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# 1 Introduction

The professional development deliverable details the approach and activities we have undertaken in the project to support the schools involved in the pilots in their use of Navigo (WP6), Amigo (WP7) and the teacher tools (WP8). The pilot sites are:

- **Novice readers**: UK (UCL), Greece (Doukas), Germany (DHBW), Spain (UB)
- **EFL**: Sweden (UGOT), Greece (BC), Romania (ULBS), Spain (UB). The addition of Spain (UB) in EFL was not part of the initial project plan
- **Struggling readers**: UK (UCL), Greece (UOI)

The goals driving the strategy for this deliverable were:

- To understand the schools, education context and policies to inform technology implementation (section 2)
- To involve teachers in the technology implementation as designers to produce culturally specific learning designs (lesson plans) (section 3)
- To develop a comprehensive technical, pedagogical and content resource for teachers and design/deliver ongoing Continuous Professional Development to participating teachers that involves the whole school (section 4)

The outcomes of this deliverable are:

- An analysis of pilot countries' literacy and language practices informing a contextual strategy for implementing technology in each country
- The design and development of learning designs (lesson plans) involving the apps with teachers
- The design of a teacher manual localised for each pilot
- The design, contextual localization, and delivery of CPD comprising a hands-on training session and ongoing support visits as requested by the schools involved

# 2 Observations

## 2.1 Motivation

The curriculum analysis and observations reported in M6 within the user requirements deliverable D3.1 indicated that reading was taught in different ways in each country involved in the pilot. While D3.1 supported us to identify criteria for design, it was necessary to understand the teaching practices in relation to literacy in more depth. The aim of this *exploratory* stage was to identify specific requirements that would inform our strategy for professional development.

Each partner secured dates for observations of school lessons with a subset of participating schools. We sought to capture the gamut of learner and age groups relevant to each pilot. In this section we present a structured analysis of each pilot site followed by a summary of our key findings.

## 2.2 Novice and struggling Readers: United Kingdom (UCL)

The observation analysis reported below collects insights on the pedagogical, technological and organisational nature of literacy classes in three different schools in the United Kingdom. A diversity of approaches and methods for literacy teaching and learning were identified; variations were dependent upon school typology and institutional choice.

For instance, in school 1 'guided reading' is used consistently across the school. The 'guided reading' concept was originally developed by Marie Clay in the 1960s, and was developed further in the US by Fountas and Pinnell (1996) and adopted by the UK National Strategies in the 1980s/90s. Guided reading is not now mandatory as part of the UK National Curriculum (2014) but remains a recommended strategy still used in classrooms as part of a 'balanced literacy approach' for teaching reading. It utilises scaffolded support from peers/adults for developing decoding and comprehension skills. There are different manifestations and ways of organising sessions; but children tend to be grouped by reading ability and share texts at an appropriate instructional level in their groups. There is a paucity of research around Guided Reading, but some studies have found it worked well (Lyons & Thompson, 2012).

In school 2 (a private institution) teachers are encouraged to develop their own approaches and methods for literacy teaching.

Furthermore, there were differences in the availability of technology in each context, and more importantly different roles of technology in teaching and learning. To provide two contrasting examples; in school 1 children use literacy apps widely as learning tools in the classroom, whereas in school 3 computers are used solely as tools for practising touch-typing exercises.

**Analysis**

| **Lesson Observations: United Kingdom (UCL)** | |
|---|---|
| **Total number of schools** | 3 |
| **Total number of literacy lessons observed** | 14 |

| **Lesson Observations: United Kingdom (UCL) School 1** | |
|---|---|
| **School type** | Non-fee paying urban primary school with a self-developed curriculum. |
| **Number of literacy lessons observed** | 4 |

| | |
|---|---|
| **Year groups (age of children)** | Year 1 (age 5-6)<br>Year 3 (age 7-8) |
| **Pedagogical approaches** | Observation of guided reading sessions, in which children in the class were divided into 4-5 groups and worked independently on a task differentiated for each group (e.g. creating words; reading a book chapter; playing literacy games). The teacher coordinated and monitored the activities. In most cases, during the activities teacher and teaching assistant worked one-to-one with pupils in the 'reading group'. |
| **Set-up notes (organisation)** | Work in groups was mainly observed. Children were grouped according to their ability level. Each group of 6 worked around a table on an individual activity. |
| **Technology use in the classroom** | The classes used tablets and literacy apps (e.g. Teach Your Monster to Read) as a learning tool in guided reading sessions. In two of the observed lessons, one of the groups played with the tablets independently during guided reading, without teacher support. Insights have yet to be developed regarding the ways in which technology is used or teacher selects app learning material tailored to children's ability. |

| **Lesson Observations United Kingdom (UCL) - School 2** | |
|---|---|
| **School type** | Fee-paying rural girls' primary school. |
| **Number of literacy lessons observed** | 7 |
| **Year groups (age of children)** | Year 1 (age 5-6), 2 (age 6-7), 3 (age 7-8), 4 (age 8-9), 5 (age 9-10), 6 (age 10-11) |
| **Pedagogical approaches** | In year 1, 2 and 3 teachers don't adopt consistent approaches and methods for literacy teaching, except for activities for spelling. Guided reading is not used. Teachers are free to develop their own literacy lessons, and design activities in the way they think is most appropriate. No particular programmes are used for differentiated spelling in year 4, 5 and 6. |
| **Set-up notes** | In line with the school approach to teacher autonomy in planning and assessing literacy classes, some very different approaches to lesson organisation and set up were observed. For instance, pupils in year 1 mainly worked autonomously on their paper book, whilst pupils in year 6 were observed working in pairs or groups on text comprehension activities. |
| **Technology use in the classroom** | 'Purple Mash' (a cross curricular online learning tool) is used in year 1, 2, 3 and 4 to involve pupils with reading. This occurs in the school computer room, where children play independently with the programme on their PCs with use of headphones. Teachers don't intervene and use their 'dashboard' after the lesson to understand pupil performance. In some cases, teachers use 'Twinkl' (another online educational resources platform) to access literacy resources using the smartboard. |

| Lesson Observations United Kingdom (UCL) - School 3 | |
|---|---|
| **School type** | Fee-paying urban specialist dyslexia school |
| **Number of literacy lessons observed** | 3 |
| **Year groups (age of children)** | 3 (ages 7-8), 4 (ages 8-9), 5 (ages 9-10), 6 (ages 10-11) |
| **Pedagogical approaches** | Each child is provided with individualised learning goals and a progression framework that teachers review both mid-term and end of term. This reflects a 'differentiated teaching and learning' approach. Teachers and school more broadly adopt evidence-based, structured approaches to literacy and support each struggling child in their learning step by step. Most work is in small groups or one-to-one with specialist teachers, with precise and pre-defined learning goals and assessment criteria. More advanced learners participate in guided reading sessions, which usually include work on reading strategies and text comprehension to develop advanced literacy skills. |
| **Set-up notes** | Most work is organised in small groups or one-to-one using paper-based resources. |
| **Technology use in the classroom** | The school does not use smartboards in the classroom and does not have availability of tablets. They have a computer room that is used for touch-typing exercises. During these tasks, pupils use computers independently, and teachers do not intervene. Thus, learning apps are not used in this school at present. |

## 2.3 Novice Readers: Greece (Doukas)

The analysis based on the classroom observations intends to provide the project partners with useful insights from the literacy classes in 3 different schools around the area of Athens. One of the foci of the visits to schools for the observation sessions was to study the pedagogical approaches used in public schools. As Doukas staff attended 2/3 consecutive lessons at each school, there was the chance to observe the continuity of lessons.

In parallel, a lot of attention was also given to the technical infrastructure available in the Greek public schools. As there were a few regulations that affected the basic required technological infrastructure (e.g. wifi not allowed, etc.) it was important to see their way of operation in order to have all information needed to provide them with feasible solutions before the beginning of the pilots. We noticed that the use of technology in literacy classes was absent and for that reason the Doukas team attended an 'informatics' class to see if the available equipment in the 'informatics' lab could possibly facilitate the pilot sessions.

**Analysis**

| Lesson Observations Greece (Doukas) | |
|---|---|
| **Total number of schools** | 3 |
| **Total number of literacy lessons observed** | 8 literacy lessons + 2 'informatics' sessions (total 10) |

| Lesson Observations Greece (Doukas) - School 1 | |
|---|---|
| **School type** | Greek public school urban (Athens) |
| **Number of literacy lessons observed** | 2 literacy lessons<br>2 informatics classes |
| **Year groups (age of children)** | 1 (age 6-7) and 3 (age 9-10) |
| **Pedagogical approaches** | Literacy lessons<br>Informatics lessons (ICT focus) |
| **Set-up notes (organisation)** | Literacy lessons: exactly the same set up as the second school that participated in the classroom observations.<br><br>Informatics Lessons: Again, students are sat in a Π shape but with their backs facing the teacher and the interactive whiteboards as they had their stationary PCs in front of them. While the teacher introduces them to the new concepts of that day's lesson they turned around and the set up was transformed and was similar to the literacy classes. When there was the need to work with the PCs, they turned the chairs around as were initially. |
| **Technology use in the classroom** | All of the classrooms (and those that we observed) have a whiteboard that is used mainly to present content that relates to the book (power point presentation aligned with the book chapter being taught). |

| Lesson Observations Greece (Doukas) - School 2 | |
|---|---|
| **School type** | Greek public school urban (Athens) |
| **Number of literacy lessons observed** | 3 |
| **Year groups (age of children)** | 1 (age 6-7), 2 (age 8), 3 (age 9-10) |
| **Pedagogical approaches** | Similar to the first school, Doukas team observed mostly traditional approaches in literacy lessons. Spelling, Vocabulary, Reading activities as a whole class. |
| **Set-up notes** | Teacher centred with students' desk (2 per desk) having a Greek Π shape. |
| **Technology use** | Again, the interactive whiteboard was the main technological element used in the three class lessons that were observed. |

| Lesson Observations Greece (Doukas) - School 3 | |
|---|---|
| **School type** | Greek public school urban (Athens) |
| **Number of literacy lessons** | 3 |
| **Year groups (age of children)** | 1 (age 6-7), 2 (age 8), 3 (age 9-10) |
| **Pedagogical approaches** | Each child has individualised learning goals and progression that teachers review each term and mid-term. This reflects a 'differentiated teaching and learning' approach. Teachers and school more broadly adopt evidence- |

| | |
|---|---|
| | based, structured approaches to literacy and support each struggling child in their learning step by step. Most work is in small groups or one-to-one with specialist teachers, with precise and pre-defined learning goals and assessment criteria. More advanced learners participate in guided reading sessions, which usually include work on reading strategies and text comprehension to develop advanced literacy skills. |
| **Set-up notes** | Most work is organised in small groups or one-to-one using paper-based resources. |
| **Technology use** | The school doesn't have smartboard or tablet availability. They have a computer room that is used for touch-typing exercise. During these tasks, pupils use computers independently, and teachers don't intervene. Thus, learning apps are not used in this school.<br><br>Informatics Lab: the most technologically advanced place of the school. There is an interactive whiteboard and 15 PCs. The internet uses Ethernet technology and wires as wifi is not allowed. |

## 2.4 Struggling Readers: Greece (UOI)

The observation analysis reported below collects insights on the pedagogical, technological and organizational nature of literacy classes in three different schools in Ioannina. We did not identify diversity of approaches and methods for literacy teaching and learning. Most classes were private and only one class had 4 students. That was the only difference between classes. Only in the school that had the class with 4 students, we noticed group activities. All schools were public. Since they were facing internet problems, no technology was used by teachers during lessons. Teachers used guided reading (see earlier description section 2.2).

**Analysis**

| **Lesson Observations Greece (UOI)** | |
|---|---|
| **Total number of schools** | 3 |
| **Total number of literacy lessons observed** | 6 |

| **Lesson Observations Greece (UOI) - Schools 1 and 2** | |
|---|---|
| **School type** | Public schools |
| **Number of literacy lessons observed** | 4 |
| **Year groups (age of children)** | 1 (age 10), 2 (age 11), 3 (age 8), 4 (age 9) |
| **Pedagogical approaches** | We observed guided reading sessions, with one student. Tasks include reading (the teacher corrects any words that the student misreads), questions about the meaning of difficult words, comprehension questions and exercises for syllabification and phonemes). The teacher coordinates and monitors the activities. |
| **Set-up notes (organisation)** | We mainly observed private work. Teacher sits at their desk and the child on their own. |

| | |
|---|---|
| **Technology use in the classroom** | Teachers didn't use any technology |

| **Lesson Observations Greece (UOI) - School 3** | |
|---|---|
| **School type** | Public school |
| **Number of literacy lessons observed** | 2 |
| **Year groups (age of children)** | 1 (age 10), 2 (ages 11-12) |
| **Pedagogical approaches** | The student and the teacher read the text (a snippet from "Don Quixote"). The student reads one paragraph and the teacher the next one and so on. The teacher corrects any word that the student misreads. The teacher also makes points about syllabification of difficult words. |
| **Set-up notes (organisation)** | In a private lesson the teacher helps the child and sits near him, while in a group lesson he sits in her desk or use blackboard. |
| **Technology use in the classroom** | Teacher didn't use any technology |

## 2.5 Novice Readers: Spain (UB)

The observation analysis reported below collects insights on the pedagogical, technological and organisational nature of literacy classes in three different schools in Spain. Despite the fact that all schools were found to follow the Spanish national curriculum, we identified a diversity of approaches and methods for literacy teaching and learning that depend on school typology and institutional choices. As far as our observations demonstrated, overall, the uses of technology throughout the literacy lessons was minimal, which makes us think that for some teachers it might be rather difficult to use Amigo and Navigo, but in turn could provide them with a very interesting, new and innovative approach.

**Analysis**

| **Lesson Observations Spain (UB)** | |
|---|---|
| **Total number of schools** | 2 |
| **Total number of literacy lessons observed** | 4 |

| **Lesson Observations Spain (UB) - School 1** | |
|---|---|
| **School type** | Private school with public funding in a big town |
| **Number of literacy lessons observed** | 2 |

| | |
|---|---|
| **Year groups (age of children)** | 2 (ages 7-8) |
| **Pedagogical approaches** | We observed guided reading in Spanish. The teacher told a story with considerable emphasis, beautiful intonation, appropriate redundancy and repetition, with rhetorical questions, with questions addressed to the students, with rich and varied vocabulary (e.g. she used some of the difficult endings of adjectives and nouns that we will be working on through the games), great noises (e.g. opening of doors, knocking on doors…), theatrical emphasis, excellent markers and linking words, excellent use of emotions. After that, the students had to draw their favourite part of the story and discuss it publicly as they draw. |
| **Set-up notes (organisation)** | The first part was in a whole class setting and the second part an individual activity, although students were allowed to talk and share experiences. |
| **Technology use in the classroom** | No technology was used in the Spanish lessons, but the teacher seemed willing to adopt new teaching methods. |

| **Lesson Observations Spain (UB)- School 2** | |
|---|---|
| **School type** | Public school in small town |
| **Number of literacy lessons observed** | 2 |
| **Year groups (age of children)** | 2 (ages 7-8) |
| **Pedagogical approaches** | In the Spanish lessons, the aim is to work on spelling. The first activity consisted of spelling some important words and writing on the digital whiteboard. In total the class worked on 7 words and the students also suggested other words that appear to have the specific difficult feature. Afterwards, they do a dictation, which apparently, they do once a week on the orthography day. |
| **Set-up notes** | In the Spanish lessons, the activities are mainly in a whole class setting or in an individual basis. |
| **Technology use in the classroom** | The teacher knows how to use the digital whiteboard, but does not seem to be using much technology in the class. |

## 2.6 Novice Readers: Germany (DHBW)

All participating schools in Germany are public and therefore not fee-paying. The observation analysis reported below collects insights on the pedagogical, technological and organizational nature of literacy classes in two different schools in Karlsruhe, Germany. All observations took place in public elementary schools. None of the schools have internet, nor do they use any form of technological support. One classroom had a laptop and a projector but this is not integrated into every day teaching. Another interesting point is that there is really no such thing as a “reading lesson”. Literacy classes are therefore usually about learning letters or grammatical points. Mostly, classes are teacher centred followed by individual work sessions. The most open lesson and closest to “reading” that was observed regarded teamwork around the creation of a poster for a book that the class read.

**Analysis**

| Lesson Observations Germany (DHBW) | |
|---|---|
| **Total number of schools** | 7 |
| **Grades** | Grade 1 (77), Grade 2 (10), Grade 3 (31) |
| **Total number of literacy lessons observed** | 104 learning sessions (total of 869 minutes) |

Below are two detailed reports that exemplify 6 general lesson observations.

| Lesson Observations Germany (DHBW) (School 1) | |
|---|---|
| **School type** | Public school |
| **Number of literacy lessons observed** | 4 |
| **Year groups (age of children)** | Grade 1 (ages 7-10) |
| **Pedagogical approaches** | In first grade each week is dedicated to learning a new letter. The lessons are usually designed in very much the same way across teachers and schools. The pattern is the following:<br>The teacher introduces a new letter with the group of students around him/her. They can do this by telling a story where the letter appears with high frequency and asking the students to guess the new letter that is the topic. A teacher will write the new letter on the board. Then the teacher will find words that start with that letter or contain the letter (vowels). Next the children will be asked to find their own words or check if their friends' names contain that letter. In the second part of the lesson, the children are asked to do a number of exercises on their own with several to choose from. The order is determined by the children. |
| **Set-up notes (organisation)** | Frequent changes in seating arrangement and work. First group lead by teacher then individual work that is usually basic drill exercises on paper, sometimes with self-correction. Few times, games are used, where children pair up in teams of two and role dice to do exercises together on a card-board game. |
| **Technology use in the classroom** | Teachers didn't use any technology |

| Lesson Observations Germany (DHBW) – (School 2) | |
|---|---|
| **School type** | Public school |
| **Number of literacy lessons observed** | 2 |
| **Year groups (age of children)** | Grade 3 (ages 8-11) Grade 4 (ages 9-12) |

| | |
|---|---|
| **Pedagogical approaches** | Students read a book together as a class. In follow-up lessons the kids were asked to create a poster about the book as a group. The teacher walks around answers questions, gives ideas about improvements and supports the work. The next lesson, students are asked to present their posters to the class. The had created questions for the class to answer about their presentations. The students then read excerpts from the book to the class. The class was then asked to give feedback to the group that did the presentation. The teacher coordinates this work by helping with understanding and formulations. |
| **Set-up notes (organisation)** | Group work, Student presentations, teacher as support role. |
| **Technology use in the classroom** | Teacher didn't use any technology |

## 2.7 English as a Foreign Language: Sweden (UGOT)

The observation analysis reported below collects insights on the pedagogical, technological and organisational nature of EFL classes in three different schools in Sweden. We identified a diversity of approaches and methods for EFL teaching and learning that mainly depend on the teacher's own pedagogical approach. Swedish teachers are quite free to form and develop their teaching as long as the students reach the objectives set for year 6. For instance, the teacher in school 1 used a quite structured approach with 'repeat-after-me' reading, while the teachers in school 2 and 3 let the students discover more on their own and had a more explorative approach. Furthermore, we noted that although all the schools have access to technology, the way the teachers used it differed. To provide two opposite examples, in school 1 the students could use games when they were finished with their ordinary tasks, and in school 3 computers were around all the time.

**Analysis**

| **Lesson Observations Sweden (UGOT)** | |
|---|---|
| **Total number of schools** | 3 |
| **Total number of literacy lessons observed** | 4 |

| **Lesson Observations Sweden (UGOT) - School 1** | |
|---|---|
| **School type** | Comprehensive school (non-fee), preschool- year 6, in small town, large proportion of students with another/an additional native language |
| **Number of literacy lessons observed** | 1 |
| **Year groups (age of children)** | 5 (ages 10-11) |

| | |
|---|---|
| **Pedagogical approaches** | We observed an EFL lesson, in which children were first quizzed on their vocabulary homework. They then read the text aloud that they had read for homework; first one sentence per student, then one student read several sentences and the class repeated after. They read the new text for homework silently and then they listened to it. The teacher gives them the new vocabulary and reads each word out loud for the students to repeat. Then they read the new text that way- the teacher first, the students repeat. All of this was done with the whole class together. Then the students gave peer-response on texts they had written in a previous lesson. This was done in pairs. If anybody finished, they could play on gamestolearnenglish.com. The teacher explained that the procedure around the homework and new text was something they did every week, the peer-response perhaps twice in a year.<br><br>The approach here is quite traditional, with the teacher leading and the students repeating. The same with the approach to games which was something to do if one was finished. It was unclear whether this was to fill time or as a reward. The teacher explained that she would mostly work with the textbook and not specifically tailor learning content to the children's ability. |
| **Set-up notes (organisation)** | This lesson was mainly organised as a whole class session. The focus is on the teacher during the first part of the class (homework checking and reading). The peer-response was in pairs. They moved from their ordinary spots to sit in pairs. |
| **Technology use in the classroom** | The class listened to the new text from the teacher's computer. They used their Chromebooks for writing and revising their texts. Those who finished the tasks could play gamestolearnenglish.com, but nobody got that far. This seemed like something that would be done without teacher support. |

| **Lesson Observations (Sweden (UGOT) - School 2** | |
|---|---|
| **School type** | Comprehensive school (non-fee), preschool-year 9, rural |
| **Number of literacy lessons observed** | 2 |
| **Year groups (age of children)** | 4 (ages 9-10) |
| **Pedagogical approaches** | We observed two similar EFL lessons in which they worked with vocabulary around animals. The teacher showed cards of different animals and the students tried to describe the animals using old and new vocabulary. The teacher explains that they will write a text about their favourite animal. The students sit in pairs trying to come up with words that describe the chosen animals. Then they write sentences with those words in it, along the model S/He is… S/He has… S/He can…<br><br>The teacher explains that she tries to get reading, writing, speaking, listening into every lesson. Also, she varies between tasks where everybody does the same (as this time) or where the task is more differentiated so that the students can work at their own level. |
| **Set-up notes** | The first part of the lesson is done with the whole class. Then the students sit in pairs (or in smaller groups, maximum 4) around tables. |

| | |
|---|---|
| **Technology use in the classroom** | The teacher explains that the projector is sometimes used to show films. |

| **Lesson Observations Sweden (UGOT) - School 3** | |
|---|---|
| **School type** | Comprehensive school (non-fee), preschool-year 6, urban |
| **Number of literacy lessons observed** | 1 |
| **Year groups (age of children)** | 5 (ages 10-11) |
| **Pedagogical approaches** | The teacher instructs the students to read a chapter in their textbooks. Then they are to sit in pairs and re-tell what they've read in their own words. After that, the whole class contributes to add new words to a list on the whiteboard, consisting of relevant words/vocabulary which are NOT included in the text in the book. Next, students are asked to roleplay or enact the episode in the textbook chapter. This is done in pairs. Certain words or expressions that the students introduce during their roleplay is then discussed in class (like "how do you say 'phew' in Swedish?"). In connection to this, phonetic representation of sounds is mentioned. During the roleplay the students improvise around the content of the episode from the textbook, adding phrases, words and expressions that are not included in the textbook episode, but which they know from previous encounters with English (such as "someone's in trouble").<br><br>This teacher strongly emphasizes daring to speak and that speaking is 'half of the grade'. It is apparent that they have practiced speaking a lot in class since the students are quite comfortable to perform in front of each other. Regarding differentiation, the teacher sometimes puts two 'strong' ones together and two 'weak' ones together so that they all get challenged and nobody can hide. |
| **Set-up notes** | When they read, they sit in their usual spots. Then the pupils are asked to form pairs with someone else than the one they usually sit next to, which is something they seem used to be used to. |
| **Technology use in the classroom** | The students all have laptops. The previous chapter in the textbook they had read as a Penguin Easy Reader. They got the first 2 pages in their textbook, but then they found the rest on Slideshare and read the rest online. They also found questions to the text online that they did as homework. |

## 2.8 English as a Foreign Language Romania (ULBS)

The observation analysis reported below collect insights on the pedagogical, technological and organisational nature of literacy classes in three different schools in Sibiu County, Romania. We identified some approaches and methods for literacy teaching and learning that depend on school typology and institutional choices, but in most of them the reading is guided consistently across the school, whereas in few cases schools allows teachers to develop their own approaches and methods. We found different technology availability in each context, and more importantly different roles of technology in teaching and learning. Most of the schools are working with classical learning tools in the classroom for literacy (books, notebooks), and in some schools' computers with CD-ROMs or cassette players with audio cassettes are merely used as tools for touch-typing exercise.

