teachers put knowledge into practice • Confident, collegial LAC Facilitator *Negative courseware features* • Too easy/repetitive for some teachers • Some teachers identified unrelatable video clips • Assignment (expense of printing the task from the courseware and the time to complete) was identified as an issue by some teachers. *Negative LAC features* • Sometimes repetitious of courseware • Sometimes the LAC Facilitators were not considered to be sufficiently knowledgeable • LACs too long
Enabling/facilitative conditions	*Support and encouragement from school leadership* *Peer collegiality* *Good LAC Facilitator (with adequate knowledge, good facilitation skills)* *Availability of resources (LAC venue, technology, classroom resources, snacks)*
Problems identified (training/ resourcing/organisation)	*Many teachers reported that required classroom materials were not adequately provided - resourcing* *Some teachers had difficulty accessing courseware at home or at school – limited flexibility in terms of time/place – resourcing* *Some LAC groups were too large – resourcing/organization* *Some variability in LAC Facilitator practices/knowledge – training* *Some LACs were didactic and did not closely follow the LAC guidelines – training* *Some teachers had insufficient time to learn content (modules not ready on time) – not always self-paced – resourcing/organization*

Appendix 13. Evaluation of ELLN Digital course elements

Key elements of successful TPD: ELLN Digital

Relevance to classroom practice
- Qualitative research (focus groups) indicated that teachers found the ELLN Digital course relevant to their classroom practice.
- The ECS indicated that over 97% of the respondents thought that the course content was relevant to their needs as teachers.

Quality and focus of content
- The courseware was such that teachers could acquire better understanding (although the depth was limited) of the subject content, namely literacy as it is traditionally defined, and how young children learn it. Overall, the CPK test indicated a small, though significant, improvement in teacher knowledge.
- The content / delivery of content on assessment of early literacy may be in need of improvement as teacher knowledge regressed in the CPK items in this area.
- Clear examples were given in the video demonstrations but some teachers found these difficult to relate to their own classroom contexts.
- Qualitative data indicated that, for some teachers, the content was not challenging enough.
- Expert colleagues within and outside the school in the form of LAC Facilitators and expert Learning Facilitators were available, although the expertise of the LAC Facilitators was not always superior to that of the other LAC group members.

Active learning processes
- Active learning was intended in the LACs and teachers were able to engage in reflection and discussion, and linking the courseware to classroom action, within the LACs.
- Learning through application of new knowledge in classrooms on a weekly basis was a key feature of the course but this did not always happen because teachers did not always have access to the appropriate classroom resources.

Collective participation
- Participating teachers appreciated this element of the course greatly, although observations indicated that the LACs did not always proceed as intended and some LACs were too large to engender the development of a strong LAC identity.
- There is evidence that some LACs were run more like traditional classes (presentations) with less discussion than intended.

Duration and sustainability
- The duration of the literacy components of the ELLN Digital course was approximately 30 hours (courseware + LAC sessions) over 11 weeks. In addition to this, teachers had to prepare their assignments and prepare materials for classroom application of their new learning.
- For real change to occur, a longer timeframe with more depth in the courseware may be advantageous.

Coherence
- Because the course was planned by a team with stakeholders from various sectors, there was a clear and transparent coherence and consistency between the curriculum, policies, and priorities of DepEd. However, when the research team requested to view school level literacy policies, no written policies were provided. Some school principals provided their literacy priorities verbally and these were not inconsistent with the course.
- Teachers' prior knowledge and beliefs about teaching were assessed through the pre-course TSNA and in the LACs there were opportunities to discuss prior knowledge and beliefs and how these may be inconsistent with new knowledge. More opportunities for discussions along these lines may be advantageous in the LACs and in self-assessment activities within the courseware.

Theory of improvement
- The relationship between the goals of the ELLN Digital TPD and the features of the TPD are clearly articulated in the course guide. However, it may be advantageous to make this relationship even clearer to participating teachers as there were some misunderstandings about the role of the LAC Facilitator.

Organizational conditions
- Organizational conditions supported the ELLN Digital course in many ways. Many of the school principals were highly supportive in providing encouragement and resources. However, they did not necessarily have adequate funding at their disposal to provide all of the resources teachers needed in order to apply their new learning.
- Teachers indicated that they thought that the culture in their schools was changing and becoming more collegial with a sense of shared responsibility.

Based on Van Veen et al. (2012).

ABOUT THE AUTHORS

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