**Analysis**

| Lesson Observations Romania (ULBS) | |
|---|---|
| **Total number of schools** | 4 |
| **Total number of literacy lessons observed** | 6 |

| Lesson Observations Romania (ULBS) - School 1 | |
|---|---|
| **School type** | Non fee paying urban middle school with a national-based developed curriculum |
| **Number of literacy lessons observed** | 1 |
| **Year groups (age of children)** | 4 (ages 8-9), 5 (ages 9-10) |
| **Pedagogical approaches** | We observed guided reading sessions, in which children are divided into 5-6 groups and work independently on a task (e.g. creating words; reading a book chapter; playing literacy games). The teacher coordinates and monitors the activities. In most cases, during the activities teachers work one-to-one with pupils in the 'reading group'. |
| **Set-up notes (organisation)** | We mainly observed work in groups. Children are grouped according to their ability level. Each group of 6 works around a table on an individual activity. |
| **Technology use in the classroom** | The classes did not use tablets and literacy apps as a learning tool in guided reading sessions. There are mainly based on are working with classical learning tools in the classroom for literacy (books, notebooks). We suggested about the possibility of using technology in their learning process and the teachers were very interested about this change. Furthermore, because teachers will select specific apps with learning material tailored to children's ability, they considered a very useful thing. |

| Lesson Observations Romania (ULBS) - School 2 | |
|---|---|
| **School type** | Non fee-paying urban gymnasium school with a national-based developed curriculum |
| **Number of literacy lessons observed** | 3 |
| **Year groups (age of children)** | 4 (ages 8-9), 5 (ages 9-10), 6 (ages 10-11) |

| | |
|---|---|
| **Pedagogical approaches** | We observed guided reading sessions, in which children are divided into 5-6 groups and work independently on a task (e.g. creating words; reading a book chapter; playing literacy games). The teacher coordinates and monitors the activities. In most cases, during the activities teachers work one-to-one with pupils in the 'reading group'. |
| **Set-up notes** | Even the teacher's autonomy is not very high, when it is possible teachers apply their idea in the planning and assessing literacy classes. We mainly observed work in groups. As far the age increases, students worked less autonomously on their paper book and more worked in pairs or groups on text comprehension activities. |
| **Technology use in the classroom** | The pupils learn sometimes in the school computer room, where they play independently with their headphones. Teachers don't intervene and use their 'dashboard' after the lesson to understand pupils' performance. |
| **Lesson Observations Romania (ULBS) - School 3** | |
| **School type** | Non-fee paying rural secondary school with a national-based developed curriculum |
| **Number of literacy lessons observed** | 1 |
| **Year groups (age of children)** | 3 (ages 7-8), 5 (ages 9-10) |
| **Pedagogical approaches** | Each child has individualised learning goals and progression that teachers review each term and mid-term. At third year group most work was in small groups or one-to-one with teachers, with precise and pre-defined learning goals and assessment criteria. In the fifth year more advanced learners participate in guided reading sessions, which usually include work on reading strategies and text comprehension to develop advanced literacy skills. |
| **Set-up notes** | Most work is organised in small groups or one-to-one using paper-based resources. |
| **Technology use in the classroom** | The school doesn't have smart board or tablet availability and neither a computer room. Thus, learning apps are not used in this school. |

| | |
|---|---|
| **Lesson Observations Romania (ULBS) - School 4** | |
| **School type** | Non-fee-paying urban gymnasium school with a national-based developed curriculum |
| **Number of literacy lessons observed** | 1 |
| **Year groups (age of children)** | 5 (ages 9-10) |

| | |
|---|---|
| **Pedagogical approaches** | We observed guided reading sessions, in which children are divided into 5-6 groups and work independently on a task. The teacher coordinates and monitors the activities. In most cases, during the activities teacher work one-to-one with pupils in the 'reading group' |
| **Set-up notes** | We mainly observed work in groups or with a single group (the whole class). Children are grouped according to their ability level. Each group of 3-5 works around a table on an individual activity. |
| **Technology use in the classroom** | The classes did use cassettes (tape) with different texts as a learning tool in guided reading sessions. |

## 2.9 English as a Foreign Language Spain (UB)

The observation analysis reported below collects insights on the pedagogical, technological and organisational nature of EFL classes in two different schools in Spain. Despite the fact that all schools were seen to follow the national curriculum, we identified a diversity of approaches and methods for literacy teaching and learning that depended on school typology and institutional choices. There was not much use of technological tools throughout our observations, although most of the teachers have some knowledge on how they could implement technological options and it will be therefore interesting to implement Navigo and Amigo in that context.

**Analysis**

| **Lesson Observations Spain (UB)** | |
|---|---|
| **Total number of schools** | 2 |
| **Total number of English as a Foreign language lessons observed** | 4 |

| **Lesson Observations Spain (UB) - School 1** | |
|---|---|
| **School type** | Private school with public funding in a big town (urban) |
| **Number of literacy lessons observed** | 2 |
| **Year groups (age of children)** | 6 (ages 11-12) |
| **Pedagogical approaches** | We observed guided reading sessions in English. The aim of the session was to read aloud and in a whole group setting a part of an adapted Sherlock Holmes book. Each paragraph was read by a different student. The teacher asked the students that were reading to translate some vocabulary into Spanish or Catalan. |
| **Set-up notes (organisation)** | The reading activity was carried out as a whole class activity. Only around ten children got to read aloud in a single session. |

| | |
|---|---|
| **Technology use in the classroom** | No technology was used in the English lessons observed, but Navigo/Amigo could clearly help fostering engagement, especially in terms of the students that are left behind or beyond the overall level of the class. |

| **Lesson Observations Spain (UB) - School 2** | |
|---|---|
| **School type** | Public school in small town |
| **Number of literacy lessons observed** | 2 |
| **Year groups (age of children)** | 6 (ages 11-12) |
| **Pedagogical approaches** | The aim of the session was to prepare and conduct an interview to obtain personal information. The teacher elicited vocabulary to help students generate questions for the personal interview. The teacher used English at all times except for grammar explanations, which usually took place in the learners' L1. The learners wrote the questions they came up with in their notebooks. They asked lots of questions, and the teacher provided feedback (recasts, comprehension checks, brief explicit explanations, feedback on intonation-vocab-grammar), elicited previous knowledge and made learners think for themselves. Once the questions were ready, they started practising a personal interview in pairs. Finally, they went public. In pairs, they stood in front of the class and they read/performance their interview. At some point, some students good occasional feedback in case it was needed. This was the shortest part since they had spent most of the time preparing the questions (No reading tasks were devised for this particular class, but one can gather the kind of dynamics that would take place in the reading class, where feedback as learners read would be expected). |
| **Set-up notes (organisation)** | In the English lessons, there have been activities observed in a whole class setting, and others in pairs or small groups. |
| **Technology use in the classroom** | The teacher observed have great knowledge on the use of the digital whiteboard, but no other technology seems to be used in the class. It should be easy to integrate Navigo and Amigo in this context. However, the school only committed to use Navigo and Amigo for 45 minutes every two weeks, which may not be enough to gather useful data. |

## 2.10 English as a Foreign Language Greece (BC)

The observation analysis below is a record of the pedagogical, organisational and technological nature of English as a foreign language lessons in three different schools in Greece. Two schools are British Council teaching centres in Athens and thus follow an identical approach determined in the main by the British Council Global Statement of Approach which sets the standards for the organisation's approach to teaching and learning. The third school is a private school following the Greek national curriculum which in turn specifies the content and outcomes of learning. This private school is also a partner school of the British Council and has partnered with the British Council on a number of curriculum development and capacity-building projects in the area of English as a Foreign Language.

**Analysis**

| Lesson Observations Greece (BC) | |
|---|---|
| **Total number of schools** | 3 |
| **Total number of literacy lessons observed** | 10 |

| Lesson Observations Greece (BC) - School 1 and 2<br>British Council teaching centres (Kolonaki and Kifissia) | |
|---|---|
| **School type** | Fee-paying after-school foreign language schools |
| **Number of literacy lessons observed** | 4 (2 at each centre) |
| **Year groups (age of children)** | A2 and B1 level students (12-13 year olds) |
| **Pedagogical approaches** | Clear statement of learning aims/session<br>Learner-centredness through pair work and group work<br>Varied teacher role – teacher, manager, facilitator, supporter, monitor<br>Limited 1-to-1 teacher-learner interaction<br>Assessment of learning<br>Focus on self-/peer-correction |
| **Set-up notes (organisation)** | Whole-class moving to pair and group work.<br>Children grouped according to activity<br>Flexible class set-up with furniture being positioned and repositioned as need requires |
| **Technology use in the classroom** | High use of IWB<br>Resources pre-selected for teacher<br>Use of tablet-based apps e.g. Quizlet and British Council LE apps<br>Teachers confident with use of tablet-based learning |

| Lesson Observations Greece (BC) - School 3 | |
|---|---|
| **School type** | Fee-paying private school |
| **Number of literacy lessons observed** | 6 |
| **Year groups (age of children)** | Years 5, 6 and 7 (12 to 3 years olds A2 to B1) |
| **Pedagogical approaches** | Book-based curriculum<br>Emphasis on acquisition of grammar and vocabulary<br>Focus on accuracy over fluency<br>Controlled activities<br>Teacher as manager as manager and monitor<br>Peer and teacher feedback<br>Assessment for learning |

| | |
|---|---|
| **Set-up notes (organisation)** | Whole class<br>Some pair work<br>Nomination of individual learners<br>High frequency of teacher-individual learner interaction<br>Fixed class set up not conducive to big group work |
| **Technology use in the classroom** | Computer connected to digital projector<br>e-book activities associated with course book<br>internet resources such as Youtube<br>Little evidence of tablet-based learning |

## 2.10 Summary and Reflections

Literacy lessons in a total of 15 schools across partner countries: UK, Greece, Spain and Germany (DHBW) were observed in relation to the 'novice' and 'struggling reader' groups and a total of 40 lessons observed by researchers across a variety of year groups. (It should be noted that many more lessons were observed by the Germany but only the outcomes for 6 schools were provided by the German team for this analysis.) With regard to the 'EFL' groups, 12 schools were involved across partner countries; Sweden, Romania, Spain and Greece and a total of 24 lessons viewed. Types of primary school varied depending on country involved and included: fee paying, non-fee paying, private, public, single and mixed gender institutions. Other school types reported were 'gymnasium' and secondary schools. Schools were geographically located in both rural and urban areas.

### Pedagogical approaches

Schools in the UK, Spain and Greece focusing on the 'novice' and 'struggling reader' groups utilised a variety of pedagogical approaches and methods for literacy teaching and learning; whilst all following a national curriculum. In one of the Greece settings (Doukas), where there was less diversity in approach evident. Guided reading occurred in all three countries and was the approach most commonly observed. Other literacy teaching activities focused on phonics/letter knowledge, spelling, reading comprehension. Whole class, group, pair and 1:1 learning situations were observed. In the classes observed by UOI (Greece) more traditional teaching approaches were observed; though in all settings there was again variety of teacher led and peer led activities or differentiated work set for different abilities. The approaches observed by DBHW in German schools differed substantially. There was no internet or technology used in the schools and rather than actual reading lessons, the focus was teacher led and based on development of phonological and grammatical skills.

With regards to the EFL classes, again a variety of pedagogical approaches were observed in literacy lessons. Teachers in Sweden tended to face fewer external restrictions and base their teaching on their personal pedagogical approach; whereas the national curriculum in Romania and Spain and the British Council Standards for British Council Schools in Greece guided expectations. None of the schools were restricted from using a creative approach for teaching and learning. EFL learners were engaged in varied language learning activities including vocabulary learning, comprehension skill development, grammar use, interviewing, guided reading and oral rehearsal of spoken English. Again, a variety of learning contexts were observed including whole group, small group, pair and one to one.

### Use of technology

Technology use in the classroom showed more variation. Whilst all schools observed in the UK were using Apps and other technologies to support learning; in schools in Greece, Spain, Romania and Germany there was a different picture. Observed technology use was minimal and use of Apps and tablets in classrooms was rare. Technology use (where it happened at all) tended to be in a room set up with computers or was seen in use of an interactive whiteboard within the classroom. Issues with internet connection problems and Wi-Fi quality were identified as possible reasons for non-use.

### Reflections: key points and implications

- Analysis of the observations showed a diversity in lesson content across schools and in different countries. This is something that could be built upon and celebrated and the potential for encouraging a diversity of approaches could be further implemented through using a flexible CPD approach such as 'learning design'.
- A variety of different pedagogical approaches to teaching literacy across schools was noted; though many similarities were also evident; for instance, in the use of ''guided reading" in many contexts.
- It would seem that the varied use of technology (where it was used at all) indicated that technology use in classrooms is often ad hoc and variable and does not always involve strategic planning for use. This would be consistent with research findings (Zhao & Bryant, 2006).
- Some interesting feedback from partners was captured during the observations. In schools where there was limited use of technologies, it was proposed that there was a real potential for Navigo/Amigo to offer opportunities for children to engage in the use of technology to support development of literacy or EFL skills and knowledge.
- Observation of sessions led partners to suggest that using Navigo/Amigo could potentially increase pupil motivation and engagement for learning.
- The importance of having a secure and fast internet connection and access to Wi-Fi was highlighted as essential for successful use of the Amigo and Navigo apps in schools.

# 3 Learning Design workshops

## 3.1 Motivation and Theory

The findings from the observational stage of our school research clearly indicated the diversity of practice across different country contexts, and most importantly within countries. Though an effort was made during the design phase to align our apps to the educational philosophies of each country, we recognise that the project technologies (Amigo reader and Navigo games) embody particular pedagogical approaches and content coverage that may be more, or less so cogent, with the practices and the curricula of each country. In scaling up the technology use across the numerous pilots it was important to recognise, value and not undermine this diversity, thus leaving room for teachers to subvert the app design. To achieve this, we drew from the field of Learning Design.

Learning Design (LD) is a field concerned with the design, evaluation and re-use of learning activities involving technology. Learning designs are in essence detailed learning activities and interventions. They can span from modules to sessions, and to activities (Dalziel et al, 2016). Scholars in this field have recognised the extrinsic forces that are currently changing the nature of both teaching and learning. Those in the teaching profession have less time, while they face high demands to align with technological and pedagogical innovations, as well as curricula. At the same time, learning is no longer bounded to academic knowledge and skill acquisition, but also requires collaboration and communication (Dalziel et al, 2016). The challenge therefore remains how to design an education that prepares learners, whilst also supports educators to more effectively prepare and facilitate this new kind of learning.

It is here where those working in the field of LD have argued in favour of developing learning designs that will support teachers in their teaching practice by placing the teacher in the role of the *designer,* conceiving this as a form of professional development (Laurillard et al, 2018). In contrast to Laurillard's view where the teacher is put in the centre, Ames et al (2016) report on the one laptop per child programme in the US to argue that techno-centric approaches to technology in education are less likely to facilitate implementation. Thus, a collaborative multi-stakeholder approach is needed that works across micro, meso and macro levels, respecting the social complexities of the education context. In the *iRead* project, we viewed the involvement of the teacher to be a critical aspect to technology implementation and scaling up in schools. Thus, alongside CPD and ongoing support we planned to offer a design involvement fostered through the process of collaborative learning designs, as one way to further secure this.

Some scholars have argued that learning designs should support a socio-constructivist approach to learning (e.g. Mangaroska & Giannakos, 2018; Laurillard et al 2018). For Dalziel et al (2016) learning designs are pedagogically agnostic. According to these authors, the core concepts informing a LD are the pedagogical approaches, the specific assumptions about the educational context, meso and macro level values, alongside teacher practice and reflection. In the *iRead* project we aligned with Dalziel et al (2016); because their view created the space to recognise the different contextual practices, and policies, we identified in the observation stage. In not prescribing a particular philosophy there was room for teachers to define this for themselves.

One of the key goals of learning designers is to yield outputs that can be reused, re-appropriated and scale up to facilitate digital learning (Laurillard et al, 2018). It is thus not surprising that *notation* and thus *representation* have become a key requirement in delivering this vision. In defining notation as the central language of learning designs the goal is for teachers "to keep improving their practice, in a principled way" (Laurillard et al, 2018). Using the analogy of music, Dalziel et al (2016) explain that learning designs capture the core elements of practice which according to Agostinho et al (2009) are effective when they offer (i) detailed and complete descriptions of tasks (ii) the resources and supports needed to accomplish the activity (iii) implementation of context. A variety of notations have been developed amongst which are the learning designer developed at UCL and the Learning Activity Management System developed at Macquarie University. In the *iRead* project we draw on a learning design representation developed by Laurillard et al (2018), which we will discuss in this section.

Alongside the hype of scaling up technology use in education with the use of learning designs, the Learning Designs community has also been self-critical about the standardised form and abstraction that learning designs promote. Though learning designs could "facilitate the drive from tacit educational practice to explicit" (Mangaroska and Giannakos, 2018), in doing so they become reductive. Laurillard et al (2008) argues that teaching requires the use of generic forms of knowledge. Other work, however, argues and shows that teachers learn through doing, professional practice occurs reflectively and is highly situated (Oliver et al 2017). While a learning design may capture the elements of practice, it is the teacher's adaptation to the context and his/her students that makes this practice effective (Dalziel at al 2016). In the *iRead* project we approach the learning designs developed as a potential anchor point for teachers' adaptations. The same designs can serve as exemplars for teachers allowing them to go imagine pedagogical practices around the apps and to recognise that the two apps can be used in new ways.

We now move from what learning designs can achieve to how they are produced. Mangaroska and Giannakos (2018) provide a methodological definition of learning design when saying that it is "a methodology that educators use and communicate with each other to make informed decisions in designing learning activities and interventions with effective use of resources and technologies". Though these authors make reference to stimulating teacher creativity, the processes and methods through which creativity is fostered is missing from the current debate. To the contrary, as discussed above, learning designs have been typically generated through digital tools that privilege structure and existing constraints. In the *iRead* project we seek to intentionally promote teacher creativity in the production of learning designs by borrowing creative processes from the field of design thinking, which we will detail in this section.

## 3.2 Learning Design Methodology

### 3.2.1 Design thinking applied to learning design

Design thinking is an approach to designing digital tools, processes, and outcomes (Kolko, 2018). Design thinking has been widely adopted by researchers and practitioners in the fields of interaction design, business, education as a methodology that can stimulate creative problem solving. While different diagrammatic views have been offered to capture the process of design thinking, they all share some common dimensions. Design starts with a broad *problem exploration*. After a design problem has been identified *creative ideation* begins. In creative ideation, the design team engages in divergence of ideas followed by the application of quality criteria to assess the feasibility and value of the ideas proposed. Through this latter process of convergence, ideas are refined and evaluated ending with a prototyping phase during which the ideas are given material form. Design thinking is carried out by an interdisciplinary design team who collaborates and critiques each of the design decisions (Hey et al.,

2007). Figure 1 captures the divergent-convergent cycles within the problem definition and the solution space illustrated by the design council.

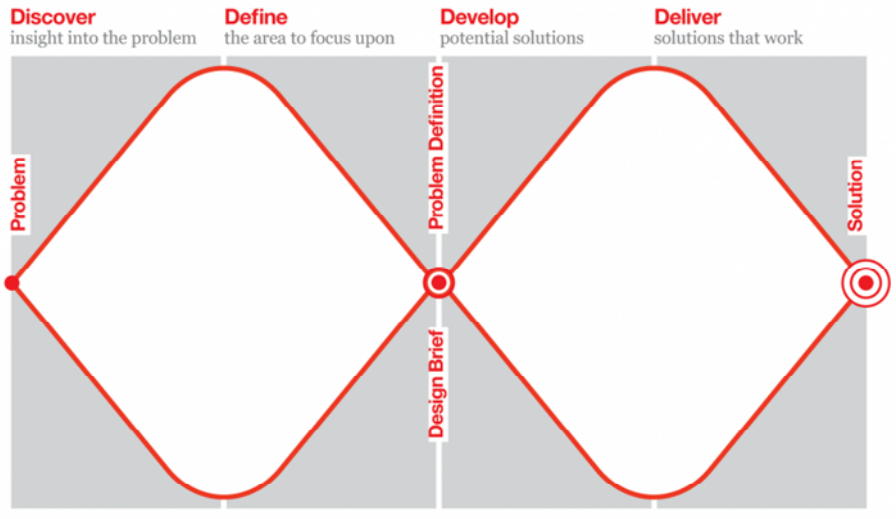



**Figure 1 – Design thinking model**

The goal of our work was to produce learning designs that promote deliberate pedagogical practice with technology. These learning designs would be embedded in subsequent CPD and teacher resources developed in a next stage. Given its grounding in theories of creativity, we adopted a design thinking process to facilitate teachers' creation of learning designs that would support the use of Navigo and Amigo in their classroom. We followed two principles of design thinking when possible: (i) divergence-convergence and (ii) the involvement of collaborative teams of teachers working together with a researcher. Rather than facilitating a process where teachers move from the problem setting to the solution space, as we will explain in the next sections, our methodology left it open to teachers to start from the technology (solution), or equally the educational problem.

### 3.2.2 Inspiration Cards

Following our aim to facilitate teacher creativity we used the Inspiration Cards. The inspiration card workshop method was developed by Halskov and Dalsgård (2006) and its use is now widespread in the design thinking process. Originally, the cards were developed to stimulate the creative process by fostering the combination of different ideas coming from technology and the domain of use. In addition to this, we were drawn to this method because of its tangible and material form, and its potential to scaffold conversations that were closely coupled with what technology could achieve. Furthermore, the inspiration cards introduced structure and rules, which as we will show were particularly pertinent in terms of representing specific pedagogical concepts that would inform the learning designs (Halskov and Dalsgård, 2006).

An Inspiration Card is a material card presenting a space for a title, image and description. *Domain Cards* describe the general domain, context of use, user group and so on. During collaborative sessions including experts in the reading domain, designers and educators, we designed three types of domain cards. The rationale for this organisation is aligned with the notion of breaking the design process into small meaningful components, as has been done in other design card decks (e.g. Deng et al., 2014). As recommended by Münch et al. (2013), scaffolding the design process into a workable number of dimensions helps produce a design plan when working with interdisciplinary teams. The ***learning objectives*** captured broad literacy areas, namely Reading, Writing and Oral Production, which teachers usually target during their lessons. The ***set up*** described typical class configurations, for instance Individual Activities and Small Group Sessions. The ***learning types*** cards reflected ways of learning based on Laurillard's (2013) conversational framework (summarised in Table 2).

| | |
|---|---|
| **Acquiring** | Learning through acquisition is what learners are doing when they are listening to a lecture or podcast, reading from books or websites, and watching demos or videos. |
| **Collaborating** | Learning through collaboration embraces mainly discussion, practice, and production. Building on investigations and acquisition it is about taking part in the process of knowledge building itself. |
| **Discussing** | Learning through discussion requires the learner to articulate their ideas and questions, and to challenge and respond to the ideas and questions from the teacher, and/or from their peers. |
| **Inquiring** | Learning through investigation guides the learner to explore, compare and critique the texts, documents and resources that reflect the concepts and ideas being taught. |
| **Practising** | Learning through practice enables the learner to adapt their actions to the task goal, and use the feedback to improve their next action. Feedback may come from self-reflection, from peers, from the teacher, or from the activity itself, if it shows them how to improve the result of their action in relation to the goal. |
| **Producing** | Learning through production is the way the teacher motivates the learner to consolidate what they have learned by articulating their current conceptual understanding and how they used it in practice. |

**Table 2 – six learning types**

The *Technology Cards* represented the breadth of functionality for both Amigo Reader and Navigo games. Each distinct functionality appeared on a single card allowing teachers to mix and match different functionalities. By combining two categories of cards to create new ideas, *Technology Cards* and *Domain Cards,* it is possible to uncover generative opportunities for technology design (Halskov and Dalsgård, 2006). Table 3 displays example cards for each category with the full set available in the Appendix.

**Domain cards**

***Learning objectives***: these included cards that captured literacy (reading, writing, oral language) [4 cards]

***Set up cards:*** these included **time** for the activity and **group configuration** [4 cards]

***Learning type***: these included generic pedagogical approaches to learning [six cards]

**Technology cards**

***Reader cards*** [14 cards]

***Games cards*** [18 cards]


**Table 3 – Summary of Cards (full set in the appendix 7.1)**

### 3.2.3 Procedure

Each partner invited participating pilot schools and their teachers to take part in the learning design workshops. Most of the partners ran two workshops of 2 hours each: one for the Amigo Reader and one for the Navigo games. Prior to the workshop, partners had localised the inspiration cards presented in the previous section adjusting for language, but also reflecting differences in the domain models underpinning in particular the game cards. The “learning type”, “setup” and “learning objectives” cards

were consistently presented in both reader workshops and games workshops. Given the different affordances and functionalities of Navigo and Amigo, the technology cards for the game and Reader were different in each dedicated workshop (see Appendix).

The workshop took place a in a room with a big table allowing the participants to move around and organise their cards on the table surface. It involved a maximum of 5 primary school teachers. Each workshop was video-recorded with the camera pointing to the table to capture how participants use the cards and what they say. Additionally, photographs of each learning design were taken. In what follows we present the 4 phases of the workshop:

**Phase 1: Explanation (10 mins) – Necessary material: cards, tablets**
The cards were already on the table divided by category. Each card had a brief explanation on it. The facilitator explained the different categories of cards, ensuring at least 1 card for each category was introduced starting from the "learning objectives". The facilitator ensured that all the participants understood the content and differences between the cards. For the technology cards, researchers used the tablets to demonstrate the different features to the teachers, as they introduced them.

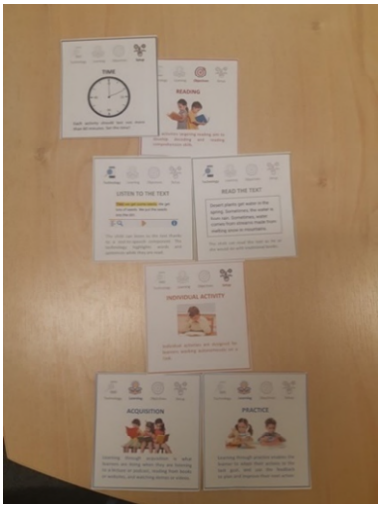
**Phase 2: Divergence: Learning design (40-50 mins) – Necessary material: cards, post-it notes**
The facilitator asked the teachers to create learning designs combining the cards. For the purposes of our project, we consider a learning design to be "one or more activities in a sequence with the same learning objective". The only "rule" for this task was using at least one card from each category, plus the "time" card. We made sure that participants understood we did not aim to do curriculum development, but rather to work on a learning activity level.

Encouraging divergence, participants had a maximum of 5 minutes to produce each learning design. Each time we started a learning design, we used a different set of cards and we left the previous one(s) on the table. At the end of each learning design, participants had to write 2/3 keywords on a post it note in order to "recall" the key aims of the particular learning design. We aimed to create approx. 10 learning designs in 40-50 mins. During this phase, the facilitators did not intervene actively in the process, and their role was to ensure that the work proceeded smoothly while answering questions.

**Phase 3: Convergence: Selection and reflection (20-30 mins in total) - Necessary material: post-it notes**
Having the 10 learning designs on the table, we asked participants to "prioritise them" by ordering them, using the post-it notes. If participants struggled, we prompted them with convergence criteria: Which one supports its learning objective best? Which one is the most feasible? Which one promotes a diversification of learning types? At the end of this part, we asked our participants to articulate the criteria they used to prioritise the learning designs.

**Phase 4: Refinement: Practical details (30-40 mins) – Necessary material: 5 printed copied of the table**
Once we agreed on a final list, we considered the first 5 learning designs. The aim was to write down the concrete details of what the teacher would do during this activity and the students. To do this, we provided a template that required more details about the set-up domain cards prompting the teachers to answer the following questions:

- What would the teacher do during this activity?
- What would the pupil(s) do during this activity?
- How much time should they spend on each part of the activity? Is the time enough?
- How many pupils should be involved in total?
- Would it work with a big class?
- How should the classroom be organised?



Phase 2 - UK

Phase 3 - Sweden

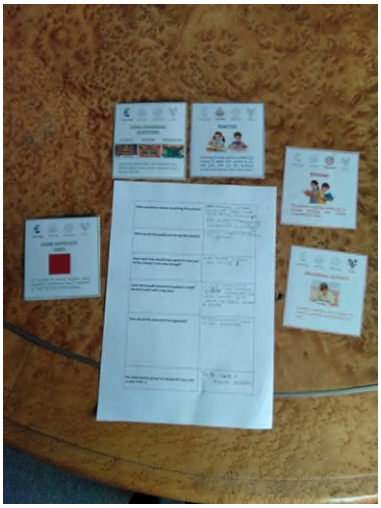

Phase 3 - UK

**Figure 2 -Workshop Outcomes**

**Phase 5: Transforming workshop outcomes into consistent learning designs**
In a final stage we set out to formalise and represent the outcomes of the workshop. From a pragmatic perspective, our goal was to produce simple and readable learning designs. Initially we explored importing the data we had collected about each design into the learning designer developed by Laurillard et al (2018). Though the learning designer aligned with the inspiration cards, when showing some of the teacher the output, the notations produced by the learning designer were not immediately understandable by them. This led us to adopt a simple format that lacked an explicit articulation of the notations.

## 3.3 Novice and Struggling Readers – United Kingdom (UCL)

Teachers and teaching assistants (TAs) from diverse school contexts were involved in learning design workshops that were organised at their school. The work generated 26 lesson plans (10 for the reader and 16 for the games) that captured a variety of pedagogical practices and points of view. One of the key initial observations from analysis of the CPD sessions indicated that teachers tended to use their school or personal pedagogical approaches as starting points to devise lesson plans during the workshops.

For example, in schools 1 and 3 teachers designed activities that they hoped would be engaging and original, with the goal to promote pupil motivation in learning. During the workshop the group approached the Navigo/Amigo apps and their evidence-based learning content as a novel opportunity to design for pupil motivation; generating creative lesson plans in which technology played a central role in supporting active and collaborative learning. Conversely, in school 2 teachers envisioned use of the games primarily to practice learning content previously taught and saw the reader as a source of texts for guided reading sessions. This reflected the school's approach to literacy teaching, which tended to focus on the most effective methods to achieve learning outcomes aligned with the curriculum. This priority superseded an emphasis on pupil engagement and motivation.

During the design activities, the sorting cards were fundamental to support the creative process. Initially, their tangible and visual nature promoted the teachers' comprehension of the task. Thanks to this, teachers often completed the first learning design autonomously. Particularly, 'technology cards' were fundamental to represent and scaffold teachers' understanding of reader and games capabilities. During learning design activities, the concrete use of the 'technology cards', in combination with other three categories of cards (representing different dimensions of lesson planning such as learning objectives and class configurations) and a subsequent phase in which teachers selected a small number of lesson plans, and refined them (convergence). This is in line with the design thinking approach described in section 3.2.1. In the workshops, this structure provided an effective approach to initially stimulate teachers' creativity, subsequently balancing this with more reflective accounts on the outcomes, leading to the selection of the most relevant lesson plans.

**Analysis**

| Learning design workshops United Kingdom (UCL) | |
|---|---|
| **Number of schools involved** | 3 |
| **Number of reader workshops** | 2 |
| **Number of games workshops** | 3 |
| **Number of teachers** | 24 |
| **Number of learning designs** | 26 |

| Learning design workshops United Kingdom (UCL) - School 1 | |
|---|---|
| **School type** | Non-fee paying rural primary school |
| **School description** | The school recently received an 'outstanding' evaluation in an Office for Standards in Education, children's services and skills (OFSTED) inspection report. OFSTED assess education and social care services quality all over the country, reporting to policymakers on their effectiveness. Teachers described the use of evidence-based approaches to literacy, namely methods that are proven to produce positive results on learning. These effective literacy approaches are made 'engaging' for pupils thanks to creative lesson plans that include playful and active tasks – for instance outdoors activities – to promote children's motivation alongside their learning. |
| **Description of the activities** | Two teachers and one TA took part in both workshops, one for the reader and one for the games. Workshops lasted 2 hours each. As a result, 5 learning designs for the reader and 5 for the game were collected. This reflects the engaging and creative nature of the teachers' approaches to literacy. For instance, teachers designed activities in which technology plays an active role in promoting collaboration, or it is a source of learning content that is developed further in literacy activities which don't include technology. |

| Learning design workshops United Kingdom (UCL) - School 2 | |
|---|---|
| **School type** | Non-fee paying Roman Catholic primary school |

| | |
|---|---|
| **School description** | The school utilises structured approaches to literacy, which are organised in a centralised way by the literacy coordinator. Thus, all teachers use the same literacy teaching methods and assessment protocols. This leaves less freedom to teachers in designing teaching and learning. |
| **Description of the activities** | Two teachers and two TAs participated in the first workshop (reader), and another two teachers and two TAs took part in the second workshop (games). 5 learning designs for the reader and 5 designs for the games were developed. These designs considered that the technology could provide a way to 'practice' skills previously taught, or the technology could provide a source of texts that could substitute the traditional 'paper' books used in guiding reading sessions. |

| **Learning design workshops United Kingdom (UCL) - School 3** | |
|---|---|
| **School type** | Non fee-paying primary school |
| **School description** | The school is located in a multicultural area in the London suburbs. Teachers utilise guided reading consistently, but are generally free to design their literacy classes aligned with the curriculum learning objectives. |
| **Description of the activities** | 13 teachers and TAs participated in a game workshop that lasted 1.5 hours. They worked in two groups with the support of two researchers. Given the limited time availability, we shortened the activities and collected 6 learning designs for the games. Teachers were very creative in rethinking their lesson plans to include the games. For instance, they planned to play games collaboratively in small groups, and then create brief theatrical scenes to represent each sentence included in the game. |

## 3.4 Novice Readers – Greece (Doukas)

Using the Learning design approach explained by UCL and after translating the cards to be used we were able to interact with 24 teachers producing 26 lesson designs based on the use of the Navigo/Amigo applications (apps) that are intended to be piloted in the Greek public schools in the context of the Greek novice readers pilot.

Some teachers regarded the apps as potentially complementary to the lessons taught in the classrooms and others suggest that the apps could be used during the learning process and partially replace the traditional way of teaching that is found in Greek public schools.

In order for the teachers to be able to visualise a lesson where they use the apps, the learning design workshops followed an initial CPD session where there was extensive interaction between teachers and the apps. The apps were still being developed at this stage. Teachers were also introduced to the adaptivity model and shown the way the teacher can bypass the model and assign students specific features that relate to the focus of the day's lesson.

For the purpose of the workshop Doukas presented an example (cards randomly chosen) in order to demonstrate the use of the cards to form a learning design. The aim was not to influence teachers but to provide a model for use. After the initial demonstration the Doukas team had the role, only, of an observer.

As for the Reader, at the time of the learning design workshops the Reader was not functioning in Greek and teachers were not able to comprehend the way it worked. Thus, no learning design workshops were run for the Reader.

**Analysis**

| Learning design workshops Greece (Doukas) | |
|---|---|
| **Number of schools involved** | 21 |
| **Number of reader workshops** | 0 |
| **Number of games workshops** | 4 |
| **Number of teachers** | 54 |
| **Number of learning designs** | 12 |

| Learning design workshops Greece (Doukas) - School Group 1 | |
|---|---|
| **School type** | Greek public schools (West Attica, Athens) |
| **School description** | The schools that participated were all Greek public schools from the area of Peristeri, Western Attica. They all are coordinated by the same local authority that belongs under the Greek Ministry of Education. We met in one of the schools of that area for the CPD. Following the CPD sessions teachers were engaged with the learning design workshop. This came as a logical continuation of the CPD as teachers had the change to experiment with the game and understand the model behind it (adaptation or teacher's choices) |
| **Description of the activities** | Teachers were divided in teams of 2 and were given two sets of cards. The set-up of the classroom used, was two student desks placed side by side. Teachers did not collaborate when creating the initial learning designs. In the next phase, they were separated into 2 groups and from all the designs created they had to choose those that they would like to keep and those that they would like to discard. |

| Learning design workshops Greece (Doukas) – School Group 2 | |
|---|---|
| **School type** | Greek public Schools (Eastern Attica, Athens) |

| | |
|---|---|
| **School description** | The schools that participated are all Greek public schools from the area of northern (Chalandri, Agia Paraskevi, Psychiko, Lukovrisi, Kifisia) Attica. We met in one of the schools of that area for the CPD. Following the CPD sessions teachers were engaged with the learning design workshop. This came as a logical continuation of the CPD as teachers had the chance to experiment with the game and understand the model behind it (adaptation or teacher's choices) |
| **Description of the activities** | Teachers were divided in teams of 2 and were given two sets of cards. The set-up of the classroom used, was two student desks placed side by side. Teachers did not collaborate when creating the initial learning designs. In the next phase, they were separated into 2 groups and from all the designs created they had to choose those that they would like to keep and those that they would like to discard. |

| **Learning design workshops Greece (Doukas) - School Group 3** | |
|---|---|
| **School type** | Public Schools (East Attica, Athens) |
| **School description** | The schools that participated are all Greek public schools from the area of east Attica (Pallini, Fokaia, Lavrio, Ag, Paraskevi). They are all coordinated by the same local authority that belongs under the Greek Ministry of Education. We met in one of the schools of that area for the CPD. Following the CPD sessions teachers were engaged with the learning design workshop. This came as a logical continuation of the CPD as teachers had the change to experiment with the game and understand the model behind it (adaptation or teacher's choices) |
| **Description of the activities** | Teachers were divided in teams of 2 and were given two sets of cards. The set-up of the classroom used, was two student desks placed side by side. Teachers did not collaborate when creating the initial learning designs. In the next phase, they were separated into 2 groups and from all the designs created they had to choose those that they would like to keep and those that they would like to discard the games. |

| **Learning design workshops Greece (Doukas) - School Group 4** | |
|---|---|
| **School type** | Greek public schools (Thessaloniki) |
| **School description** | The schools that participated are all Greek public schools from Thessaloniki, Kalamaria and Kavala. We met in one of the schools of that area for the CPD. Following the CPD sessions teachers were engaged with the learning design workshop. This came as a logical continuation of the CPD as teachers had the change to experiment with the game and understand the model behind it (adaptation or teacher's choices) |

| | |
|---|---|
| **Description of the activities** | As the number of teachers was significant smaller than the other game learning design workshops (5), teachers formed one group and sat in a round table. They were given 5 sets of cards, and having in mind their experience with playing the game (during the CPD sessions) they were asked, each, to create a learning design. They were finally asked to choose those (2), after discussion and presentation of the learning designs, that they were more attracted two as a group. |

## 3.5 Novice Readers – Spain (UB)

We involved teachers and teaching assistants from diverse school contexts in learning design workshops that were organised at their school. The work generated 10 Spanish lesson plans – 5 for the reader and 5 for the games – that captured a variety of pedagogical practices and points of view. Most of the teachers use their personal pedagogical approaches as starting points to think of lesson plans. However, as Navigo/Amigo is very far from their regular lessons, some of them were very creative and came up with very interesting learning designs. Others seemed to be a bit lost and created very complicated designs. As they were looking at the cards, their comments were positive and they could think of innovative features they had not noticed that could be done with the technology. Some of them had trouble understanding how the games and books could individualise the learning experience and adapt it to all kind of levels. All the teachers agreed that using Navigo/Amigo could boost the students' engagement and motivation.

Furthermore, it was positive to notice how the teachers collaborated to understand how to use all the cards. By explaining their own learning designs aloud as they were creating them, they allowed other teachers to get more ideas and become more creative. The session consisted of a brief explanation on the games and the reader with practical examples with a tablet and then a description of the different categories of cards. Then, the teachers would each take a set of cards and start creating learning designs while being recorded. In the end of each learning design we took a picture of the resulting sequence. Some workshops took place with EFL teachers and Spanish literacy teachers at the same time, although each had the cards in their target language. In most of the cases their collaboration was very positive.

**Analysis**

| **Learning design workshops Spain (UB)** | |
|---|---|
| **Number of schools involved** | 4 |
| **Number of reader workshops** | 3 |
| **Number of games workshops** | 2 |
| **Number of teachers** | 5 |
| **Number of learning designs** | 10 |

| Learning design workshops Spain (UB) - School 1 | |
|---|---|
| **School type** | Private school with public funding in a small city |
| **School description** | It is a catholic religious school placed in the historic centre of a 50.000 inhabitants city. It is one of the very few private schools in the centre of the city, which stands as a choice for all kind of families looking for a private school with public funding in the city. Therefore, the students attending the school come, in general, from middle income families, although there are some immigrant families that also decide to enrol to the school. As for the literacy lessons, in the classes we have observed, it is taught in a rather traditional way. The teacher is also the head of studies and has been doing the same job for over 30 years. She is great at class management. |
| **Description of the activities** | One Spanish teacher took part in the workshop. It lasted for around 2 hours. As a result, 2 learning designs for the reader and 2 for the game were collected. The teacher was engaged in the workshop and was always willing to participate in all kind of activities. This is surprising considering her traditional methods, but shows she might be ready to move to a more innovative and digital setting. |

| Learning design workshops Spain (UB) - School 2 | |
|---|---|
| **School type** | Public school in small town |
| **School description** | The school is located in a town with less than 10.000 inhabitants in the outskirts of Barcelona. It consists of a medium-to-high income town, in which most families work in the city but chose to live in a residential area in the outskirts. Most of the students come from families that are well educated having a medium-to-high socio-economic status. The teachers are motivated and full of energy, and the school building looks quite new and full of light. |
| **Description of the activities** | There were two teachers attending the workshops, one Spanish teacher and one English teacher, as they decided they wanted to carry out the training together. The English teacher, who is the head of studies as well, had some issues with the iRead project and did not want us to record her nor take pictures of her work. Therefore, we could not use her learning designs, although both teachers created very nice lessons. |

| Learning design workshops (Spain (UB) - School 3 | |
|---|---|
| **School type** | Private school with public funding in a big city |
| **School description** | It is a catholic religious school in a residential neighbourhood in Barcelona. It has middle income families and some immigrant students coming from a wide range of European and Asiatic countries. The teachers are committed and willing to participate in the project. The Spanish teaches are obviously experienced in teaching literacy in the first years of Primary Education, and they appear to have a deep knowledge of the curriculum. |

| | |
|---|---|
| **Description of the activities** | There were three teachers participating in the workshops, two Spanish teachers and one English teacher (we only carried out one workshop at the school and therefore there were both Spanish and English teachers). The two Spanish teachers designed 5 learning designs, which were a bit traditional, mixing their usual lessons with the uses of the apps provided by the iRead project. |

| **Learning design workshops Spain (UB) - School 4** | |
|---|---|
| **School type** | Public school in a rural village |
| **School description** | Very small public school in a village of around 1.000 inhabitants. The school has one class per year, although none of them have more than 20 students per class. The teachers come from nearby towns and are both committed and flexible |
| **Description of the activities** | Three teachers participated in the workshops. They came up with 5 learning designs. Most of the learning designs were long and complicated, which made us think they might not be realistic and teachers will probably not use them in their classes. |

## 3.6 Novice Readers – Germany (DHBW)

The German research team determined that the learning design workshops would be very difficult for teachers to understand. There are a number of reasons for this that are specific to the German context. Firstly, the use of technology has been non-existent in the schools we have visited. Secondly, “reading” is not taught as a subject. German class contains grammatical or spelling lessons in class settings followed by individual or small group practice. We thus decided to take a ‘bottom up’ approach and investigate the types of lessons that we observed (reported in Section 2) using them as a foundation to learning design and introducing “reading” exercises. We went through an enormous effort of visiting seven schools in three different grades, observing 104 learning sessions for a total of 869 minutes. Each of these observations was annotated according to a template with deductive categories. Among others, the lessons were annotated using the proposed design cards for the learning design workshops. (A table is attached in the appendix to show these annotations in detail.)

Based on this data, the most important lesson patterns were:

1. Practice reading individually during free-work time
2. Practice writing individually during free-work time
3. Oral group work in class collaborative setting, learning new items
4. Oral practice in class collaborative setting
5. Reading practice in collaborative small groups

Based on the data and conversations with the teacher in training sessions, we realized that the fact that these schools have no prior experience or training in technology in the classroom, we needed to recommend a very slow start. Many of our schools are just receiving WIFI installed into a few of their classrooms this and next year, so several schools we work with still have no internet in December 2019. Teachers are too worried about technology failure to use the technology in a whole-class setting for the moment. With the collected information and this background, we recommend to use the tablets in individual setting of free-work time, where students can choose from a variety of available tasks to practice material. This setting also coincides with the most frequent classroom setting. Therefore, the interference in teaching style is minimal. The tablets represent only one of the offers. Should the technology fail on that day, the classroom is not disrupted. Over time and with more confidence, teachers can then move to whole classroom activities.

5 learning designs were developed following this approach.

1. Identify Letters (Amigo, Navigo) – matching lesson Pattern 1
2. Identify long vs. short vowels (Amigo, Navigo) – matching lesson Pattern 1
3. Reading (Amigo) – matching lesson Pattern 1, 4, 5

4. Vocabulary (Amigo) – matching lesson Patterns 2, 3, 4, 5
5. Part of Speech (Amigo, Navigo) – matching lesson Pattern 1

The learning designs follow the design cards approach. In addition, a few prototypical students were created as personas that all teachers will immediately recognize. The deficiencies of these students focus on the following areas for which games were designed:

1. Long vs. short vowels (Hüte vs. Hütte)
2. High frequency words (und, …)
3. Sentence structures (Subject, Predicate, Object)
4. Spelling and practicing graphemes (Sch, sp, ..)

For these students, the manual shows how the teacher would select the games using the teacher view. Since we recommend free-work time, the lesson wrapper around the exercises is not needed in these latter examples: the games are selected based on the teaching content. This content is usually introduced on Mondays and not within the same lesson as the material is used. Therefore the "lesson wrapper" – the introduction to the topic takes place Mondays and not on Fridays when the games will be used in open-learning environment for practice.

## 3.7 Struggling Readers – Greece (UOI)

We involved teachers and teaching assistants from diverse school contexts in learning design workshops that were organised at University of Ioannina. The work generated 18 lesson plans – 9 for the reader and 9 for the games – that captured a variety of pedagogical practices and points of view. Overall, we noticed that teachers used their personal pedagogical approaches as a starting point to think of lesson plans during the workshops. For instance, in school 5, teachers designed group activities that involve 4 -5 students facing problems in phonology. During the workshop teachers from school 5 mainly interacted with the Navigo Games in order to make lesson plans to help students facing phonological problems and support active and collaborative learning. Conversely, in school 6 teachers suggested lesson plans while using the reader, because this would help students facing reading comprehension problems. So, their lesson plans were for guided reading sessions while using the reader app.

During the design activities, cards were fundamental to support the creative process. Initially, their tangible and visual nature promoted teachers' comprehension of the task. Thanks to this, teachers often completed learning designs in pairs. Particularly, Technology Cards were fundamental to represent and scaffold teachers' understanding of reader and games capabilities. During learning design activities, their concrete use in combination with other three categories of cards representing teachers' pedagogical 'context' promoted rich discussions around the interaction between technology – with its embedded instructional design – and pedagogy. More broadly, the workshop structure included an initial learning design moment (divergence) and a subsequent phase in which teachers selected a small number of lesson plans, and refined them (convergence). In our workshops, this structure seemed a good approach to stimulate teachers' creativity first, and then balance it with more reflective accounts on the outcomes to select the most relevant lesson plans.

**Analysis**

| **Learning design workshops Greece (UOI)** | |
|---|---|
| Number of schools involved | 12 |
| Number of reader workshops | 2 |
| Number of games workshops | 2 |
| Number of teachers | 22 |
| Number of learning designs | 18 |

| Learning design workshops Greece (UOI) | |
|---|---|
| School type | Public primary schools in a district town |
| School description | All schools are located in Ioannina. All students are provided with free textbooks (no special books for dyslexia). Teachers utilise guided reading, and exercises in preprinted worksheets. Teachers in public schools are free to design their literacy classes aligned with the curriculum learning objectives. |
| Description of the activities | Twenty-two teachers and four teaching assistants took part in both workshops, one for the reader and one for the games. Workshops lasted 2 hours each. As a result, 9 learning designs for the reader and 9 for the games were collected. Teachers were divided into two groups (11 teachers in each group) and worked in pairs in order to make lesson plans with the support/guidance of six researchers. Some teachers considered the technology (a) as a way to 'practice' skills previously taught or (b) as a source of texts that could substitute the traditional worksheets or books used in guiding reading sessions or (c) as a pool of exercises. In the designed activities, technology plays an active role in promoting collaboration or it is the source of learning content that is developed further in literacy activities that don't include technology. Teachers were very creative in rethinking their lesson plans to include the games. |

## 3.8 English as a Foreign Language – Sweden (UGOT)

We involved teachers from diverse school contexts in learning design workshops that were organised at their schools. The work generated 28 lesson plans – 14 for the reader and 14 for the games. These plans reflect a variety of pedagogical practices and approaches to teaching. Overall, we noticed that teachers used their personal pedagogical approaches as starting points to think of lesson plans during the workshops. For instance, teachers in school 3 and 4 normally design activities that aim to be engaging and varied, with the goal to promote pupils' motivation in learning. During the workshop they approached the Navigo/Amigo apps and their evidence-based learning content as a novel opportunity to design for pupils' motivation, generating creative lesson plans in which technology plays a central role in supporting active and collaborative learning. Conversely, in school 2 teachers envisioned to use the games only to practice learning content previously taught, especially concerning grammar. This reflects their approach to teaching EFL, which focuses more on the most effective methods to achieve learning outcomes aligned with the curriculum than to foster students' engagement and motivation.

The cards developed for the lesson planning activities were used to support the creative process during the design activities and helped the teachers to understand the task. By using the cards and discussing with one another, teachers often completed the first learning design autonomously. Particularly, Technology Cards were fundamental to represent and scaffold teachers' understanding of reader and games capabilities. During learning design activities, their concrete use in combination with other three categories of cards representing teachers' pedagogical 'context' promoted rich discussions around the interaction between technology – with its embedded instructional design – and pedagogy. The workshops were initiated with a learning design moment (divergence). This was followed by a phase in which the teachers selected a small number of the lesson plans which they found to be the best among those that they had created together and refined them (convergence). In our workshops, this structure seemed a good approach to stimulate teachers' creativity first, and then balance it with more reflective accounts on the outcomes to select the most relevant lesson plans.

**Analysis**

| Learning design workshops Sweden (UGOT) | |
|---|---|
| **Number of schools involved** | 4 |
| **Number of reader workshops** | 4 |
| **Number of games workshops** | 3 |
| **Number of teachers** | 6 |
| **Number of learning designs** | 28 |

| Learning design workshops Sweden (UGOT) - School 1 | |
|---|---|
| **School type** | Independent (non-fee), preschool- year 9, in small town |
| **School description** | Montessori school run by a non-profit parents' cooperative. Integrated work in year 1 to 3 work. From year 6 the students can choose a music profile. Teachers are free to design their EFL classes aligned with the curriculum learning objectives. |
| **Description of the activities** | One teacher took part in the reader workshop. The workshop lasted just over 1 hour. The teacher did not want to heed the instructions and designed an activity for several consecutive lessons. Unfortunately, this activity was not possible to break up into smaller activities. As a result, no learning design was collected. This reflects the independence of Swedish teachers. The teacher was however very enthusiastic about the possibilities of using the reader in class. |

| Learning design workshops Sweden (UGOT) - School 2 | |
|---|---|
| **School type** | Comprehensive school (non-fee), preschool- year 6, in small town |
| **School description** | Large proportion of students with another/an additional native language. As in all comprehensive schools in Sweden, teachers are free to design their EFL classes aligned with the curriculum learning objectives. |
| **Description of the activities** | Two teachers participated in the first workshop (reader), and the same two teachers took part in the second workshop (games). Both workshops lasted just over an hour. 5 designs for the reader and 5 for the games were collected. The teachers thought the reader seemed like something that would be a good complement to their ordinary reading activities and especially liked some of the features, eg the Tricky Words list. They found it more difficult to design for the games as they found it difficult to fully grasp how they would work. The workshops were held late in the day which possibly had an impact on the teachers' willingness to engage in design work. For the games they mostly designed activities involving grammar. |

| Learning design workshops Sweden (UGOT) - School 3 | |
|---|---|
| **School type** | Comprehensive school (non-fee), preschool-year 9, in village |
| **School description** | As in all comprehensive schools in Sweden, teachers are free to design their EFL classes aligned with the curriculum learning objectives. |
| **Description of the activities** | One teacher participated in the first workshop (reader), and that same teacher plus another one took part in the second workshop (games). Both workshops lasted just over an hour. 4 designs for the reader and 5 for the games were collected.<br><br>The teachers especially hoped Navigo/Amigo would help them with differentiation and individualization in the classroom as the students' levels of English vary greatly. |

| Learning design workshops Sweden (UGOT) - School 4 | |
|---|---|
| **School type** | Independent school (non-fee), preschool-year 9, rural |
| **School description** | Montessori school run by a non-profit parents and staff cooperative.<br><br>The teachers are free to design their EFL classes aligned with the curriculum learning objectives. |
| **Description of the activities** | One teacher participated in the first workshop (reader), and that same teacher plus another one took part in the second workshop (games). Both workshops lasted just over an hour. 4 designs for the reader and 5 for the games were collected. In the first workshop, when the teacher was alone with the researcher, she struggled with coming up with designs. It was late in the day and she needed a 'sparring partner' so the researcher took on a more active role and discussed possible scenarios with her. During the following session, when there were two teachers, the researcher could take on a more observing role as the two teachers discussed with each other. |

## 3.9 English as a Foreign Language – Romania (ULBS)

We involved teachers and teaching assistants from diverse school contexts in learning design workshops that were organised at their school. The work generated 26 lesson plans – (15 for reader + 11 for the games) – that capture a variety of pedagogical practices and points of view. Overall, we noticed that teachers used their school or personal pedagogical approaches as starting points to think of lesson plans during the workshops. In some schools teachers normally design activities that aim to be engaging and always different, with the goal to promote pupils' motivation in learning. During the workshop they approached the Navigo/Amigo apps and their evidence-based learning content as a novel opportunity to design for pupils' motivation, generating creative lesson plans in which technology plays a central role in supporting active and collaborative learning.

During the design activities, cards were fundamental to support the creative process. Initially, their tangible and visual nature promoted teachers' comprehension of the task. Most of the times teachers completed the learning design autonomously. Particularly, Technology Cards were fundamental to

represent and scaffold teachers' understanding of reader and games capabilities. During learning design activities, their concrete use in combination with other three categories of cards representing teachers' pedagogical 'context' promoted rich discussions around the interaction between technology – with its embedded instructional design – and pedagogy. The workshops stimulated teachers' creativity helping to select the most relevant lesson plans.

**Analysis**

| **Learning design workshops Romania (ULBS)** | |
|---|---|
| **Number of schools involved** | 4 |
| **Number of reader workshops** | 4 |
| **Number of games workshops** | 4 |
| **Number of teachers** | 12 |
| **Number of learning designs** | 26 |

| **Learning design workshops Romania (ULBS) - School 1** | |
|---|---|
| **School type** | Non-fee-paying urban gymnasium school (primary) with a national-based developed curriculum |
| **School description** | The school has a long good tradition in Sibiu county. Teachers described the use of evidence-based approaches to literacy, namely methods that are proven to produce positive results on learning. These effective literacy approaches are made 'engaging' for pupils thanks to creative lesson plans that include playful and active tasks – for instance outdoors activities - to promote children's motivation alongside their learning. |
| **Description of the activities** | The school's principal, two teachers and one teaching assistant took part in both workshops, one for the reader and one for the games. Workshops lasted 2 hours each. We have two meetings in this school one for Reading and one for Games. As a result, 5 learning designs for the reader and 5 for the game were collected. This reflects the engaging and creative nature of the teachers' approaches to literacy. For instance, teachers designed activities in which technology plays an active role in promoting collaboration, or it is source of learning content that is developed further in literacy activities which don't include technology. |

| **Learning design workshops Romania (ULBS) - School 2** | |
|---|---|
| **School type** | Non-fee paying urban gymnasium (primary) school with a national-based developed curriculum |

| | |
|---|---|
| **School description** | This is one of the oldest schools from Sibiu dating from 14$^{th}$century. Most of the teaching is done in German. We pilot the EFL here.<br><br>Every teacher adapts its teaching methods and assessment protocols to the class level. This leaves relatively high freedom to teachers in designing teaching and learning. |
| **Description of the activities** | We have two meetings in this school one for Reading and one for Games. Two teachers and one teaching assistants participated in the first workshop (reader), and another two teachers and one teaching assistants took part in the second workshop (games). 4 designs for the reader and 4 for the games were collected and considered the technology provided a way to 'practice' skills previously taught or as a source of texts that could substitute the traditional books used in guiding reading sessions. |

| **Learning design workshops Romania (ULBS) - School 3** | |
|---|---|
| **School type** | Non-fee paying rural secondary school with a national-based developed curriculum |
| **School description** | The school is located in a rural area of Sibiu County. The town even it is small gave birth to 11 academicians during the last 150 years. Teachers utilise guided reading aligned with the curriculum learning objectives. |
| **Description of the activities** | Two teachers participated in a game workshop that lasted 2 hours. They worked in two groups with the support of two researchers. We collected 3 learning designs for the reader and one for the games. Teachers were very creative in rethinking their lesson plans to include the games. For instance, they envisioned to play games collaboratively in small groups, and then create brief theatrical scenes to represent each sentence included in the game. |

| **Learning design workshops Romania (ULBS) - School 4** | |
|---|---|
| **School type** | Non-fee paying urban gymnasium school with a national-based developed curriculum |
| **School description** | The school has a long good tradition in Sibiu county. Teachers described the use of evidence-based approaches to literacy, namely methods that are proven to produce positive results on learning. These effective literacy approaches are made 'engaging' for pupils thanks to creative lesson plans that include playful and active tasks – for instance outdoors activities - to promote children's motivation alongside their learning. |

| | |
|---|---|
| **Description of the activities** | The school's principal, one teacher and one teaching assistant took part in both workshops, one for the reader and one for the games. Workshops lasted 2 hours each. We have two meetings in this school one for Reading and one for Games. As a result, 3 learning designs for the reader and 1 for the game were collected. Teachers designed activities in which technology plays an active role in promoting collaboration, or it is source of learning content that is developed further in literacy activities which don't include technology. |

## 3.10 English as a Foreign Language – Spain (UB)

We involved teachers and teaching assistants (TAs) from diverse school contexts in learning design workshops that were organised at their school. The work, as for the Spanish (see section 3.5 Spanish novice readers above above) setting, generated 10 lesson plans – 5 for the reader and 5 for the games – that captured a variety of pedagogical practices and points of view. In some cases, both EFL and Spanish teachers participated jointly in the workshops. The first part of each workshop was the same for both groups, but then the specific designs for Spanish and EFL were done separately. Most of the teachers used their personal pedagogical approaches as starting points to think of lesson plans. However, as the Navigo/Amigo approach is very far from their regular lessons, some of them were very creative and came up with very interesting learning designs. Other seemed to be a bit lost and created very complicated designs. As they were looking at the cards, their comments were positive and they could think of innovative features they had not noticed that could be done with the technology. Teachers raised questions about the 'adaptivity' component, and they wondered how adaptive and personalised the system was, and how it exactly worked. General rules about adaptivity were briefly explained (e.g. if a feature is mastered quickly, they move on to the next more difficult feature, each student follows his/her own path, etc.). They were interested in the concept and some of them thought that this would be encouraging and motivating, especially for both weaker and more advanced students.

Furthermore, it was positive to notice how teachers collaborated in order to understand how to use all the cards. By explaining their own learning designs aloud as they were creating them, they allowed other teachers to get more ideas and become more creative. The session consisted of a brief explanation on the games and the reader with practical examples with a tablet and then a description of the different categories of cards. Then, the teachers would each take a set of cards and start creating learning designs while being recorded. In the end of each learning design we took a picture of the resulting sequence. Some workshops took place with EFL teachers and Spanish literacy teachers at the same time, although each had the cards in their target language. In most of the cases their collaboration was very positive.

**Analysis**

| **Learning design workshops Spain (UB)** | |
|---|---|
| **Number of schools involved** | 4 |
| **Number of reader workshops** | 3 |
| **Number of games workshops** | 2 |
| **Number of teachers** | 5 |
| **Number of learning designs** | 10 |

| Learning design workshops Spain (UB)- School 1 | |
|---|---|
| **School type** | Private school with public funding in a small city |
| **School description** | It is a catholic religious school placed in the historic centre of a 50.000 inhabitants city. It is one of the very few private schools in the centre of the city, which stands as a choice for all kind of families looking for a private school with public funding in the city. Therefore, the students attending the school come, in general, from middle income families, although there are some immigrant families that also decide to enrol to the school. The teachers come from different towns in the area and have great experience in the teaching profession. |
| **Description of the activities** | Two English teachers took part in the workshops. The workshop lasted for 2 hours. As a result, 3 learning designs for the reader and 3 for the game were collected. The teachers were engaged and creative. This shows that they have their own strategies but have also understood the Navigo/Amigo approach. |

| Learning design workshops Spain (UB) - School 2 | |
|---|---|
| **School type** | Public school in small town |
| **School description** | The school is located in a town with less than 10.000 inhabitants in the outskirts of Barcelona. It consists of a medium-to-high income town, in which most families work in the city but choose to live in a residential area in the outskirts. Most of the students come from families that are well educated and with a medium-to-high socio-economic status. The teachers are motivated and full of energy, and the school building looks quite new and is full of light. |
| **Description of the activities** | There were two teachers attending the workshops, one Spanish teacher and one English teacher. The English teacher, who is the head of studies as well, had some issues with the iRead project and did not want us to record her nor taking pictures of her work. Therefore, we could not use her learning designs, although both teachers created very nice lessons. |

## 3.11 English a Foreign Language – Greece (BC)

The pilot study for both schools 1 and 2, the British Council teaching centres was planned in two phases:

1. reader exploitation as part of the approach to literacy;
2. game exploitation once a satisfactory level of competence with the reader has been established.

Phase 1 was originally scheduled for June 2019 but was postponed due the absence of the appropriate learner profile. It has subsequently been rescheduled for November 2019. The associated CPD activity for the phase 1 for both these centres was carried out prior to the proposed June pilot date with 5 British Council teachers. This resulted in 10 lesson plans for the reader which captured a variety of ideas for exploitation. The associated CPD activity for phase 2 is planned for December 2019.

The pilot study for school 3, the private school is timetabled for February 2020. Learning design workshops are planned both for the set-up and support the pilot. The partner school has requested that this learning design activity be delivered synchronously to the pilot to build up teacher confidence and ensure a standard of delivery.

Though the design activity cards prompted discussion around the interaction between technology and pedagogy, the confidence of teachers in existing pedagogy coupled with the organisational global statement of approach led teachers to view the Navigo/Amigo apps as a replacement or alternative for a particular lesson stage or activity. Overall the resulting lesson plans are aligned with teacher experiences and transferable.

Furthermore, a review of the lesson plans shows that teachers view technology as playing a core and leading role in stimulating rather than simply practising learning. The teachers participating in the workshops constructed learning pathways with the Navigo/Amigo apps as the starting point for discovery rather as an extension activity which meant to consolidate previous learning.

**Analysis**

| **Learning design workshops: Greece (BC)** | |
|---|---|
| **Number of schools involved** | 2 |
| **Number of reader workshops** | 2 |
| **Number of games workshops** | 0 |
| **Number of teachers** | 5 |
| **Number of learning designs** | 10 |

| **Learning design workshops - schools 1 and 2<br>British Council teaching centres (Kolonaki and Kifissia)** | |
|---|---|
| **School type** | Fee-paying after-school foreign language schools |
| **School description** | Both schools are British Council teaching centres teaching children aged 4 -17. The British Council offer promises language development, life skills growth and development of digital literacy. All classrooms are well-equipped with wi-fi access and there is access to tablets.<br><br>Courses include a digital learning component. All teachers hold a minimum professional qualification, including university level qualification, appropriate certification in teaching children are assessed annually according to a set of corporate standards including IT competency and provision of e-learning opportunities. |
| **Description of the activities** | 5 teachers took part in the learning design workshops.<br>1 workshop was run in the Kolonaki teaching centre (3 participants) and 1 in the Kifissia teaching centre (2 participants). Both workshops were delivered by the Academic Manager. 10 lesson plans were captured demonstrating how the |

| | |
|---|---|
| | reader app could be included in the organisation's pedagogical approach to reading |

## 3.10 Summary and Reflections

| 'Novice readers' and 'struggling readers' learning design workshop data combined: UK (UCL), Spain (UB), Greece (Doukas & UOI) and Germany (DHBW). | |
|---|---|
| Number of schools involved | 40 |
| Number of reader workshops | 7 |
| Number of games workshops | 11 |
| Number of teachers/TAs | 105 |
| Number of learning designs | 66 |

| EFL learning design workshop data combined: Sweden (UGOT), Romania (ULBS), Spain (UB), Greece (BC). | |
|---|---|
| Number of schools involved | 14 |
| Number of reader workshops | 13 |
| Number of games workshops | 9 |
| Number of teachers/TAs | 28 |
| Number of learning designs | 74 |

Overall 140 learning designs were created within the school workshops; 66 for the 'novice'/'struggling reader' groups and 74 for the EFL group. Overall 133 teachers/TAs from 56 schools across Europe were involved in the learning design workshop sessions. Learning designs were created for use of the reader and the games and informed development of the lesson plans, that were incorporated into the teacher manual for all countries involved (see next section). Lesson ideas and a structure for teacher implementation and potential uses of the games/reader were developed. The diversity of the learning designs created reflects the range of settings and variety of pedagogical approaches involved as reported in section 2.

In parallel with the lesson observations, diversity was represented in the wide range of schools involved in the learning design workshops, including: private/ private with public funding, public, fee paying, non-fee paying, independent, comprehensive, primary (including one middle school) school. Schools were located in both rural and urban settings. 18 workshops were held for 'novice'/'struggling reader' groups for the games and reader and 22 for the EFL group. Some schools considered both the reader and the games and some just focussed on one or other of the Apps.

In the 'novice/struggling reader' groups' learning design workshops, both teachers and teaching assistants (TAs) were involved in creating the learning designs in schools in the UK (UCL), Spain (UB), Greece (UOI). Teachers alone were involved in the sessions in Greece (Doukas). In the Spanish

learning design workshops, two of the schools combined EFL teachers and teachers of 'novice/struggling reader' readers together in the sessions. In four contexts UK (UCL), Spain (UB), Greece (UOI and Doukas) it was observed that teachers tended to use their school or personal pedagogical approaches as starting points to devise the designs/lesson plans during the workshops. The German context was slightly different and the learning design workshops were introduced more gradually as it was felt that a lack of prior learning and experience with either technology in the classrooms or existence of dedicated reading lessons would mean the learning design activity would be too conceptually challenging. A different approach was hence taken and workshop numbers were not provided here.

It was also noted by many of the partners involved that the learning design process using the cards encouraged creativity and originality; though in one school in Spain this resulted in an over complexity of the lesson plans that were developed. In the UK the teachers chose to 'reflect' upon which designs would be most appropriate to convert into lesson plans.

Researchers suggested that the multisensory nature of the cards and kinaesthetic sorting activities fostered opportunities for collaborative working by the teachers, resulting in the co-creation of designs and plans. Researchers from different settings also commented on teacher views that the Navigo/Amigo apps had great potential for engaging and motivating pupils. Whilst some schools saw technology as playing a central role in supporting active and collaborative learning; other schools wanted to stick to using technologies to reinforce prior learning and practice skills.

In the EFL schools a combination of teachers and TAs engaged in the learning design workshops in Spain and Romania, whilst in Sweden and Greece workshops were for teachers only. Again, it seems that participants tended to use their school or personal pedagogical approaches as starting points and creativity was encouraged by working with the learning designs. It was emphasised that the cards fostered collaborative learning and scaffolded the process; which again reflects the experience of the 'novice/struggling reader' workshops. Links to evidence-based practice were observed.

**Reflections: key outcomes and future implications**

- Teacher understanding of the potential of Amigo and Navigo was demonstrated through their engagement in skilfully developing a varied set of learning designs.
- A positive ethos of collaboration between teachers and researchers was fostered through the design workshops and underpinned many of the sessions. Both worked together sharing skills and expertise, through a process of knowledge exchange, to create learning designs and lesson plans that will support technology appropriation.
- Considering some of the longer and more complex learning designs that were created by some of the teachers, the researchers reflected on the potential issues that these lesson plans raised e.g. plans would be harder to implement in the classroom context. This could inform future development of learning designs.
- Teacher involvement in design creation could reinforce teacher understanding of the potential usage of the technologies in the classroom. The experience in exploration and development of the learning designs could also contribute to confidence in using technologies during the implementation phase.
- Design activities did not work so well when just one group member was involved. Hence future guidance should perhaps suggest minimum group numbers for sessions.
- Collaborations between teachers of 'struggling'/'novice readers' and teachers of EFL learners were fruitful and positive; indicating there is some crossover.
- There is a need to be mindful of and follow ethical procedures carefully when unexpected issues are faced when working with schools. e.g. when permission is refused by a participant.
- It is likely that with continued use of the Reader and games that teachers would quickly become familiar and more experienced with the personalised/adaptive features of the technology and develop their expertise and increase confidence levels.
- Enhancing knowledge of adaptivity potentials of the technologies may need additional support from researchers.
- Teachers could discuss the importance of ease of implementation and develop future 'best practice' guidelines for developing lesson plans using the Laurillard framework (Laurillard, 2013).

# 4 CPD

## 4.1 Motivation and Theory

Continuing Professional Development/Professional Development (CPD/PD) is an essential element of the iRead project, underpinning and providing a foundation to support successful implementation and embedding of technologies within schools in the identified partner countries. This links to the project evaluation (D9.1) aims; particularly the second aim of embedding and scaling up the Navigo and Amigo apps into everyday practice. Collaboratively designing new ways of including the technologies into learning requires flexible approaches, reflecting the richness offered by the diversity of learning approaches and the resulting potentially different configurations of technology usage to support reading. An extensive literature based on CPD/PD already exists (Timperley et al, 2008); though less literature exists on the links between CPD and pupil outcomes. There is a developing literature regarding PD with specific regard to use of technology in schools which will be briefly examined here.

After researchers had first observed the pedagogical diversity and variety of learning contexts within schools (observation data and reflections are reported and analysed below) researchers embarked upon a process of engaging schools in collaborative processes to support the introduction of the Amigo/Navigo apps and ensure teachers understood the aims of implementation/ felt confident to use the apps. To support the learning of the three target groups (novice readers, struggling readers and EFL learners) teachers and researchers collaborated on a CPD approach. Studies have indicated teachers have struggled to integrate new technologies and need convincing to include games into their classrooms (Steiler -Hunt & Jones, 2018). Initial problems with embedding technology have seemed to contribute to negative views inhibiting use of mobile technologies in school (Zhao & Bryant, 2006).

A well planned CPD programme was integral to supporting development of a positive ethos around incorporating game use in classrooms and in ensuring intended outcomes were achieved. A recent study (Geer at al, 2015) focused on emerging pedagogies around using iPads in schools suggested that well-planned professional development could support teachers to move towards a 'transformational' stage in tablet use that could potentially support learning outcomes and development of new pedagogies. Case studies have been emerging which could inform practice, looking at personalisation of learning and use of technologies including mobile devices and the important role CPD has to play (Ekanayake & Wishart, 2015).

Planned CPD aimed to establish teacher/researcher partnerships beginning with co-creation of learning designs; informed by theory represented in Diana Laurillard's approach to learning design (Laurillard, 2013). Laurillard's idea that we should see 'inquiry learning' as a process whereby the 'narrative' presented can be transformed into a participant's own story is pertinent. A supportive environment provides scaffolding for teachers to become involved with using technology in the classroom based on their distinct needs and pedagogies. Thus, the learning design phased reported in section 3 was the first stage of our CPD.

A teacher manual was created to support the process and incorporated the lesson plans created by teachers and a training programme (for each country) to support teachers to learn to use and embed the technologies within the classroom in their local contexts. The Technological Pedagogical Content Knowledge (TPACK) model (Harris & Hofer, 2011) informed the CPD process, recognising that teachers need to feel confident to use Navigo/Amigo in their particular schools in an effective way (Mishra & Koehler, 2006). The TPACK model can be applied in the context of the iRead project; in that teachers would make creative links between the learning (content), methods of teaching (pedagogies), and the appropriate tools (technology) in order to effectively implement the technologies in their classroom.

For the subsequent implementation phase to be a success, a clear and evidence informed approach to professional development was essential. The CPD sessions occurred directly within the schools, linking to the idea that CPD based in school settings of teachers involved leads to better student and teacher outcomes (Cordingley et al, 2003). CPD was delivered face to face, as this was the key preference expressed in teaching interviews that took place earlier. CPD scaffolded the learning process to empower the teachers to develop confidence, skills and knowledge (Vygotsky, 1978) in the process of appropriation. This was seen to help enable teachers to plan for using the technologies independently

within their varied settings. Researchers supported schools to set up their teaching in a way that fitted best with their distinct contexts and acknowledged differing starting points and varied levels of prior knowledge (Weston & Clay, 2018).

A gradual withdrawal process was applied, whereby researchers ensured that staff were given continued contact and access until they were confidently and independently using the technologies (Dix, 2007). Research suggests that as staff expertise develops, staff become more adaptable (Kennedy, 2016). Teachers were able to continue to access support to tackle problems. After CPD sessions were delivered, suggestions were made to have a 'research champion' in each school as well adoption of social media support groups where schools and researchers could communicate. This area will be developed at a later stage.

In many learning contexts the dominant form of professional development remains as a 'transfer' of knowledge or 'best practices' from an expert presenter to an audience. In practice, this often includes a process whereby a teacher participates in an external course and then returns to school to share knowledge with colleagues. However, despite continued dominance, this CPD model is known to be unlikely to lead to improvements in teaching and learning (Nutley et al, 2007) unless further interactions are involved (Hemsley-Brown & Sharpe, 2004). The relationship between researchers and practitioners is evident in the project's CPD approach which incorporates a 'knowledge exchange' relationship; through peer supported CPD (Timperley et al, 2007; Cordingley et al, 2007). This demonstrates use of a collaborative approach, fostering joint ownership of materials and be can linked to the concept of 'joint practice development' (Levin, 2004, Sebba et al, 2012) as seen in the learning design workshop focus on building a relationship between researchers and educational practitioners.

Guskey's path model of professional learning (Guskey, 2002) offers ideas for teacher change that teachers can use to reflect on CPD/PD within their schools. Guskey (2002) envisaged the outcomes of PD as leading to necessary changes (see figure 3). Consideration of PD models has led to moves to inform the development of recommendations for CPD that has as the key aim of achieving a positive impact on pupil learning (Curee, 2010). Cordingley (2015) describes 8 common characteristics of effective CPD; including a focus on collaboration, inquiry-based learning, linking theory to practice, plus an emphasis on scaffolding and modelling. These key principles are demonstrated within the CPD planned by the iRead project. Suggestions have also been made that it is crucial to ensure that the available CPD models should always be adapted for purpose and context (Boylan et al, 2018).


**Figure 3: Guskey's model of teacher change (2002)**

In the case of the iRead project it is beneficial to look at literature that specifically links professional development with an emphasis on technologies. Rodríguez et al (2010) highlighted that if we hope to encourage more teacher engagement with new technologies, scaffolds will need to be put into place to enable this to happen. Potential barriers still exist which have prevented teachers from adopting technologies in the classroom (Kpocha, 2012). Reflecting on current technology use in the classroom, in order to foster sustainable change, an important thing to consider is the focus on situated learning activities and professional development. The need for 'collective participation' providing some solutions through individualised support was identified (Bradshaw, 2002). It seems that apps on portable devices could potentially have an impact on educational outcomes, though CPD is integral to ensuring the necessary knowledge and skills are acquired by teachers. Mouza (2006) points out that CPD is needed to scaffold teachers towards becoming independent and skilled users of technologies. CPD might provide the necessary supports that encourage teachers to rethink boundaries, pedagogy, and the curriculum.

To consider some conditions for success it has been suggested that the role of researcher (and head teacher through providing positive reinforcement) can be key to the success of CPD in supporting the integration of technologies (Liu, 2013). The researcher's presence can support creativity and support generation of new ideas. This was observed during some of the learning design workshops where

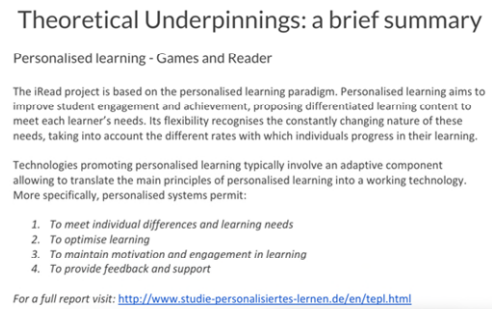
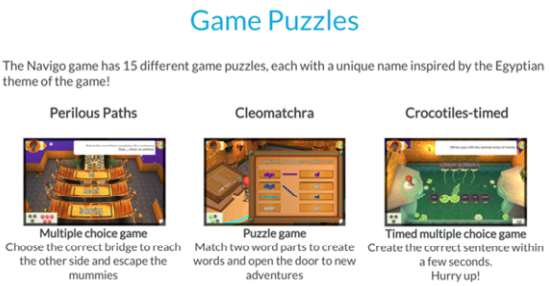
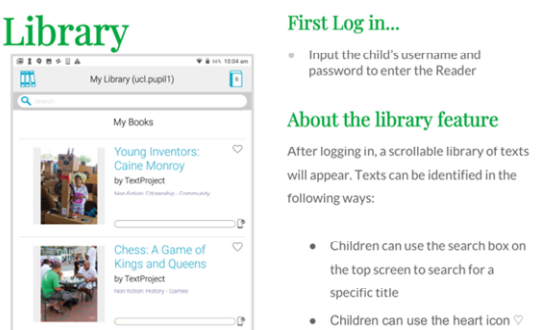
researchers could scaffold the design process. The need for follow up support; demonstrated through continued contact and scaffolded 'in house' support from the project researcher teams for teachers will be a determiner (Zhao & Bryant, 2006) for implementation success (Zhao & Bryant, 2006). Mentoring until confidence grows can provide a building block for future success and the idea of a technology lead or 'champion' (Kpocha, 2006) in schools would support this process as the researcher visits to the school gradually diminish. The table that follows summarises our approach.

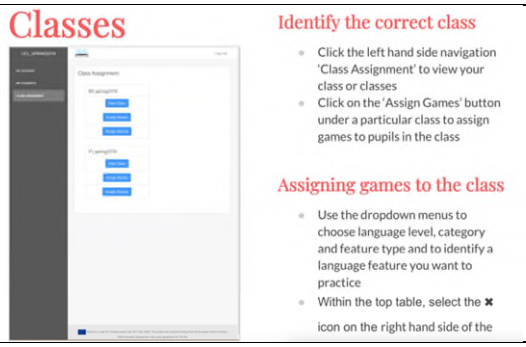
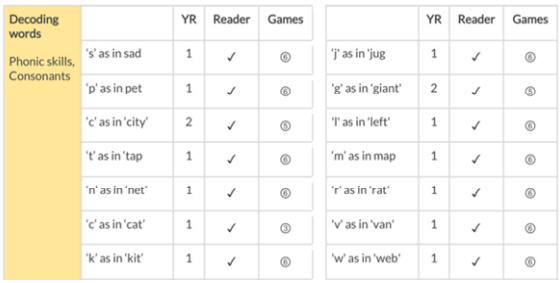
| CPD Literature | iRead Project CPD dimensions |
|---|---|
| Teachers have struggled to integrate new technologies and need convincing to include apps such as games into their classrooms (Steiler -Hunt & Jones, 2018).<br><br>Negative views inhibiting use of mobile technologies in school (Zhao & Bryant, 2006). | • support development of a positive ethos around incorporating game use in classrooms<br>• ensure teachers recognise intended outcomes and connect them to the apps |
| Constructionist approach to learning design (Laurillard, 2013) | • Establish teacher/researcher partnerships beginning with co-creation of learning designs<br>• Scaffolding for teachers to become involved with using technology in the classroom |
| The Technological Pedagogical Content Knowledge (TPACK) model<br>(Harris & Hofer, 2011). Teachers need to feel confident to use technology in their particular schools in an effective way | • Teacher manual designed to support the incorporation of lesson plans created by teachers, and evidencing the methods of teaching with technology<br>• Teacher manual designed to include a curriculum section to facilitate the creative links between the learning (content), methods of teaching (pedagogies), and the appropriate tools (technology) in order to effectively implement the technologies in their classroom |
| CPD based in school settings of teachers involved leads to better student and teacher outcomes (Cordingley et al, 2003). | • The CPD sessions occurred directly within the schools, with follow up sessions in classrooms if needed |
| Scaffolding learning in CPD<br>• Independent and skilled users of technologies (Mouza, 2006)<br>• Empower the teachers to develop confidence, skills and knowledge (Vygotsky, 1978) | • Scaffolded teacher learning process<br>• Gradual withdrawal process applied<br>• Follow up support offered |
| Situated learning activities | • Supported schools to set up their teaching by identifying the differing starting points/ varied levels of prior knowledge and working from teachers' perspective/needs |
| Peer supported CPD (Timperley et al, 2007; Cordingley et al, 2007)<br><br>'Joint practice development' (Levin, 2004, Sebba et al, 2012) | • Researchers' and practitioners' relationship based on 'knowledge exchange' |
| The idea of a technology lead or 'champion' (Kpocha, 2006) | • Establish a 'research champion' in each school |

| | |
|---|---|
| The role of researcher is key to the success of CPD (Liu, 2013). | • Researcher's presence in the CPD delivery and ongoing support |

## 4.2 Teacher Manual

A teacher manual was created to support teachers to learn to use and embed the technologies within the classroom in their local contexts. The document includes a description of Navigo and Amigo and their theoretical underpinnings, step-by-step guidance on technologies' benefits and use, and practical information on tablet management. The manual was initially designed in English and subsequently translated in Greek, Spanish and German to support first language teaching in other countries. Furthermore, each version of the manual incorporated curriculum mapping information and the lesson plans created during the learning design workshops reported in section 3, which are specific to each country and were designed to support local practice. This work generated 8 manuals – 4 for first language teaching and 4 for English as a foreign language, which are available at on the iRead project website at the following link: https://iread-project.eu/resources-2/. The following paragraphs describe the content and aims of each manual section briefly.

| | |
|---|---|
| *Theoretical underpinnings*<br>  | The first section of the manual aims to introduce the project goals and key elements to the teachers. First, it introduces the learning paradigm guiding technology design – personalised learning – and how this model applies to the Navigo game and Amigo reader through a personalised user model built on a language-specific domain model. Following this, the section describes the reading areas covered in the domain model, namely decoding and comprehension. |
| *Navigo Game*<br>  | The 'Navigo game' section describes the main educational advantages and design elements of the game. After a brief overview of the key benefits for the child's learning and motivation, the section describes the game narrative and the 15 game mechanics. Then, it explains how the 900 game activities take children through a learning journey than begins with the identification of a language feature towards the development of reading fluency. |
| *Amigo Reader*<br>  | Similarly to the previous section, this part introduces the key benefits, learning content and design features embedded in the Amigo Reader. A brief overview on the learning content is provided, with reference to the appendixes where teachers can find a table with all the text titles and authors included in the Reader library. Following this, the section illustrates the main design elements of the technology, such as the library and pre-reading activities, and it describes their mode of operation. |
| *Teacher Tools* | The section presents the goals and main opportunities offered by the Teacher Tools. This describes how the tool can be used to assign |

| | |
|---|---|
|  | games and texts to individual students and whole class, with the support of visuals and step-by-step task guidance. |
| *Curriculum materials*<br>  | 'Curriculum materials' is designed to support teachers in planning activities for their pupils. It includes two sub-sections. The 'curriculum mapping' reports all the language areas and features included in Navigo game and Amigo Reader, information on the most appropriate year group for each feature, and how many texts and learning games target each learning objective. Thanks to this, teachers can consider when to use the apps to reach specific learning objectives. Following, the lesson plans created in the learning design workshops provide concrete examples of app usage scenarios including Navigo and Amigo, and tips on how to use the Teacher Tools and curriculum mapping to implement the lesson and design new ones. |
| *Day to day tablet administration*<br>  <br>Inside the box you will find:<br>• a fully set up tablet (logged in the Google account that relates to your school's pilot, iRead apps installed, etc.)<br>• a charger (fast-charger/2A-5.2V)<br>• a USB to USB-mini wire. | This section includes practical information supporting teachers and schools in managing the tablets during the pilot. This involves a description of tablet technical characteristics, management of Google accounts, wi-fi and updates, and tablet storing and charging. |
| *Frequently Asked Questions*<br>General<br>1. How has the content of the Navigo game & Amigo reader been created in line with our curriculum?<br>In the UK, the national curriculum was used to create a conceptual model of children's language development. We refer to this as our domain model. For more info on curriculum mapping see pages 27-35<br>2. For students where English is a foreign language (EFL) how has the content of the Navigo game & Amigo reader been created?<br>Across Europe, the content has been tailored in line with the Common European Framework of Reference for Languages (CEFR)<br>Amigo Reader<br>3. How can I work on a specific sound within the Amigo reader app?<br>Once you select a text from the library, use the pre-reading activity to select a specific language feature. When activated, this feature will highlight every time it appears within the text. | This final section reports the main questions that teachers asked during the CPD sessions and school visits, with the goal to anticipate similar questions and keep track of difficulties and emerging questions. |

## 4.3 Novice and Struggling Readers – UK (UCL)

### 4.3.1 Reflections on CPD 2019-20

| CPD sessions (United Kingdom) | |
|---|---|
| **Number of schools involved** | 10 |
| **Number of teachers participating** | 75 |

*General overview*- Overall, the CPD sessions have been successful in allowing teachers to have hands-on practical experience in using the technologies. On a practical level, access to schools has been mixed. Some schools have prioritised our CPD sessions therefore allocating a fixed time within the school's existing inset training schedule at the start of term. In other cases, it has taken longer to secure a dedicated time for teaching staff out of the classroom. In these cases, researchers have attended after school twilight (evening) sessions with teachers and/or teaching support staff throughout the first few months of the Autumn 2019 term. Communication with schools has been more effective in cases where there has been a key literacy lead contact person available who is familiar with students, staffing and timetabling for literacy.

*Evaluation of CPD approach*– In practice, the structure of each of the CPD sessions in the participating schools has been differentiated to meet the needs of the group. For example, in our largest CPD sessions including 45 participants, researchers followed a structured schedule to allow for enough time to introduce the project and technologies to new participants; demonstrate the technologies; practice discrete tasks, and; understand how to use the technologies within a series of activities from a given lesson plan. In cases where there have been internet connectivity issues in the training room, there have been challenges in allowing for school staff to practice using the technologies which will impact on the level of follow up support that will be put in place.

*Learning from local practices* - These sessions have also been useful in identifying local priorities and first impressions from school teams. One of the key messages that school teams have expressed concerns the need for support in introducing the technologies into the classroom. This has led to individualised plans for how researchers will work with school staff on a practical level. CPD sessions have also given key insights about each school's literacy practices and how the technologies are likely to be used alongside existing literacy programmes. For instance, in one school, the promotion of literacy development and interest in reading is a key school goal therefore staff are keen to embed the apps into the ecology of their existing literacy practices.

The CPD sessions are also highlighting adaptations and practical supports that will be needed. For instance, the idea of establishing a local 'technology champion' who is a nominated school team member who can act as an intermediary between teachers and researchers. Also, the sessions have highlighted some of the different ways that teachers are planning on using the technologies by leveraging timetabled sessions where half of the class is away or when classes have more flexible or free time to allow for introducing the apps in an exploratory way. From observation, in the session, teachers have begun to suggest how they might utilise the technologies in different ways, for example, for augmenting existing guided reading sessions in large groups, or separately, with individual younger students in self-initiated play sessions.

*Exploitation* - Discussions with teaching staff are revealing some of their considerations and priorities for using the apps and teacher tool. For instance, some have highlighted that younger novice readers in Year 1 will need closer support to use the Amigo reader and learn to navigate the interface. Others have commented that in the Navigo game, they will need strategies for redirecting students away from spending too much time on customising their avatar, so that they can prioritise game play. In terms of feedback on the functionalities of the technologies, the CPD sessions have also been useful in identifying further requirements from teaching staff. For example, regarding the Navigo game, some

teachers have expressed an interest in having further in-game auditory feedback. Others have asked about ways of tailoring language functions targeted to struggling readers.

### 4.3.2 Reflections on CPD 2020-21

| CPD sessions for Novice and Struggling Readers, United Kingdom | |
|---|---|
| Number of schools involved | 9 |
| Number of teachers participating | 13 |
| Number of CPD sessions | 10 |

***General overview***

In the UK we have had two periods of school closures – the first was for 4 months at the end of 2019/20 academic year and the second was for 2 months at the start of 2021. During this time only children of key workers and those classed as vulnerable were able to attend school, with all other children learning from home. In between these closures whole year groups could be sent home for two weeks at a time if there was a confirmed case of COVID within the group so even when the children were in school it was a very disrupted time.

On returning to school after the first closure period there were lots of new rules and procedures that the teachers needed to learn and adapt to, including restrictions on school visitors. This resulted in the schools taking longer to decide how they might be involved in the project going forward, and this pushed back when the CPD was arranged in some cases. However, once arranged we found conducting the CPD remotely was much more efficient to run without the additional travel time and staffing requirements to run large sessions.

Due to the implications of COVID, in addition to the limited engagement we experienced with some schools during the previous year, we reflected on the different school relationships we had built and decided to end our relationships with some schools and increase our pupil numbers in the schools that had proven to be more active. In addition to this we recruited new schools who required additional CPD to introduce them to the project and the apps. This strategy proved to be working well up until the second school closure (which was implemented with very little notice) with good engagement with researchers from the majority of the schools during the first term of the 2020/21 academic year. However, the UK government has now put more pressure on schools to deliver a high quality of home-learning, with schools having to manage pupils in school as well as at home, and this has resulted in the majority of schools pausing their use of the iRead apps to focus the multiple challenges this presents.

***Evaluation of the CPD approach***

Given our decision to reduce or stop our engagement with some schools who had not engaged with the iRead apps during the previous year, we subsequently focused on recruiting additional schools who would be highly motivated to engage with the project. This was done through personal contacts with project members as well as a local education authority who worked with a large number of primary schools across one region of the UK. One school experienced staff absences during the autumn term which resulted in them being slow to get going and then during the second school closure they decided they could not accommodate the additional screen time as they were already delivering a full online timetable. In total three schools did not continue at all this year and in another school, we scaled back the initial whole school approach to focus on a smaller group of struggling readers.

In two highly engaged schools we expanded to additionally include two new classes of novice readers. Three new schools also joined the project, which resulted in five new classes of novice readers. During the autumn term it was challenging to stay in touch with some schools due to the constantly changing situation within the schools, particularly in areas with high infection rates. In contrast other schools experienced less disruption during this period and were more responsive.

We moved our CPD fully online and adapted the introductory CPD sessions we had developed the previous year to be delivered in smaller chunks so as not to overwhelm the teachers with too much information. This also allowed them to try things out in the classroom and then reflect on the more advanced functionality of the apps within the context of this previous experience in the classroom. After each session we shared all of the resources via email as well as a summary of specific questions asked during the session. We also created bite-sized videos to summarise key aspects of the apps for teachers, parents, and children, as well as a printable poster to support access to the apps. Feedback has suggested that this was found to be useful. Furthermore, for the later CPD sessions we created a short questionnaire for teachers to specify their priorities for the training session and we adapted the content accordingly to meet these needs.

**1 - What worked well in the CPD:**

- Building a relationship with key school contacts early on and then starting to build relationships with individual teachers (2019 and 2020). Practically, this allowed for scheduling training with larger groups and regular contact meant we could monitor success of CPD and differentiate ongoing professional development support. Given online working, we have now been able to customise the CPD into smaller chunks and work closely with individual staff and their needs. This includes transitioning into supporting teachers who wished to continue the use of the iRead apps at home during school closures by providing regular usage and engagement reports/strategies.
- Creating a range of CPD resources in different formats that included training slides with lots of images and less text, including answers to any questions asked during the session along with answers, and an online accessible teacher manual. During the initial training sessions in 2019, we presented the slides and teacher manual in the first CPD sessions that were held in schools, then we used these resources as we adapted the format of CPD to online as well as restructured to shorter/more frequent/customised sessions in 2020.

**2 – Challenges faced in the CPD:**

- **Training content:** Reflecting on 2019/20, we faced challenges in trying to deliver too much content within one session, which meant that teachers were overwhelmed and kept coming back to ask for more support. Training content challenges also related to how we were able to deliver content with face to face, school-based sessions not being possible in 2020. Responding to this we split up the CPD content into 3 sessions with a more targeted focus, organised online sessions. After CPD1, we asked teachers to identify their training needs (increasing their agency in actively deciding next steps and personalised CPD). Also, in the 2nd CPD, we built on authentic experiences based on their practices using the apps in the classroom.
- **Additional resources:** During 2019/20, despite creating a detailed instructional teacher manual, teachers regularly emailed researcher to ask many basic questions that could be found in the manual/training slides. We realised that the teacher manual format might not be the quickest and most efficient way for teachers to access information so we created a series of ‘how to’ videos that were 1-2 minutes in length focusing on key topics for getting started with the technologies and a classroom poster. Feedback again suggested these were very helpful and accessible. We signposted to these new resources in the shorter training sessions. We also included questions they ask within their CPD slides (personalising).
- **Managing teacher cognitive load:** In 2019/20 teachers and gatekeepers expressed teachers had limited time to learn how to use the technologies and trial using them in class. These concerns were exacerbated significantly by new practices responding to COVID and the increased need for teachers to learn a wide range of new digital tools and practices in a very short time period. In some schools, researchers had a strong presence in offering indirect and class-based support but in one case, too much support caused further challenges by deskilling and reducing some staff members’ confidence in deliver the inventions without the researcher present. In this school, in 2020/21 we adapted the professional development plan to reduce the learning demands on staff by bypassing the need to learn about using more of the advanced functionality which was not required to simply use the apps. In a telephone meeting with the gatekeeper (SENCo) we agreed student initialisation profiles together which were set by the researcher. CPD was then geared towards breaking down into 2 phases: 1. allowing for students to use the technologies independently, focusing solely on logging in to the tablets, providing login cards for students, then 2. learning to use the teacher tool for student progress when needed. Consequently, teachers can understand the positives and get feedback before trying the next step.

### 4.3.3 Comparison of CPD approach taken in 2019-20 and 2020-21

| **iRead Project CPD dimensions 2019-2020** | **iRead Project CPD dimensions 2020-2021** |
|---|---|
| Support development of a positive ethos around incorporating game use in classrooms<br><br>Ensure teachers recognise intended outcomes and connect them to the apps | • Continued as before |
| Establish teacher/researcher partnerships beginning with co-creation of learning designs<br><br>Scaffolding for teachers to become involved with using technology in the classroom | • Continued as before |
| Teacher manual designed to support the incorporation of lesson plans created by teachers, and evidencing the methods of teaching with technology<br>English teacher manual<br><br>Teacher manual designed to include a curriculum section to facilitate the creative links between the learning (content), methods of teaching (pedagogies), and the appropriate tools (technology) in order to effectively implement the technologies in their classroom | • Developed a game record sheet for teachers that links with the curriculum mapping within the teacher manual<br>• Created a short video overview of the teacher manual content.<br>• Used social media to highlight particular aspects of the manual e.g. lesson plans |
| The CPD sessions occurred directly within the schools, with follow up sessions in classrooms if needed | • Staggered approach to online CPD sessions that were condensed into smaller topics (intro, using the teacher tool, monitoring student progress) to give teachers the opportunity to put what they have learned into practice in the classroom before moving onto the next thing |
| Scaffolded teacher learning process<br>Gradual withdrawal process applied<br><br>Follow up support offered | In addition to last year:<br>• Adapted the CPD strategy for new schools to first enable students in getting started, then scaffolding teacher development in having more control over the teacher tool's functionalities<br>• Provided strategies for use at home as well as technical support direct to parents<br>• Created a series of instructional 'how to...' videos and classroom poster that supported:<br>• Navigo game play basics<br>• Navigo game play top tips<br>• Assigning games with the teacher tool |

| | |
|---|---|
| | • A student's guide to playing the Navigo game<br>• Classroom poster on playing Navigo |
| Supported schools to set up their teaching by identifying the differing starting points/ varied levels of prior knowledge and working from teachers' perspective/needs | In addition to last year:<br>• Asked teachers to identify their individual learning needs through a teacher professional development form that informed the focus of later CPD session. |
| Researchers' and practitioners' relationship based on 'knowledge exchange' | • Continued as before |
| Establish a 'research champion' in each school | • Continued as before |
| Researcher's presence in the CPD delivery and ongoing support | • Continued as before |

## 4.4 Struggling Readers – Greece (UOI)

### 4.4.1 Reflections on CPD 2019-2020

| CPD sessions (Greece) | |
|---|---|
| Number of schools involved | 12 |
| Number of teachers participating | 22 |

*General overview* - Overall, the CPD sessions have been successful in allowing teachers to have hands-on practical experience in using the technologies. Since only public schools participate in this study, teachers had to secure a dedicated time for the CPD sessions out of the classroom, which was coordinated with the responsible local authorities. Teachers attended 2-hour sessions with the researchers in November 2019 just before the beginning of the big pilot in public schools. Note that teachers were already familiar with the technology since the first pilot study took place at their schools in September 2019. Communication with schools has been more effective in cases where there has been a key literacy lead contact person available who is most familiar with students, staffing and timetabling for literacy.

*Evaluation of CPD approach* – In practice, the structure of each CPD has been differentiated to meet the needs of the group. For example, in the CPD sessions of 35 participants, participants were divided into three working groups (split in separate rooms) and researchers followed a structured schedule to allow for enough time to introduce the project and technologies to new participants; demonstrate the technologies; practice discrete tasks, and; understand how to use the technologies within a series of activities from a given lesson plan.

*Learning from local practices* - These sessions have also been useful in identifying local priorities and first impressions from school teams. One of the key messages that school teams have expressed concerns the need for support in introducing the technologies into the classroom. This has led to individualised plans for how researchers will work with school staff on a practical level. CPD sessions have also exposed key insights about each school's literacy practices and how the technologies are likely to be used alongside existing literacy programmes.

The CPD sessions are also highlighting adaptations and practical supports that will be needed. For instance, through the introduction of a local technology champion who is a nominated school team member who can act as an intermediary between teachers and researchers. Also, the sessions have highlighted some of the different ways that teachers are planning on using the technologies by leveraging timetabled sessions where half of the class is away or when classes have more flexible free time to allow for introducing the apps in an exploratory way. From observation, in the session, teachers have begun to suggest how they might utilise the technologies in different ways, for example, for augmenting existing guided reading sessions in large groups, or separately, with individual younger students in self-initiated play sessions.

*Exploitation* - Discussions with teaching staff are revealing some of their considerations and priorities for using the apps and teacher tool. For instance, some teachers have highlighted that they will need closer support to use the technology and learn to navigate the interface effectively. They also noticed that a lot of time is required to move from game to game or to log in the technology, thus, making it hard to combine the technology with their individual lessons. Children with reading difficulties in Year 4 need more time to understand each linguistic phenomenon and teachers will need to develop strategies for redirecting students away from spending too much time on customising their avatar, so that they can prioritise game play.

In terms of feedback on the functionalities of the technologies, the CPD sessions have also been useful in identifying further requirements from teaching staff. For example, for the Navigo game, some teachers have expressed an interest in having further in-game auditory feedback. Others have asked whether students can additionally have access to the games/reader while at home, so students can further practice the phenomena taught at school.

### 4.4.2 Reflections on CPD 2020-21

| CPD sessions for [Struggling Readers], [Greece UOI] | |
|---|---|
| Number of schools involved | 17 |
| Number of teachers participating | 18 |
| Number of CPD sessions | 1<br>*group CPD session for all teachers, several 1:1 meetings with teachers also occurred |

***General overview***

The pandemic brought with it several challenges to conducting CPD with participating schools. Researchers were not able to visit schools to support teachers. During the 1st school closure, students did not take the tablets home, and as students were not using the tablets at the time, researchers and teachers abstained from conducting CPD sessions. Once schools opened again (on the 14th of September) researchers were faced with the issue of some of the participating teachers leaving their positions and new teachers entering. Researchers connected with the new teachers informing them about the iRead project. They also reminded the experienced teachers about the different aspects of using the apps. The face-to-face CPDs took place in each school separately before 2nd closure. This was a time-consuming task for researchers to organise. After the second closure, researchers organised one virtual CPD online. The virtual CPD was perceived as helpful especially by the new teachers. Researchers found that it was efficient for them to conduct CPD virtually. Through virtual techniques, such as sharing a screen with the teachers, everyone was able to see and experience how to use the teacher tool in real-time.

***Evaluation of CPD approach***

There were two new participating schools, and two schools chose not to continue with the project. There were staff changes in the schools that left the project: new teachers who had not been part of the project did not want to use technology in their class. In the schools that continued taking part the students who had been on the 6th grade during 2019-2020 were replaced by new students from 4th grade to comply

with the age range of the project. The two new schools were in Ioannina and had matching characteristics with the schools that left the project. New teachers utilized guided reading and exercises in preprinted worksheets. In September 2020 researchers faced challenges to maintain engagement with participating schools because some teachers were hesitant to continue due to COVID-19. Teachers' main concerns related to sharing tablets or headphones. Researchers supported teachers by giving guidance about how they could use apps in the classroom using the manual and lesson plans. Researchers gave a tablet and a pair of headphones to each student.

**1 - What worked well in the CPD:**

- Relationships: experienced teachers offered to help with introducing iRead to the new teachers. This worked well during the virtual CPD session.
- Scheduling: One-to-one session organised for experienced and new teachers was successful both as a refresher for those already familiar with the technology, and as an introduction to those new to the apps.
- From September 2020, a flexible approach to CPD was taken based on the teachers' preference. Teachers were given the option to take part in a one-to-one CPD session. In one school researchers worked together with an experienced teacher to successfully introduce and give guidance with the technology to a new teacher. Where possible, researchers visited schools to support new teachers in using the apps with students and offered experienced teachers' refreshers on aspects of the technologies that the teachers may have forgotten about. Virtual CPD session was an opportunity to the experienced teachers to exploit and understand areas which they felt they already knew and worked well and bring to fore those areas which they felt needed improvement.

**2 – Challenges faced in the CPD:**

There were several obstacles this year with regards to organising physical visits to schools due to the pandemic. Even if a school would be open, the researchers were not allowed to visit due to virus concerns. Some face-to-face visits for CPD did occur where possible. Despite face-to-face training and virtual CPD session, few teachers used the teacher tool to assign games. In addition, we found that very few teachers used the tool to check students' progress. Overall, teachers found the teacher tool difficult to use. To address this challenge researchers stepped in to assign games for students and check students' progress. Researchers would then inform teachers about students' progress (by telephone or by e-mail). Another challenge for CPD was non-attendance: some teachers were not able to attend the virtual CPD session researchers had organised. Feedback from teachers on the virtual CPD session was that they preferred face-to-face training or support offered via telephone. The virtual CPD session was themed around using the teacher tool, during which researchers showed teachers how to use it and the teachers were simultaneously trying it out themselves. Researchers did not use a PPT as part of this session as it was focused on giving teachers a practical experience with the teacher tool.

### 4.4.3 Comparison of CPD approach taken in 2019-20 and 2020-21

| **iRead Project CPD dimensions 2019-2020** | **iRead Project CPD dimensions 2020-2021** |
|---|---|
| Support development of a positive ethos around incorporating game use in classrooms<br><br>Ensure teachers recognise intended outcomes and connect them to the apps | Same as last year, however, most of the communication between researchers and teachers took place over phone and/or e-mail. |
| Establish teacher/researcher partnerships beginning with co-creation of learning designs<br><br>Scaffolding for teachers to become involved with using technology in the classroom | Where the pandemic situation allowed, researchers visited schools and helped teachers. Researchers phoned with each teacher once a week.<br>In six of the participating schools the researchers used the apps with students. In these schools, the teachers did not have time to do this and/or they were not familiar with using technology in the classroom. |

| | |
|---|---|
| Teacher manual designed to support the incorporation of lesson plans created by teachers, and evidencing the methods of teaching with technology•<br><br>Teacher manual designed to include a curriculum section to facilitate the creative links between the learning (content), methods of teaching (pedagogies), and the appropriate tools (technology) in order to effectively implement the technologies in their classroom | While we encouraged teachers to use the teacher manual, teachers chose not to use it and they found it difficult to use. Teachers could not find the time to read it because of its length. This activity would have had to take place outside their working hours which they were not prepared to do. |
| The CPD sessions occurred directly within the schools, with follow up sessions in classrooms if needed | CPD sessions were conducted face-to-face within the schools.<br>We also organised one virtual CPD session. |
| Scaffolded teacher learning process<br>Gradual withdrawal process applied<br><br>Follow up support offered | Visited schools and gave support with challenges teachers faced with the apps and/or the tablets, and with any technical needs such as updating the apps. |
| Supported schools to set up their teaching by identifying the differing starting points/ varied levels of prior knowledge and working from teachers' perspective/needs | We used the apps and applied learning designs in the classroom. |
| Researchers' and practitioners' relationship based on 'knowledge exchange' | Researchers provided help to teachers and gave information about the different features, games, or learning designs. |
| Establish a 'research champion' in each school | One teacher per school apart from one where there have been two teachers. |
| Researcher's presence in the CPD delivery and ongoing support | Ongoing weekly support. |

## 4.5 Novice Readers – Greece (Doukas)

### 4.5.1 Reflections on CPD 2019-2020

| CPD sessions (Greece) | |
|---|---|
| **Number of schools involved** | 21 |
| **Number of teachers participating** | 54 |

The overall impact of the CPD was more than positive. Whilst it was a huge task to coordinate and deliver CPD sessions for the 21 schools involved; the participants were well-organised and as they found the project very interesting there were few problems with the organisation of the CPD sessions. Participants did not have the chance to explore the Amigo Reader as at that time (Spring Semester 2019), the Reader was not ready for Greek. In general, all teachers were present and each of them had the chance to learn, play the game and create lesson plans. In a case where the teacher could not join our CPDs either in Thessaloniki or in Athens, we had a 1:1 webinar with almost the same structure as we followed in the previous ones.

The CPD sessions in Greece were organised for all the teachers (52 + 2 internal) who were due to participate in the Greek Novice pilot. To help the organisation of the CPD, schools were divided (when possible) in groups, based on their area. At each school there was a contact person appointed to handle the communication on behalf of the school. After communicating with all schools of a certain area, we set a date for each session. They were also informed that after the CPD they would have to participate in a Game Learning Design Workshop. To ensure that the teachers focus, all CPD sessions were either scheduled at the end of the school day (when students had left the school) or during the weekend. Before the CPD session, and in communication with the schools hosting the CPD, the Wi-Fi problem was resolved either by using an Ethernet to Wi-Fi repeater or a Windows 10 laptop, connected via Ethernet that worked as a Wi-Fi repeater. The second choice gives you instant access to see which devices are connected. Therefore, when needed during the pilots, teachers can be assured that only the Lenovo Tab 4 10 devices are connected. For a few remote schools (e.g. Naxos Island private school) we organised a webinar CPD session.

From the beginning of the first CPD session, we found an allocated time (10-15') at the start, during which teachers could try the tablets and the applications, which was important and very helpful. This allowed them to be able to understand the elements and features that we presented during the session. They were not able to conceptualise the way the adaptivity model works and how they can choose the learning content of the game by themselves for the students. However, they were able to understand what data would be gathered and what for. We also found, that there was a big interest in the technological set up the Doukas team suggested, as they were a bit unfamiliar with the use of such technology and tools. As for the initial learning goals, participants exceeded the expectations and were keen to cover each different discussion area with a lot of questions. Overall, the learning goals were achieved as teachers were "collecting" questions for 6 months (the period between the delivery of tablets and the teacher training).

As Greek public schools do not easily fund small equipment costs (due to centralised administration), teachers were inquiring about the cost to purchase a case for the tablets and how to optimally facilitate their charging. As these questions (along with other technical ones) were directed to the Novice Greek pilot leader, a specific section of the CPD was developed to address them. Among other things, teachers were informed that the most cost-efficient way, that provides fast charging abilities for multiple tablets (10+) is a multi-socket solution along with the use of the tablets' chargers or how to project a tablet's screen on the interactive board. Additionally, teachers and principals wanted information about the process of obtaining a permission from the Institute of Educational Policy, responsible for the regulation of the educational process in Greek public schools. For this purpose, a meeting with a regional coordinator from the Institute of Educational Policy was held. For those unable to participate, a relevant section explaining the step-by-step process was included in the CPDs.

All teachers from the schools selected for the pilot were informed that the project is a European H2020 project and were given the information resources in advance (project's website, blog, Greek Novice schools' newsletter, etc.). Selected teachers were accompanied by English teachers inquiring if they could join the pilots/open pilots for the EFL. All three times, they were redirected to the EFL pilot in Greece (British Council). Along with the teachers that were selected for the pilot, some of their colleagues were present and were attracted to the open pilot idea and all of them were interested in the curriculum mapping. The educational process is closely monitored by the Ministry of Education giving teachers fewer opportunities for improvisation and activities outside the national curriculum. The existence of the curriculum mapping allows teachers to incorporate Navigo to the educational process. One of the coordinators of educational processes in primary Greek public schools expressed the interest of Cypriot colleagues in participating in the project. Partners from the Doukas School Team visited one school in Limassol, Cyprus and had the chance to disseminate the project to local teachers that were redirected to the Online Pilot.

### 4.5.2 Reflections on CPD 2020-21

| CPD sessions for [Novice], [Greece DOUKAS] | |
|---|---|
| Number of schools involved | 7 |
| Number of teachers participating | 22 |
| Number of CPD sessions | 4 |

***General overview***

*How covid 19 has impacted schools and our research*

The pandemic restrictions affected and created obstacles for conducting CPD sessions in schools. Two face-to-face CPD sessions were conducted with teachers from four public primary schools during the months of September and October 2020 before school closures.

At the time, the restrictions allowed for a maximum group of nine persons to meet in a shared space. In parallel, to maintain work during the restrictions, Doukas School organised an on-line CPD session.

Two Doukas School teachers who implemented the pilot within their school had weekly meetings with the project team over the course of the whole year, attending to any upcoming issues. The researchers presented them with details on how to use the teacher tool, and the teachers shared any issues or difficulties with the researchers. This exchange has served as an ongoing CPD for this school.

***Evaluation of CPD approach***

No new schools were recruited during the 2nd year of the Evaluation in schools (Sep20 – Apr21). In some schools, the teachers who had been part of the initial implementation of the iRead pilot and technologies in the school changed. These teachers either moved to another school, or they were assigned a new class that was not participating in the pilot. Due to the pandemic, schools were closed for several months. As a result, teachers participating in the project were more familiar with processes relating to on-line learning and the use of digital technologies. However, the transition to the on-line learning environment had a major impact on the time teachers spent engaging with the project. The Greek Novice pilot leaders attended to this issue by initiating one-to-one communication with schools and teachers and suggested new ways of working and offering to support with any issues they may have faced.

However, despite these efforts several teachers who had taken part in the previous year did not continue using the applications this year. Another issue had to do with accessibility. Some students from low-income families wanted to continue learning with the iRead apps but did not have an appropriate mobile device to continue using the apps on at home. In a number of cases, tablets were given to students and their parents signed a form stating that they would take care of the tablets and guaranteeing to return them in the condition they had received them in. For some students this was a way for them to participate in any of the on-line courses their schools were offering.

This year, there were two main changes to the CPD: (1) limiting the group size to a maximum of seven participants in each face-to-face CPD due to 9 people restriction posed by the pandemic, and (2) organising CPD on-line. The CPD sessions focused on the teacher tool to enable teachers to control, monitor and adjust their students' learning paths with the iRead applications. Furthermore, the CPD sessions were focused on the Navigo app due to the inability of the Greek TTS feature from the Amigo Reader to produce high quality results. Despite partners' efforts in finding a suitable TTS, none of the trials passed the minimum standards held by teachers that would have motivated them to use them in their classrooms.

Teachers' enthusiasm in the Greek evaluation schools led to them asking to join the English classes. As a result, the Doukas School enrolled several students in the EFL version of the applications. Here, the procedures and processes followed matched those by participating English pilot schools. In these cases, the Navigo application was used to develop and enhance students' English reading skills, and the teachers also used the Amigo application.

**1 - What worked well in the CPD:**

During CPD 2020-21, researchers found that the teachers were more familiar with the technology this year due to having spent more time using the technologies as part of home teaching during the pandemic. Most of the teachers had either used the applications themselves or participated in their colleagues' classes during which the iRead technologies had been used. Also, the implementation of the iRead technologies in the public schools played a crucial role in improving their internet connection.

An important number of schools have already bought WIFI repeaters to improve the connectivity. Moreover, as for the school premises, they have rooms where they store and charge the tablets and classrooms with certain characteristics such as good internet connection where they have their lessons when using the iRead technologies. In a nutshell, this year schools increased their readiness and have already faced several problems that made it more difficult to use the iRead application last year.

**2 – Challenges faced in the CPD:**
The main challenge concerning the CPDs was the inability for the researchers and the Greek Novice pilot leaders to maintain contact with the schools and deliver the CPDs in face-to-face sessions. Therefore, new CPD seminars were only delivered to the schools that expressed a willingness to participate and host a seminar in their physical space or participate virtually.
Whenever teachers and schools expressed a need for support it was addressed by the researchers. Researchers found that there was less need to conduct CPD this year as experienced teachers required less support having been to at least one CPD session during the past years.

### 4.5.3 Comparison of CPD approach taken in 2019-20 and 2020-21

| **iRead Project CPD dimensions 2019-2020** | **iRead Project CPD dimensions 2020-2021** |
|---|---|
| Support development of a positive ethos around incorporating game use in classrooms<br><br>Ensure teachers recognise intended outcomes and connect them to the apps | Ongoing |
| Establish teacher/researcher partnerships beginning with co-creation of learning designs<br><br>Scaffolding for teachers to become involved with using technology in the classroom | Teachers did not create new learning designs. They carefully read and commented on the existing ones. |
| Teacher manual designed to support the incorporation of lesson plans created by teachers, and evidencing the methods of teaching with technology•<br><br>Teacher manual designed to include a curriculum section to facilitate the creative links between the learning (content), methods of teaching (pedagogies), and the appropriate tools (technology) in order to effectively implement the technologies in their classroom | Teachers became even more familiar with the teacher manual and described the experience of using it during the implementation of the school year 2019-2020.<br><br>Also, helped their colleagues by suggesting more efficient ways on how and when to use the teacher manual. |
| The CPD sessions occurred directly within the schools, with follow up sessions in classrooms if needed | The CPD sessions occurred within the schools and on-line. The follow-up sessions took place on-line and researchers provided their help to teachers digitally. |
| Scaffolded teacher learning process<br>Gradual withdrawal process applied<br><br>Follow up support offered | Teachers already familiar with the process.<br><br>Follow up support offered |
| Supported schools to set up their teaching by identifying the differing starting points/ varied levels of prior knowledge and working from teachers' perspective/needs | Ongoing |
| Researchers' and practitioners' relationship based on 'knowledge exchange' | Researchers' and practitioners' relationship based on 'experience exchange' |
| Establish a 'research champion' in each school | Not applicable |

| | |
|---|---|
| Researcher's presence in the CPD delivery and ongoing support | Researchers' presence in the CPD delivery, both physically and digitally and ongoing support. |

## 4.6 Novice Readers – Spain (UB)

### 4.6.1 Reflections on CPD 2019-2020

| CPD sessions (Spain) | |
|---|---|
| **Number of schools involved** | 8 |
| **Number of teachers participating** | 10 |

*General overview* - Overall, the CPD sessions have been successful in allowing for teachers to have hands-on practical experience in using the three apps. As the CPD sessions coincided with the beginning of the school year, it has not always been easy to communicate with them and find an appropriate time to carry out the sessions. Most schools have allocated a fixed time within the teaching hours, permitting the teachers to leave the class with a substitute teacher and have the training within their working schedule. Communication has been easier when talking to the teachers directly than with the head teachers, which in some cases were overloaded with work and had a hard time to answer to our emails. All the teachers were willing to start the project and asked many questions, which is an indicator of their interest. On average, they needed 3 sessions to get the system rolling. The first and second session were devoted to troubleshooting (usernames/passwords wrongly use by learners, a small number of games that do not work, issues with internet, etc..) and it is usually by session three that things start running smoothly. They probably need up to four or five sessions to get to use the games and the reader within the same lesson. After session 4 they have started asking about the teacher tool. We are a bit concerned that the language in the Spanish version of the game is not as complete as the English version yet.

*Evaluation of CPD approach* – Each CPD session has been different in order to meet the needs of the group. Most of the teachers were already familiar with the project, since they conducted all the pilot tests during the last months of the previous academic year. In one of the schools all teachers were new and unfamiliar with the project so we had to start from the beginning again. Also, one more teacher was new in another school. The training consisted of showing them the user guide and making sure they all understood how to look for information in case they needed it as well as the use of the teacher tool, which was the only new thing for them. They showed interest and asked questions when needed. Most of their concerns came from not being sure the apps would work correctly (they found some issues last year) and being worried about how to start. We volunteered to be there with them on the first few days they used the system so that they could feel at ease and more confident.

*Learning from local practices* – Even though all schools follow the national curriculum, they are all comprised by different people and therefore, they work in a very different way. For this reason, their concerns and priorities are also different, so we have to adapt to every single situation. Specifically, Spanish teachers have seemed more concerned about using tablets in the class. This might be because they are using the system with small children, who might not be used to have tablets in the regular lessons.

In general, the teachers have many ideas on how to implement Navigo/Amigo in the classroom. Every time we have meet them to show them an app or for teacher sessions, in the end the teachers have brilliant ideas on how to use it that we could have not imagined. This means they know the curriculum, their own students and have wide experience in teaching at that grade level. They are aware of the importance of literacy development and can see how Navigo/Amigo can help them. In one school, for

instance, the dominant language is Catalan, so the Spanish teachers are very happy to have such an interactive way to introduce Spanish literacy.

*Exploitation* – There are some important concerns among the teachers in terms of the Navigo and Amigo apps. Among the most relevant, there is the issue of motivation. Teachers are concerned that the motivation might decrease as the achievements (clothes and citizens rescued) are automatically saved in the tablet instead of the user. There are also some concerns regarding the teacher tool. Teachers do not like that once they have assigned some specific features to an individual or to the whole class, the list disappears, and they cannot check what they chose or track the games. If there is any mistake on the issue, they will not be able to detect it. Furthermore, they have noticed if the WIFI connection is not perfectly working, they might have some problems with playing the games or using the reader. In fact, this is one of the most usual issues with the apps.

### 4.6.2 Reflections on CPD 2020-21

| CPD sessions for [novice readers], [Spain] | |
|---|---|
| Number of schools involved | 6 |
| Number of teachers participating | 7 |
| Number of CPD sessions | 12 (*6 initial meetings, one per school and 6 online follow up meetings) |

***General overview***
All schools have been open during this past academic year since September. In most cases we could visit the schools for the initial sessions of CPD. However, soon after the beginning all CPD has been organised online. Moving CPD to an online environment was found to affect the momentum and speed at which teacher training has evolved this year. There were some changes from the previous year as detailed below, and the new teachers who participated in the project required familiarisation with the technologies which was achieved through our CPD training.

***Evaluation of CPD approach***
The number of participating schools decreased from eight to six schools. All of the six participating schools already had had experience with iRead CPD. We found that our shared experience of previous CPD sessions supported the facilitation of training sessions this year. Experienced teachers helped with the training of new teachers. It was effortless to maintain engagement with the teachers and the schools. We saw this as an outcome of the engagement efforts during the previous year. At the beginning of this year teachers were already inspired to continue engaging with the project. We decided not to recruit new schools as the six participating schools included a high number of students.

**1 - What worked well in the CPD:**
With some new teachers we had to begin our teacher training from the beginning. To support new teachers' engagement with the project, experienced teachers worked alongside new teachers to introduce them to iRead. This was found to be a beneficial approach that supported new teachers' engagement and training. Experienced and new teachers worked collaboratively, enhancing the idea that building up rapport amongst teachers can play an important role in implementing supportive learning technologies and taking part in projects such as iRead. The positive effect the relationship between experienced and new teachers had on training may have become even more important because of the unusual circumstances posed by the pandemic. The relationship supported training better than, for example teachers engaging with the training manuals. The manuals were rarely consulted by the teachers. Even if the manuals were incorporated in the training sessions, for example by researchers pointing out some of the useful parts of the manual to the teachers, they found the manual lengthy and difficult to comprehend. Engaging with colleagues and communication with the researchers were a superior way for teachers to engage in their training. In addition, researchers organised follow-up conference calls to find out about any additional needs and this was also found to support teachers' progress.

**2 – Challenges you faced in the CPD:**

During the past year, it was a challenge to visit schools. We had an opportunity to visit some schools in November 2020 before all classroom activity moved online. It was the schools' decision that all training and follow-up CPD would take place online. Strict lockdown measures meant it was not possible to access to schools. One area of teacher training found to be affected by school closures was engaging teachers with the teacher tool. Researchers found that not having the opportunity to show the teachers how the tool works, and to practice it together, resulted in the teacher tool being used only sporadically. Face-to-face training with the teacher tool would have created an opportunity for a more widespread and effective engagement with the tool. Instead, a video conference on the use of the teacher tool was found to be ineffective. While the researchers supported teachers in the use of the teacher tool, the teachers described having mainly relied on the algorithm built in the system to assign the games, instead of doing it themselves. Because the researchers were aware of teachers' previous positive experiences in using the teacher tool, they felt that had there been a chance to train with the teacher tool face-to-face would have improved their use of iRead technologies. This also applied to the Amigo reader and the possibilities that deeper awareness of its technical potential could have afforded to teachers. Most teachers did not encourage their students to read books with the Amigo app. Researchers thought that encouragement during the CPD online sessions through sharing screen and showing the different options both in the teacher tool and the e-reader were not sufficient to engage teachers in to deeply explore the technical opportunities. Exploring these areas during a face-to-face CPD workshop would have strengthened teachers' training opportunities and engagement with the technology. One of the participating teachers could not connect iRead to their work at all. The manuals were rarely consulted by the teachers. Even if the manuals were incorporated in the training sessions, for example by researchers pointing out some of the useful parts of the manual to the teachers, they found the manual lengthy and difficult to comprehend.

### 4.6.3 Comparison of CPD approach taken in 2019-20 and 2020-21

| **iRead Project CPD dimensions 2019-2020** | **iRead Project CPD dimensions 2020-2021** |
|---|---|
| Support development of a positive ethos around incorporating game use in classrooms<br><br>Ensure teachers recognise intended outcomes and connect them to the apps | We tried to convey and generate a positive ethos for teachers to engage with the iRead technologies this year. We found it challenging to do this with new teachers with whom we could not meet with in person. Teachers recognised intended outcomes and connected them to the apps. |
| Establish teacher/researcher partnerships beginning with co-creation of learning designs<br><br>Scaffolding for teachers to become involved with using technology in the classroom | During 2019-2020 academic year, teachers had participated in exploring the use of the learning designs in their classroom. Researchers found that during the past year was the opposite: teachers explored activity opportunities with the technology less during the 2020-2021 academic year.<br><br>Because of the pandemic, we were not able to offer support and scaffolding iRead physically during a class. In one case we used live conferencing to follow the teacher around the class as she was using iRead. We found this to be a beneficial way to engage with the teacher in using the technology. |
| Teacher manual designed to support the incorporation of lesson plans created by teachers, and evidencing the methods of teaching with technology•<br><br>Teacher manual designed to include a curriculum section to facilitate the creative links between the | Most teachers reported not having used the manual. They found the manual lengthy and impractical, accessing it only on occasion. |

| | |
|---|---|
| learning (content), methods of teaching (pedagogies), and the appropriate tools (technology) in order to effectively implement the technologies in their classroom | Teachers used the teacher tool less this year.<br><br>This affected the way in which they exploited<br><br>opportunities to connect their syllabus and<br><br>opportunities with the iRead technologies. |
| The CPD sessions occurred directly within the schools, with follow up sessions in classrooms if needed | CPD sessions took place online instead of in schools. |
| Scaffolded teacher learning process<br>Gradual withdrawal process applied<br><br>Follow up support offered | Schools withdrew from the project in a more suddenly this past year. This was in contrast with the previous year when withdrawal from the project was more gradual. Researchers believe the pandemic situation affected this.<br><br>Follow up support was offered on an ongoing basis, however, this offer was not taken up by each of the participating teachers. |
| Supported schools to set up their teaching by identifying the differing starting points/ varied levels of prior knowledge and working from teachers' perspective/needs | We offered the same type of support this year as during the previous one. We felt that there was less integration of the technology into teachers' syllabus. |
| Researchers' and practitioners' relationship based on 'knowledge exchange' | No change to previous year. |
| Establish a 'research champion' in each school | We tried to set a clear 'reference' teacher in each school, which was more practical than dealing with coordinators. We found this to be a beneficial strategy. |
| Researcher's presence in the CPD delivery and ongoing support | The researcher carried out all of the CPD himself. |

## 4.7 Novice Readers – Germany (DHBW)

### 4.7.1 Reflections on CPD 2019-2020

| CPD sessions (Germany) | |
|---|---|
| **Number of schools involved** | 5 (by end of Dec) |
| **Number of teachers participating** | 15 (estimated) |

CPD Sessions are in progress this Fall. As soon as a school signs up the CPD is administered to the participating teachers.
*General overview* – Getting schools to start using the apps in the Fall is a very slow process. Most schools are currently in the process of building up their WIFI availability in the schools. Parental consent forms have been solicited since last school year. As soon as the forms were in, we have scheduled meetings after school with the concerned teachers. We follow the example approach suggested by the UK very closely. In addition, we create fake user accounts so that the teachers can test ideas on three

test children in their classrooms by assigning them extra tasks or playing games that are automatically assigned. Teachers seem to enjoy listening to the workshop but then take their time at home to test out what we explained with more time at their disposal.

*Evaluation of CPD approach* – In practice, the structure of each CPD has been differentiated to meet the needs of the group. For example, in our largest CPD sessions of 45 participants, researchers followed a structured schedule to allow enough time to introduce the project and technologies to new participants; demonstrate the technologies; practice discrete tasks; and understand how to use the technologies within a series of activities from a given lesson plan. In cases where there have been Internet connectivity issues in the training room, there have been challenges in allowing for school staff to practice using the technologies which will impact on the level of follow up support that will be put in place. Schools do not have their own technical support. The teachers that adapt the project are the local champions within the schools. It has helped to show results from previous studies of the effect the games have on student skills.

*Learning from local practice* – The hardest challenge has always been the wi-fi connection in the schools. The second concern was the media interaction for children, especially in first grade. Teachers were very worried about being able to handle the technology on their own and were worried about back-up plans in case the technology fails. As a result, we only recommend the use of the tablets in the students' free time, where other choices are available. We also took small steps in teaching them how to use the materials. First, to allow the tablet into the classroom, and let students play the adaptive content, regardless of whether it fits the classroom material. Next, to pick students with special needs and assign special games to them. When they feel secure with all that, they can assign class games based on the material that is covered in school for extra practice.

Exploitation – since the teachers are extremely overwhelmed with the actual usage of technology, they have not been able to formulate further requirements.

### 4.7.2 Reflections on CPD 2020-21

| CPD sessions for [Novice], [Germany] | |
|---|---|
| Number of schools involved | 6 |
| Number of teachers participating | 7 |
| Number of CPD sessions | 2 group CPD sessions.<br>*all other trainings were on 1-1 basis with 7 researchers. 16 Interviews were recorded. Instructional videos were provided online for various user-case scenarios. |

***General overview*** –
Due to the pandemic, we had regular school closures. As a result, during the weeks when schools were open, teachers were preoccupied trying to make up for the time missed. Teachers became interested in obtaining tablets in order to be able to work with the children remotely. To do that, we also offered tablet instruction courses in schools to the children, to get them ready for using the tablets responsibly. Our original 10-week plan to support schools in using iRead technologies in a structured manner, interviewing and scheduling evaluations was impossible to carry out in any of the schools under these circumstances. From students' written evaluation exam performance, it can be concluded that the students in grades 1 and 2 have suffered from the pandemic-based school closings. Digitalization, and a need for it, has become more important in Germany due to these times of the pandemic. This is a positive development for schools in these times of crisis.

***Evaluation of CPD approach -***
Based on the feedback from interviews with teachers last year, researchers developed a stronger one-to-one support for teachers and also offering joint teaching sessions for them. In addition, researchers changed the way in which the work with the teachers was organised. To illustrate, researchers organised a lab-like set-up which students and teachers could visit at any time. Starting out by watching researchers work with the children, teachers would then slowly take over once feeling secure. Researchers would be at hand to offer support in the background. This method was found to be useful

for a teacher who wants to use the technology but may feel uncomfortable using it. This year, researchers added three new schools in different regions of Germany. These schools had heard about the project and wanted to join. In addition, one school in our immediate district was added as well. Only two schools from the previous year continued their participation in the program. The reason for this is due to the pandemic and continuing problems with WIFI availability in the classrooms or teacher champions leaving the partner schools.

**1 - What worked well in the CPD:**
Holding online training sessions was found to be successful because (1) teachers were able to meet each other, and (2) they had more leisure-time in afternoons and evenings to spend time with the topic rather than a brief moment at school in between classes. Online teaching would have been difficult before the pandemic. With COVID, teachers became more aware of and open towards using video conferencing tools.

Researchers focused on the following during CPD training:

- How to use the teacher tool
- The underlying learning principles, i.e. what is being taught in the games and how that is accomplished with feedback, practice and adaptive content
- Supplemental videos to re-watch some of the training sessions
- One-to-one sessions with teachers on how to work with the teacher tool and how to support their students directly, for example by helping teachers to choose games for the students
- Hotline via email for parents and teachers during school closure during which we lent the tablets to students to take home

**2 – Challenges faced in the CPD:**
The researchers had concrete project plans for 10–12-week interventions and dates for evaluation, interviews and workshops. None of the schedules were possible due to the continuous uncertainties and disruptions of school closures. The researchers were able to conduct interviews online. However, the teachers had little awareness about how their students were playing the games. It was not always possible to conduct evaluation tests in regulated environments due to school plans being affected. Often, the research team was not allowed to enter schools even when they were open.

### 4.7.3 Comparison of CPD approach taken in 2019-20 and 2020-21

| **iRead Project CPD dimensions 2019-2020** | **iRead Project CPD dimensions 2020-2021** |
|---|---|
| Support development of a positive ethos around incorporating game use in classrooms<br><br>Ensure teachers recognise intended outcomes and connect them to the apps | Teachers were increasingly enthusiastic about using the games in the classroom. Researchers found that adopting the idea of using the technology sometimes took a long time.<br>Teachers were trained in both what topics the games can teach and the digital components. |
| Establish teacher/researcher partnerships beginning with co-creation of learning designs<br><br>Scaffolding for teachers to become involved with using technology in the classroom | Researchers did not work on co-creating of learning designs.<br><br>Researchers scaffolded for some teachers by letting them watch how researchers worked with the technologies and the students, and after this allowing for the teachers to take over. |
| Teacher manual designed to support the incorporation of lesson plans created by teachers, | Researchers rewrote the teacher manual to address the questions that came up during the last interview of the previous year. |

| | |
|---|---|
| and evidencing the methods of teaching with technology•<br><br>Teacher manual designed to include a curriculum section to facilitate the creative links between the learning (content), methods of teaching (pedagogies), and the appropriate tools (technology) in order to effectively implement the technologies in their classroom | Researchers did not do this at any point in time. |
| The CPD sessions occurred directly within the schools, with follow up sessions in classrooms if needed | The CPD occurred online affording more time spent which resulted in a positive outcome. Also, it was done in smaller groups and the topic of the session was chosen by the teachers. |
| Scaffolded teacher learning process<br>Gradual withdrawal process applied<br><br>Follow up support offered | See above. Researchers did this in schools with teachers who were hesitant and willing. |
| Supported schools to set up their teaching by identifying the differing starting points/ varied levels of prior knowledge and working from teachers' perspective/needs | In the first year, we supported all the schools by either having our researchers work with the kids directly or leaving the job completely to the teachers.<br>In the second-year researchers added the idea of gradually moving the task of working with the kids to the teacher. |
| Researchers' and practitioners' relationship based on 'knowledge exchange' | Online training sessions could have led to practitioners' exchange but there was never enough time due to the pandemic issues. |
| Establish a 'research champion' in each school | Researchers were not able to do that. However, the researchers did have technical or project champions. Each school usually had one person that pushed the project adoption internally. |
| Researcher's presence in the CPD delivery and ongoing support | Online workshops were held by the team of researchers. |

## 4.8 English as a Foreign Language – Greece (BC)

### 4.8.1 Reflections on CPD 2019-2020

| CPD sessions EFL: Greece (BC) | |
|---|---|
| **Number of schools involved** | 1 |
| **Number of teachers participating** | 6 |

*General overview*: The CPD session was organised with the partner school signed up for the pilot studies in February 2020. It was organised as part of the planned professional development and capacity-building activities which are agreed in the memorandum of understanding between the British Council and the partner school. The session was delivered as part of the school's existing induction and In-Service Training (INSET) programme at the start of the school year.

*Evaluation of CPD approach*: In practice the CPD presentation was refined to:

- a presentation of the whole project and a discussion on benefits for literacy
- a focus on the Reader application
- a demonstration of the technology and some of the discrete functions

*Learning from local practices:* One of the key concerns coming from the school meeting was the need for support in introducing the technologies into the classroom. This led to a request for synchronous support and work on the learning pathways. The CPD session also highlighted the difference in competency levels and thus support required between the three participating pilot schools and reinforced the decision to timetable the school 3 pilot to allow it take account of the learning acquired by the research team from the school 1 and 2 pilots. Connectivity issues experienced during the CPD session also emphasised the need to run pre-class checks before each and every pilot lesson.

*Exploitation:* Discussions with teaching staff at this stage have shown an interest in using the Amigo reader but a concern that teachers do not have the strategies for integrating it into their existing routines.

### 4.8.2 Reflections on CPD 2020-21

| CPD sessions for [EFL], [Greece] | |
|---|---|
| Number of schools involved | 3 |
| Number of teachers participating | 15 |
| Number of CPD sessions | 9 |

***General overview***

The pandemic had a serious impact on the educational system in Greece. Schools have remained closed for face-to-face activities since October. This has affected all levels both in the private and public sector. Despite the relative lack of preparedness for e-learning in terms of teacher education, infrastructure and equipment, we must point out that educators have showed exceptional resilience. The effort to move to e-learning has, however, created some issues of fatigue and questions around well-being amongst educators. This exhaustion has been evident in all CPD training which itself has been delivered online. There is still an evident sense of educator curiosity around iRead but implementation and full exploitation of the project has fallen down the list of school priorities as staff, English departments and school struggle to deliver the promised curriculum to children and parents.

***Evaluation of CPD approach***

A new partner Ionian school was recruited to the project to take account of the Ministry of Education Covid19 goals of keeping primary schools open if possible and reopening them in the first instance after a national lockdown. At a strategic level, both schools are long-established British Council partners with a solid and reliable reputation for professionalism. Though not digital schools by nature, they are both keen to upskill their teachers and add a digital dimension to their offer.

The partner primary schools have recently returned to face-to-face teaching and we are now driving the project into the classroom. We have however had to review the implementation process to take account of the required Covid19 safety measures and no-sharing polices as well as the fact that local British Council expertise though available to partner schools cannot be transferred easily to the school and class environment due to school and classroom access. The British Council, as all after-school educational institutions, remains online and will do so for the foreseeable future resulting in a change in local implementation priorities to emphasise implementation in the partner schools which are currently working face-to-face.

**1 - What worked well in the CPD:**

This has resulted in the adaptation of CPD in terms of classroom planning with aim of demonstrating to all stakeholders that the project is core content rather than enrichment. As such we are in discussion with the academic leads of both schools to see what parts of the existing curriculum can be replaced by iRead resources. This will have an effect on the breadth and variety of resources that we can take into the classroom. Broadly speaking CPD has followed/is following this staged introduction which worked well:

**The teacher's toolkit**

Session 1: Day-to-day tablet administration
· Receiving/returning/charging
· Powering on/off
· Checking for connectivity
· Assigning the same tablet to each student each time
· Accessing the applications
Session 2: Amigo Reader
· The Library and its classifications
· Downloading a text
· Assigning a text to a group
· Assigning a text to an individual
Session 3: The Learning Journey
· Assigning/over-reading the pre-reading activity + the text-highlighting feature
· The Tricky Words feature
· Customizing the text
Session 4: Navigo Games
· Searching for games vs feature
· Assigning a game to a group
· Assigning a game to an individual
· Individual vs group game assignments
· Ordering and removing games
. Class monitoring

**2 – Challenges faced in the CPD:**
Parent communications at partner schools and prompted by our *Welcome pack* describing the project and its proposed implementation have seem some concern about the use of screens in the classroom both from a health and safety perspective and an expressed desire to return to traditional face-to-face methods ("my child has spent too much time in front of a screen. Why does he have to now?").
In parallel, we have also had to establish clean-working protocol where tablets are:

- sterilised immediately before use
- stored in a clean and sterile area
- handled by staff wearing medical gloves

The handing out, collection, cleaning and storage of tablets to children is carried out by a designated member of staff and not the class teacher to ensure ownership of task.

### 4.8.3 Comparison of CPD approach taken in 2019-20 and 2020-21

| **iRead Project CPD dimensions 2019-2020** | **iRead Project CPD dimensions 2020-2021** |
|---|---|
| Support development of a positive ethos around incorporating game use in classrooms<br><br>Ensure teachers recognise intended outcomes and connect them to the apps | Teacher concerns:<br>· *Psychological* – feeling exhausted/over-challenged by lockdown, wanting to step-back<br>· *Physical* – fit with new ways of working in the classroom, H&S concerns<br>· *Experiential* – sense of having fallen behind with reference to curriculum delivery/digital tiredness<br>· *External* – school and parent pressure to deliver curriculum outcomes |
| Establish teacher/researcher partnerships beginning with co-creation of learning designs | Drivers<br>· Lack of access to school sites to build face-to-face trust and confidence. |

| | |
|---|---|
| Scaffolding for teachers to become involved with using technology in the classroom | · Classroom support limited by Covid19 guidelines on classroom access by externals<br>Outcomes<br>· More structured implementation to minimise risk in the classroom<br>· Need to upskill local champions who can support teachers on-site |
| Teacher manual designed to support the incorporation of lesson plans created by teachers, and evidencing the methods of teaching with technology•<br><br>Teacher manual designed to include a curriculum section to facilitate the creative links between the learning (content), methods of teaching (pedagogies), and the appropriate tools (technology) in order to effectively implement the technologies in their classroom | As previous year -<br>Plus:<br><br>· Teacher manual designed to support the implementation in a classroom environment characterise by a Covid19 classroom safety and no sharing policy.<br><br>· Teacher manual designed to support the prospective use of the reader and game resource at home in a non-e-classroom setting. |
| The CPD sessions occurred directly within the schools, with follow up sessions in classrooms if needed | · CPD delivered online with follow-up 1-to-1 sessions as required.<br>· Permission for recording online sessions sought to provide asynchronous training allowing individuals to reattend, check understanding and refresh if required.<br>· Face-to-face sessions up to 90 minutes in length but online sessions limited to 45 minutes to take account of digital well-being/screen tiredness. |
| Scaffolded teacher learning process<br>Gradual withdrawal process applied<br><br>Follow up support offered | · Refer to outline above.<br>· Due to pressures to deliver curriculum outlines, partner schools are looking for integration of content rather than simple inclusion. This will limit teacher/student opportunity to select content (particularly with respect to the Reader) as academic leads are looking at ways of parachuting content into the curriculum in place of existing text.<br>More scope for teacher/student to select content with Games |
| Supported schools to set up their teaching by identifying the differing starting points/ varied levels of prior knowledge and working from teachers' perspective/needs | · There has been a noted change in school priorities due to curriculum lag, from enrichment of the English language offer, both partners no longer have the space/time in their curriculum for *reading corners* and are now working with teachers to replace core content. This will have an effect on the kind of materials used, their frequency of use and the level of mastery of the apps which we can hope to achieve with both teachers and students. |
| Researchers' and practitioners' relationship based on 'knowledge exchange' | Ongoing |

| | |
|---|---|
| Establish a 'research champion' in each school | · Need to upskill local champions who can support teachers on-site due to school access limitations. |
| Researcher's presence in the CPD delivery and ongoing support | Ongoing |

## 4.9 English as a Foreign Language – Spain (UB)

### 4.9.1 Reflections on CPD 2019-2020

| CPD sessions EFL: Spain | |
|---|---|
| **Number of schools involved** | 8 |
| **Number of teachers participating** | 10 |

*General overview*– In general terms the CPD sessions have been highly successful in getting teacher acquainted with the apps in the general framework of the iRead project. Some time was needed to set up all training sessions as they were starting the academic year, but problems were overcome and by October all schools had received training. Most schools let teachers join the training within teaching schedule and found substitutes or alternative solutions. As with Spanish teachers, communication has been easier when talking directly to the teachers rather than coordinators or principals. Because of the preparatory work done before the summer, all teachers were willing to start the project and asked many questions, which is to us was a clear indicator of their interest. On average, they needed 3 sessions to become acquainted with the system. The first and second session were devoted to trouble-shooting (usernames/passwords wrongly use by learners, a small number of games that do not work, issues with internet, etc..) and it is usually by session three that things start running smoothly. They needed up to four or five sessions to get to use the games and the reader within the same lesson. Some did not make use of the reader at the beginning and focused on the games. After session 4 they started showing interest in the teacher tool. We are a bit concerned that the language in the Spanish version of the game was not as complete at the time of training, but the problem was solved soon after.

*Evaluation of CPD approach*– Each CPD session presented different challenges. It was certainly advantageous that teachers were already acquainted with the project, since we had conducted pilot tests during the last months of the previous academic year. In one of the schools all teachers were new and unfamiliar with the project so we had to start from scratch. Their willingness and motivation made things easy, though. Also, one more teacher was new in another school. The core section of the training consisted of showing them the user guide and making sure they all understood how to look for information in case they needed it as well as the use of the teacher tool, the only app that had not been introduced previously. They were keen and interested and they were only worried about the stability of the system, the games and the reader, which had failed at different points during the pilots in the previous academic year. We offered the possibility of helping start the system by attending the first and/or second session, an offer they ended up taking up in most cases.

*Learning from local practices* – There is a considerable degree of freedom in the application of the curriculum. So much so that even if the EFL curriculum is based on competences (in line with EU recommendations) some schools still manage to teach traditional grammar lessons, often pushed by publishing companies. The priorities of each school and even each teacher varied, so we need to adjust our training to every single situation. In general, English teachers are more familiar with technological possibilities than in teachers of the Spanish lessons.

In general, the teachers have many ideas on how to implement Navigo/Amigo in the class, and their students are also older and more technology savvy. Teachers were open minded and ready to take in the new technology and they immediately understood the possibilities offered by the system. Although they have specific reading programs in many of the schools in order to promote reading skills in English (e.g. through grades readers, additional reading sessions, in-class libraries and resources), they could see the potential advantages of technology.

*Exploitation* – Because at the beginning the system did not save personalized choices onto the system but on the tablets, teachers were worried motivation might be negatively affected. Some issues with the Teacher Tool were also raised. Another concern was that of internet connection, but it has ended up working in a stable manner in all schools after various adjustments.

### 4.9.2 Reflections on CPD 2020-21

| CPD sessions for [EFL], [Spain] | |
|---|---|
| Number of schools involved | 6 |
| Number of teachers participating | 7 |
| Number of CPD sessions | 6 initial meetings, one per school<br><br>6 online follow up meetings |
| *In 20-21 CPD sessions 20-21 for novice readers and EFL were joint sessions for teachers of EFL with the same material shared; so the analysis of the CPD outcomes is reported above for the novice readers, See p64-66 for analysis for reflections on CPD for 2020-21 for UB. | |

## 4.10 English as a Foreign Language – Romania (ULBS)

### 4.10.1 Reflections on CPD 2019-2020

| **CPD sessions EFL: Romania** | |
|---|---|
| **Number of schools involved** | 4 |
| **Number of teachers participating** | 12 |

*General overview*- Overall, the CPD sessions were successful in allowing for teachers to have hands-on practical experience in using the technologies. The researchers together with teachers set up the period when they could meet together in schools and university rooms. The activities were more than welcomed by teachers who were enthusiastic to create learning design based on cards. Communication with schools was more effective in cases where there was a key literacy lead contact person available who was more familiar with students, staffing and timetabling for literacy.

*Evaluation of CPD approach*– In practice, the structure of each CPD was differentiated to meet the needs of the group. The researchers introduced the project and technologies to teachers, demonstrated the usefulness of technologies, developed different scenarios, and the teachers understood how to use the technologies within a series of activities from a given lesson plan. In cases where there were internet connectivity issues in the training room, there were some challenges in allowing for school staff to practice using the technologies which impacted on the level of follow up support that could be put in place.

*Learning from local practices* - These sessions were also useful in identifying local priorities and first impressions from school teams. One of the key messages that school teams expressed concerned the need for support in introducing the technologies into the classroom. This led to individualised plans for how researchers could work with school staff on a practical level. CPD sessions also exposed key insights about each school's literacy practices and how the technologies were likely to be used alongside existing literacy programmes. For instance, in one school, the promotion of literacy development and interest in reading was a key school goal therefore staff were keen to embed the apps into the ecology of their existing literacy practices.

The CPD sessions also highlighted adaptations and practical supports that were needed. For instance, through the introduction of a local technology champion who is a nominated school team member who could act as an intermediary between teachers and researchers. Also, the sessions highlighted some of the different ways that teachers were planning on using the technologies by leveraging timetabled sessions where half of the class was away or when classes had more flexible free time to allow for introducing the apps in an exploratory way. From observation, in the sessions, teachers began to suggest how they might utilise the technologies in different ways, for example, for augmenting existing guided reading sessions in large groups, or separately, with individual younger students in self-initiated play sessions.

*Exploitation* - Discussions with teaching staff revealed some of their considerations and priorities for using the apps and teacher tool. For instance, some highlighted that younger novice readers in Year 1 would need closer support to use the Amigo reader and learn to navigate the interface. Others commented that in the Navigo game, they needed strategies for redirecting students away from spending too much time on customising their avatar, so that they could prioritise game play. In terms of feedback on the functionalities of the technologies, the CPD sessions were also useful in identifying further requirements from teaching staff. For example, for the Navigo game, some teachers expressed an interest in having further in-game auditory feedback. Others asked about ways of tailoring how to target specific language functions for struggling readers.

### 4.10.2 Reflections on CPD 2020-21

| CPD sessions for EFL [Romania] | |
|---|---|
| Number of schools involved | 9 |
| Number of teachers participating | 9 |
| Number of CPD sessions | 4 |

***General overview***

In Romania, schools were mostly either fully or partially closed during the 2020-2021 academic year, with only a short period of time of on-site classes in October. Only 8th and 12th graders had face-to-face classes because they were expected to pass graduation exams at the end of the year. The rest of the students in Sibiu, including all the students involved in the project, had online classes. This means that there was limited control on the use of technology by the students, as well as by the teachers. With regards to the CPD sessions, they had to be carried out either online or over the phone, depending on the context. With some of the teachers leaving the projects (for reasons pertaining to issues related to tenure) and others joining in, and issues related to school schedules (some classes were taught in the morning, others in the afternoon), organising the CPD sessions posed various challenges: Some teachers were novices and struggling with technology; others needed only updates and occasional clarifications as they had attended the training sessions previously.

Nevertheless, through organising individual CPD sessions teachers could attend training even if they were not able to attend the group session.

***Evaluation of CPD approach***

Initially, six schools took part in the project. Four of these were located in Sibiu, and two in the rural areas nearby. Later on, three new schools were added, one of which is in Sibiu and two in the rural areas nearby. One of the schools involved in the first part of the project decided to discontinue.

Tablets were collected at that time and redistributed to another school in Sibiu. At present, we are working with altogether nine schools. Four of these are non-fee-paying urban gymnasium schools in Sibiu and five rural schools in areas nearby. Mainly 6th grade students (11–12-year-olds) have taken part in the project.

Recruiting new schools for the project was a straightforward process. Teachers who left the project were quickly replaced by others, usually thanks to the support of the school management. Challenging aspects of CPD included teacher mobility, changes in the teaching scenario and teachers' time and availability.

Teacher mobility occured when for administrative reasons, schools employed substitute teachers for periods of time ranging between a few months to one year, rather than offering tenure. Maternity leaves were another issue. This impacted CPD greatly since the new incomers had to be trained to familiarise them with the use of technology.

Changes in the teaching scenarios took their toll on our ability to supervise activities since it became challenging to monitor the students' engagement with the apps. Reports from the teachers' stated that whilst students were asked to complete activities with Navigo, many students did not engage with the app. Also, only four out of nine teachers managed to assign iRead activities to their students on an ongoing basis, according to the data analytics.

Teachers' availability for online group CPD sessions varied, and several teachers were unable to participate due to other time commitments. To overcome this issue, researchers replaced group CPD sessions with individual 1:1 sessions organised via Skype or Google Meet. These sessions focused on introducing the operating requirements of Navigo and Amigo Reader to the teachers and discussing specific problems they encountered. The advantage of this approach was that each teacher received 1:1 support and, according to feedback from the teachers this was perceived as a time efficient approach. The number of CPD sessions reported at the top of this page (4) does not reflect the number of individual 1:1 sessions but records the number of group sessions where broader topics were discussed with varied groups of teachers.

**1 - What worked well in the CPD:**

As schools switched to online teaching, their schedules varied greatly. Therefore, we organised individual teacher support instead of group sessions. This seemed to have several advantages for our teachers in several respects: it focused on the needs of each teacher regardless of whether they had joined at the beginning of the project or later. This approach also offered personalised assistance at a convenient time for the teachers, and teachers who had felt insecure with the technology in comparison to their more advanced, digitally skilled colleagues benefitted as they felt more comfortable to explore areas they found challenging on a one-to-one basis. Topics discussed included detailed requirements, expectations, student motivation and engagement, and challenges.

Following our ongoing support and encouragement for teachers to use iRead technology as part of their English class, one of the teachers agreed to describe this experience in her M.A. dissertation project.

Teachers who have managed to use iRead apps and technology successfully report a rise in their students' motivation level. Working with the iRead technology also motivated teachers to improve their technical skills. One of the teachers teaching lower secondary English classes in a school in a rural area near Sibiu, who joined this project in October 2020, became one of our most dedicated collaborators. Over a short period of time, she improved her digital skills significantly and managed to motivate her students to use the iRead apps and technology.

**2 – Challenges faced in the CPD:**

School visits had to be replaced with online/ over the phone personalised assistance. Online classes were shortened from 50 minutes to 45 minutes to enable teachers to spend a little bit more time in accommodating the iRead technology in their classes. The use of iRead tablets by students became an issue in instances where children and parents argued over how much time was spent with the tablet, with parents quoting children's health and mental well-being becoming affected in the long run. Although such issues were not raised at the beginning of the project, they were triggered by the fact that at the beginning of the school year, the Ministry of Education had assigned tablets to all students via a national program. The students taking part in the iRead project were in the situation of using two tablets, which raised concerns about their well-being. Adaptations were made to the CPD to address some of these challenges. Examples of these adaptations included: redirecting a number of tablets towards more active centres and adding additional students who had requested that they take part in the project. Accounts were created for them and iRead apps were installed on the tablets provided by the Ministry with the approval of school management.

## 4.10.3 Comparison of CPD approach taken in 2019-20 and 2020-21

| **iRead Project CPD dimensions 2019-2020** | **iRead Project CPD dimensions 2020-2021** |
|---|---|
| Support development of a positive ethos around incorporating game use in classrooms<br><br>Ensure teachers recognise intended outcomes and connect them to the apps | As well as the positive ethos created, unfortunately, the impact of online teaching also had some negative effects on the development of a positive ethos around incorporating game use in classrooms. This was because all the tasks had to be carried out online and children (as well as parents) complained about having to spend too much time in front of computers (in addition to the iRead applications). |
| Establish teacher/researcher partnerships beginning with co-creation of learning designs<br><br>Scaffolding for teachers to become involved with using technology in the classroom | Physical meetings when possible and online meetings (Skype) with teachers explaining the operating requirements of Navigo and Amigo Reader applications. |
| Teacher manual designed to support the incorporation of lesson plans created by teachers, and evidencing the methods of teaching with technology<br><br>Teacher manual designed to include a curriculum section to facilitate the creative links between the learning (content), methods of teaching (pedagogies), and the appropriate tools (technology) in order to effectively implement the technologies in their classroom | The teacher manual was in electronic form straightforward to access, read and search through. Sometimes we used Google Meet to demonstrate how the Navigo and Amigo Reader applications work and also how we could use the User management iRead Interface from teacher or student perspectives. |
| The CPD sessions occurred directly within the schools, with follow up sessions in classrooms if needed | Most of the CPD sessions occurred online using Skype or Google Meet. |
| Scaffolded teacher learning process<br>Gradual withdrawal process applied<br><br>Follow up support offered | The researcher provided assistance to the teacher in developing lesson plans and provided feedback. |
| Supported schools to set up their teaching by identifying the differing starting points/ varied levels of prior knowledge and working from teachers' perspective/needs | Teachers had a high degree of independence in choosing the games / proper lessons because each school had its own peculiarities (for example in some rural areas students who are considered to be top of the class may have lower levels of linguistic competence than average students in some top schools in Sibiu). |
| Researchers' and practitioners' relationship based on 'knowledge exchange' | Generally, researchers had a high degree of digital skills and assisted teachers in their online activities. |
| Establish a 'research champion' in each school | This was not possible, though research links were made with a master's student. |
| Researcher's presence in the CPD delivery and ongoing support | The researcher's presence in the CPD delivery and ongoing support was performed online |

| | |
|---|---|
| | and depended on school and teachers' availability and engagement. |

## 4.11 English as a Foreign Language – Sweden (UGOT)

### 4.11.1 Reflections on CPD 2019-2020

| CPD sessions (Sweden) | |
|---|---|
| **Number of schools involved** | 3 |
| **Number of teachers participating** | 9 |

*General overview* – CPD sessions were conducted in November 2019 with teachers at three schools. Three more schools followed in the new year (spring term 2020), before they started the evaluation. We did not have enough tablets to let all schools do the evaluation at the same time, and we therefore did it in two batches. We met the teachers for the CPD sessions in the afternoons when they did not have classes. The sessions were held at the schools where the teachers worked and they were successful in allowing for the teachers to have hands-on practical experience in using the technologies.

*Evaluation of CPD approach* – In practice, the structure of each CPD was differentiated to meet the needs of the group. As our groups were small (2-5 teachers) the researchers (2 in every session) were able to individualise the CPD according to the teachers' needs. In most cases, the teachers were already quite familiar with the project as they had been working with us for some time. Therefore, we could talk less about the project and focus on demonstrating the technologies, practicing tasks, and understanding how to use the technologies within a series of activities from a given lesson plan. There were also discussions about how failing technology, for example crashing apps, could impact the implementation.

*Learning from local practices* - The sessions were useful in identifying local priorities and first impressions from school teams. The CPD sessions revealed insights about each school's English teaching practices and how the technologies are likely to be incorporated in the teachers' present teaching. Most teachers said that they would probably let the students explore the apps on their own in the beginning, mainly to let the adaptivity set in properly, and start making class assignments later on.

*Exploitation* - Discussions with teaching staff revealed some of their considerations and priorities for using the apps and teacher tool. For instance, in the Navigo game, they need strategies for redirecting students away from spending too much time on customising their avatar, so that they can prioritise game play. In terms of feedback on the functionalities of the technologies, the CPD sessions were also useful in identifying further requirements from teaching staff. For example, for the Navigo game, some teachers expressed an interest in being able to get the in-game auditory feedback in written form as well. Many also requested reading comprehension questions for the texts in the Amigo reader. As regards the Teacher tool, all teachers found it to be easy to understand and appreciated that it resembled other tools they had already worked with.

### 4.11.2 Reflections on CPD 2020-21

| CPD sessions for English as a Foreign Language: Sweden (UGOT) | |
|---|---|
| Number of schools involved | 9 |
| Number of teachers participating | 12 |
| Number of CPD sessions | 11 |

***General overview***

In Sweden, comprehensive school has remained open during the COVID-19 period. However, schools closed about a week earlier for Christmas than they usually do to combat the spreading of the virus. There were great disturbances as both teachers and students had to remain at home at the slightest sign of illness. Everything was scaled down as teachers were forced to concentrate on the very core of each subject. All teachers had to prepare for a possible lockdown and had to learn new digital systems and ways to teach remotely. They also practiced hybrid teaching to a large extent as absence was high amongst both teachers and students but teaching still had to go on. This all assumed a lot of time. The teachers describe that they had all intentions to be active in the iRead project, but that their time simply was consumed by having to embrace digitalization on a large scale.

The above situation meant that it was difficult to get in touch with the teachers as they prioritized other things. The teachers did not use the iRead apps as much as they had intended to, which lead to us not getting as much data as we had hoped for and them not requesting CPD or our support.

***Evaluation of CPD approach***

As autumn term began, many of our schools already had the tablets with the apps and just continued to use them. Some of our schools wanted a fresh start, so we held CPD workshops with the teachers there to rekindle their acquaintance with the apps. We recruited one new school, and held an initial CPD workshop there with the teacher who was going to use the iRead apps in two classes. Four schools decided to terminate their engagement in the project in the later part of the autumn term, each for different reasons. The teachers in one school said that the students had simply played the games to the end and had run out of content, in another the COVID-19 situation led to so much extra work that the teachers felt they did not have the time to engage with iRead. One school received notice in the autumn that they would be closed down due to a council reorganization and the in the last one the teachers decided that iRead was not interesting after all despite not having tried it with the students.

We have had small groups of teachers for each CPD session all along. As time has passed and we have become better at identifying the needs of the teachers we have adapted our CPD accordingly. We have often made the session quite short and hands-on, letting the teachers try the iRead apps themselves with us present to see what they need help with. Due to the current situation, we had to hold two online CPD workshops via Zoom. This worked well as they were with just one teacher at a time and with a specific focus.

Despite the late stage of the project, we recruited five additional schools for the spring term 2021 through a successful call in a Facebook group for English teachers. We also upscaled by adding one class in one the schools already involved. Due to the situation with Covid-19, schools are closed for visitors, but we managed to obtain special permission to visit as long as we were wearing masks and protective visors. Considering that we had had limited success keeping in contact with the teachers previously, we decided on a more hands-on approach to CPD with these new schools. We did not do a CPD session with the teachers prior to them starting with the tablets in class. Instead, we participated in the first few lessons where iRead was used and helped the teachers whenever problems arose. When the teachers felt comfortable using iRead on their own, we stopped going. This appeared to be a more successful approach than the one previously taken.

**1 - What worked well in the CPD:**

- The teachers involved in the project were mostly very digitally competent. After introducing the iRead apps, we could just put the tablets with the apps in their hands and let them try and play and then troubleshoot along the way. This was a hands-on approach which made them active in the sessions and this worked well.
- The initial CPD sessions helped us establish a trustful relationship with the teachers. Most teachers have thus been very forthcoming with the challenges they have faced. This has made it easier for us to solve problems quickly. At one school the students suddenly could not log in to the Amigo Reader. The teacher then immediately contacted us to ask how she could solve this and we contacted Dolphin who in turn provided a solution.

**2 – Challenges faced in the CPD:**

- The iRead apps did not always work in the CPD sessions. This happened several times when we modelled the apps and this impacted on the teachers' trust in the usability of the apps. This was

especially the case with the Amigo Reader. In one particular case, this actually lead to the teachers wanting to leave the project.

· In Sweden, teachers are quite autonomous. This meant that when we offered to come to the schools and help with lesson plans or even teach, some were not interested and maintained that they could manage on their own. One teacher even said that if they had contacted us about their problems at an early stage, they might have remained in the project.

### 4.11.3 Comparison of CPD approach taken in 2019-20 and 2020-21

| **iRead Project CPD dimensions 2019-2020** | **iRead Project CPD dimensions 2020-2021** |
|---|---|
| Support development of a positive ethos around incorporating game use in classrooms<br><br>Ensure teachers recognise intended outcomes and connect them to the apps | Continuous discussions with teachers about how games can be used in teaching, However, most teachers were very positive to begin with. |
| Establish teacher/researcher partnerships beginning with co-creation of learning designs<br><br>Scaffolding for teachers to become involved with using technology in the classroom | None of the teachers have used the lesson plans created with the learning designs in the teacher manual. We have pointed out that they exist, but to no avail. |
| Teacher manual designed to support the incorporation of lesson plans created by teachers, and evidencing the methods of teaching with technology•<br><br>Teacher manual designed to include a curriculum section to facilitate the creative links between the learning (content), methods of teaching (pedagogies), and the appropriate tools (technology) in order to effectively implement the technologies in their classroom | Only one teacher has actively used the teacher manual. She wanted to know how to assign texts to the students and we pointed her to the manual. She later said that she had read several things in it. |
| The CPD sessions occurred directly within the schools, with follow up sessions in classrooms if needed | 2020: Due to COVID-19, we did some follow-up sessions on Zoom.<br>2021: CPD occurred in the classroom, during actual lessons. |
| Scaffolded teacher learning process<br>Gradual withdrawal process applied<br><br>Follow up support offered | 2020: Support repeatedly offered, but rarely taken.<br>2021: Scaffolded teacher learning process<br>Gradual withdrawal process applied |
| Supported schools to set up their teaching by identifying the differing starting points/ varied levels of prior knowledge and working from teachers' perspective/needs | Ongoing. |
| Researchers' and practitioners' relationship based on 'knowledge exchange' | Researchers and practitioners continued to exchange knowledge |
| Establish a 'research champion' in each school | This was not possible. |
| Researcher's presence in the CPD delivery and ongoing support | Researcher's presence in the CPD delivery and ongoing support |

## 4.12 CPD Reflections and key outcomes

### 4.12.1 Academic Year 2019-2020

**CPD 2019-2020**

| **'Novice readers' and 'struggling readers' CPD data combined: UK (UCL), Spain (UB), Greece (Doukas & UOI) and Germany (DHBW).** | |
|---|---|
| Number of schools involved | 56 |
| Number of teachers involved | 176 |

| **EFL CPD data combined: Sweden (UGOT), Romania (ULBS), Spain (UB), Greece (BC).** | |
|---|---|
| Number of schools involved | 16 |
| Number of teachers involved | 37 |

Overall, for struggling readers and novice readers the CPD sessions involved 56 schools in 4 different countries, for a total of 176 teachers. As regards the EFL partners, 16 schools participated with 37 teachers involved in the sessions. CPD sessions were mostly organised after school, with a few exceptions in which whole-school participation led to embed the training meeting into existing capacity-building activities.

Partners highlighted the effectiveness of the CPD sessions to provide an overview of the technologies and gain initial insights on their potential uses in the classroom. Furthermore, the sessions were key to engage teachers in the pilot. In most cases, partners adapted the CPD principles and guidelines developed by UCL to the specific needs and local context of each school taking part in the pilot. This allowed an understanding of local priorities in terms of apps use and to develop an initial plan on what sort of practical support is needed in each context. In all these cases, the sessions took place at school, and the number of teachers participating in each session varied according to the school and degree of participation, spanning from 1 in remote Swedish schools to 45 in a two-form school based in United Kingdom.

However, in the case of Greek novice readers it was decided to take the opposite approach: instead of visiting each school, participants were grouped according to their geographical area, and the Greek partner organised two 2-hour sessions and one webinar for a remote island. According to partner's report, during the sessions teachers showed a lack of understanding of adaptivity and Teacher Tools, in contrast to general positive insights described by the rest of the partners. Thus, it seems that a localised approach to CPD leads to a more beneficial outcome for both sides, with teachers gaining better opportunities to understand how technology works and uses, and project partners developing initial ideas on support and research collaboration.

Most partners highlighted the importance of having one key contact person per school to organise the sessions and develop collaboration. In some countries, for instance Spain and United Kingdom, schools participated in previous empirical studies, revealing initial insights on the important role of continuous end-user engagement in technology design for potential adoption in context.

Alongside being important to discuss usage scenarios, the sessions revealed key teachers' concerns regarding practical set-up issues and more broadly concerns about technology use. Collecting from partners' report, teachers discussed Wi-Fi connectivity issues, worries about possible problems of the

apps due to the still ongoing development phase, and in the case of Spain concerns on the effects of certain app features on pupils' motivation.

**Key outcomes**

- Most CPD sessions took place at school after school hours. This reflects teachers' availability and can inform the organisation of future CPD planning.
- Compared to structured, large-scale approaches, adapting to the specificity of each institution – and sometimes of the single teacher – led to better technology understanding. Future design of CPD sessions might consider the benefits of personalising the structure of the sessions.
- CPD sessions contributed to provide an overview of the technologies and gain initial insights on their potential uses in the classroom, as well as to understand local priorities in terms of apps use.
- Having one key contact person per school was fundamental to organise the sessions and develop further collaboration. Future CPD efforts might want to take this into account for communication management.
- The sessions revealed teachers' concerns regarding practical set-up issues such as Wi-Fi connectivity, and more broadly self-reported difficulties about technology use. The insights can inform the development of long-term support plans

## 4.13 Academic Year 2020-2021.

| **'Novice readers' and 'struggling readers' CPD data combined: UK (UCL), Spain (UB), Greece (Doukas & UOI) and Germany (DHBW).** | |
|---|---|
| Number of schools involved | 45 |
| Number of teachers involved | 67 |
| Number of recorded CPD sessions | 29*<br>*Group CPD sessions; note individual 1:1 sessions were held in addition to this number. |

| **EFL CPD data combined: Sweden (UGOT), Romania (ULBS), Spain (UB), Greece (BC).** | |
|---|---|
| Number of schools involved | 27 |
| Number of teachers involved | 43 |
| Number of recorded CPD sessions | 36 |

Overall, for the struggling readers and novice readers groups the CPD sessions involved 45 schools in 4 different countries, for a total of 67 teachers. The number of CPD sessions recorded in total for the novice and struggling readers group was 29; though additional personal 1 :1 sessions and interviews were provided though are not included in the figures in the table above. Regarding the CPD sessions conducted by the EFL partners, 27 schools participated with 43 teachers in 4 different countries. The number of CPD sessions held in total for the EFL learner groups was 36.
There were necessary changes in the nature and delivery of the CPD in 2020-2021 due to the impact of the pandemic. One key difference was in the capacity to deliver face-to-face training, as most of the group CPD sessions had to be delivered online. Some opportunities for face-to-face delivery continued; though this varied from country to country and was responsive to countries safety procedures put in place during the repeated 'lockdowns' that occurred across Europe. As well as group sessions many partners offered personalised or 1:1 support to staff from schools involved with the project. The changes in approach and content of the CPD are detailed and analysed below and key reflections are discussed.

As well as the CPD delivered and developed by individual partners in their countries in 2020-2021; all project partners came together to reflect on both partner- and project-level CPD practice collaboratively to draw conclusions about what had gone well and what had been challenging. An interactive online

discussion and evaluation tool (https://metroretro.io/) was used to facilitate conversation and record partner contributions to the discussion. The outcomes reported add another dimension to understanding CPD from a whole project perspective and demonstrates how a joint reflective approach enabled partners to come together and categorise and compare their reflections on the CPD process.

# 5 Conclusions

Below is a summary of some of the key findings and reflections on the outcomes of the observations, learning designs and CPD sessions represented in section 9.2 of this deliverable. Implications for the future are included. Conclusions have been reported separately for 2019-2020 and 2020-2021 due to the different nature of the challenges faced with the impact of COVID on providing CPD. This update includes additional reflections about the support and challenges that were faced in supporting the schools to embed technology deeply in their everyday practice within the context of a pandemic.

## 5.1 Key reflections on lesson observations, learning designs and CPD provision and outcomes 2019-2020.

**Reflections on lesson observations: key outcomes and future implications 2019-20**

- Analysis of the observations showed a diversity in lesson content across schools and in different countries. This is something that could be built upon and celebrated and the potential for encouraging a diversity of approaches could be further implemented through using a flexible CPD approach such as 'learning design'.
- A variety of different pedagogical approaches to teaching literacy across schools was noted; though many similarities were also evident; for instance, in the use of ''guided reading" in many contexts.
- It would seem that the varied use of technology (where it was used at all) indicated that technology use in classrooms is often ad hoc and variable and does not always involve strategic planning for use. This would be consistent with research findings (Zhao & Bryant, 2006).
- Some interesting feedback from partners was captured during the observations. In schools where there was limited use of technologies, it was proposed that there was a real potential for Navigo/Amigo to offer opportunities for children to engage in the use of technology to support development of literacy or EFL skills and knowledge.
- Observation of sessions led partners to suggest that using Navigo/Amigo could potentially increase pupil motivation and engagement for learning.
- The importance of having a secure and fast internet connection and access to Wi-Fi was highlighted as essential for successful use of the apps in schools.

**Reflections on Learning Design sessions: key outcomes and future implications 2019-20**

- Teacher understanding of the potential of the apps was demonstrated through their engagement in skilfully developing a varied set of learning designs.
- A positive ethos of collaboration between teachers and researchers was fostered through the design workshops and underpinned many of the sessions. Both worked together sharing skills and expertise, through a process of knowledge exchange, to create learning designs and lesson plans that will support technology appropriation.
- Considering some of the longer and more complex learning designs that were created by some of the teachers, the researchers reflected on the potential issues that these lesson plans raised e.g. plans would be harder to implement in the classroom context. This could inform future development of learning designs.
- Teacher involvement in design creation could reinforce teacher understanding of the potential usage of the technologies in the classroom. The experience in exploration and development of the learning designs could also contribute to confidence in using technologies during the implementation phase.

- Design activities did not work so well when just one group member was involved. Hence future guidance should perhaps suggest minimum group numbers for sessions.
- Collaborations between teachers of 'struggling'/'novice readers' and teachers of EFL learners were fruitful and positive; indicating there is some crossover.
- There is a need to be mindful of and follow ethical procedures carefully when unexpected issues are faced when working with schools. e.g. when permission is refused by a participant.
- It is likely that with continued use of the apps and games that teachers would quickly become familiar and more experienced with the personalised/adaptive features of the technology and develop their expertise and increase confidence levels.
- Enhancing knowledge of adaptivity potentials of the technologies may need additional support from researchers.
- Teachers could discuss the importance of ease of implementation and develop future 'best practice' guidelines for developing lesson plans using the Laurillard framework (Laurillard, 2013).

**Reflections on CPD sessions: key outcomes and future implications: 2019-20**

- Most CPD sessions took place at school after school hours. This reflects teachers' availability and can inform the organisation of future CPD planning.
- Compared to structured, large-scale approaches, adapting to the specificity of each institutions – and sometimes of the single teacher – led to better technology understanding. Future design of CPD sessions might consider the benefits of personalising the structure of the sessions.
- CPD sessions contributed to provide an overview of the technologies and gain initial insights on their potential uses in the classroom, as well as to understand local priorities in terms of apps use.
- Having one key contact person per school was fundamental to organise the sessions and develop further collaboration. Future CPD efforts might want to take this into account for communication management.
- The sessions revealed teachers' concerns regarding practical set-up issues such as Wi-Fi connectivity, and more broadly self-reported difficulties about technology use. The insights can inform the development of long-term support plans.

## 5.2 Key reflections on CPD provision and outcomes 2020-2021

### 5.2.1 General overview: summary of partner comments 2020-2021.

The COVID-19 pandemic had a large impact on the progression of the project and the take up of and approach to CPD taken by all the project partners involved. There were considerable levels of disruption to children's education and fewer opportunities to participate in face-to-face CPD across all nations. The extent of school closures varied from country to country; though even schools in countries such as Sweden, who had fewer actual closures, were still considerably impacted.
The impact of the pandemic meant that in many cases there was a change in school priorities (such as delivering the missed curriculum) and as a result it was challenging to encourage schools to engage with the CPD opportunities offered by the project and in many cases, it became considerably harder to communicate with schools.

The pandemic also led to issues with accessibility. Some children did not have access to the tablets provided by iRead during school closures, which meant ongoing CPD provision was suspended during this time. Other schools were keen to use the tablets to support learners who were 'home schooling'; which involved training children to work independently with the tablets. Many schools restricted the number of visitors and stopped large group face to face meetings within shared spaces and new strict rules related to COVID-19 safety provision such as 'social distancing' had an impact on the type of CPD that could be provided. Other countries (e.g., Spain) were able to visit schools and provide initial CPD sessions face-to-face, though moved later to online sessions. Some schools decided to offer weekly meetings with project staff (e.g., Greece, Doukas).

With the advent of the new school year (2020-2021) changes in the schools who were participating were reported. Annual staff turnover and changes meant that new staff had to be trained to use the

technology and applications; whilst teachers already trained did not need to be initiated. This led to some additional challenges in the tailored planning of training. In some countries new schools were recruited which meant the need for upskilling new staff.

Partners related that their original plans for CPD had to be changed in order to respond to the current context and CPD as a necessity was moved online (and also via telephone in e.g., Romania). With this change in approach to the delivery of CPD, considerable advantages were reported; for example, positive moves towards digitisation of learning, CPD opportunities through virtual meetings utilising tools such as screen sharing, changes in momentum and speed of delivery. Whilst some partners reported the impact of a lack of preparedness and infrastructure, they also reported a resilient response to embracing new technologies, with some inevitable learning fatigue.

Key outcomes:

- The pandemic had an impact on the provision and delivery of CPD.
- Schools changed their priorities and this in turn had an impact on engagement with CPD offerings.
- There was a change in approach to mode of CPD delivery as it had to be moved online.
- There were notable changes in the structure of CPD sessions, which were differentiated to meet the varying and changing needs of the different groups involved.

### 5.2.2 Summary of partner evaluations of CPD approach 2020-2021.

Background information relating to key changes were reported in partner evaluations of their CPD approach for 2020-2021. Information regarding changes in the number of schools participating in the project was provided. Some schools chose to leave the project for various reasons. Amongst these reasons were: impact of the pandemic (meaning less time to devote to the project due to increased additional time demands on staff); poor connectivity (Wi-Fi issues); schools closed to visitors; key staff leaving; children having finished the game and run out of content, and school closures. One partner decided to end the relationship with schools that had not been engaging and redistribute tablets. Some said schools were enthusiastic about continuing and some decided to recruit additional schools; or schools requested to join the project based on positive feedback from existing participant schools. Some partners decided to expand provision in schools who were already successfully engaged with using the technologies and with the CPD being offered.

In some countries the schools participating reported no changes; and this enabled the cascading of training from more experienced teachers to new staff. In other schools training new staff had an impact on time demands, as introductory CPD had to be repeated or started from scratch in the new schools welcomed to the project. There were also challenges reported around engagement with CPD offered, due to the competing time demands of staff.

Partners discussed the ongoing development of relationships between schools and researchers and new strategies for teacher training engagement. Examples included: offering 1:1 CPD; lab-based and scaffolded researcher-run sessions that teachers could attend to develop their confidence with using the technologies (Germany); or researchers supporting teachers by giving guidance about how they could use apps in the classroom consulting the manual and lesson plans (Greece, UOI). It was reported by one partner (Sweden) that they felt their ability to identify personalised CPD needs and adapt provision accordingly had improved. In addition, initial sessions were offered to attempt to re-engage existing schools with the project. Also, when new schools were recruited, they used insights gained from CPD work with previous schools to try and improve the training by doing it during actual lessons with students.

CPD sessions were offered on a 1:1 basis and specifically focused ‘hands-on’ problem solving sessions were found to be useful. In the UK, UCL developed a set of ‘bite-sized’ training videos, a guidance poster and a questionnaire which gathered information on CDP priorities and supported content adaptation. The delivery of CPD was adapted and the sessions were offered in smaller chunks instead of a large amount of introductory material to support teacher engagement, time efficiency and reduce

any chances for information overload. This 'evidence-informed CPD' approach provided teachers with initial content, which they then had the opportunity to try out in the classroom, before returning for follow-up CPD.

Partner evaluations recognised the main change was in mode of delivery and the move from offering the majority of CPD face-to-face, to offering mainly online provision. Partners reported using different forums: such as Zoom, Skype or Google Hangouts. Partners were able to capitalise on new learning resulting from the necessary move to embrace digital education in schools across the globe. This meant school staff felt more confident than before to engage with using digital technologies, as well as online forums.

### 5.2.3 Summary of partner evaluations of 'what worked well' and what 'challenges' were faced 2020-2021.

Four key themes emerged: relationship building; digitalisation of education as a result of COVID-19; impact of shift to online CPD delivery and finally, CPD linked to home engagement.

**Relationship building: What worked well.**

- Further consolidation of relationships between teachers and researchers, and building of trust and effective communication, enhancing the collaborative opportunities for CPD.
- Enhancing relationship with one key school contact has helped with scheduling large group training, monitoring success of CPD and differentiating ongoing CPD support.
- Teachers with prior experience of iRead cascading knowledge to new teachers who joined the project in 20/21; in some cases, leading to less need for follow up CPD sessions.
- Teachers participating in iRead felt upskilled with regards to technology use in general.
- Developing relationships with individual teachers and increasing agency (e.g., 1:1 support) allows personalised/customisation differentiation of training according to individual needs.
- Teachers developing their own research as a result of working in partnership with iRead project, e.g., MA dissertation output.

**Relationship building: 'Challenges faced':**

- It was felt by some partners that if there had been opportunities for more face-to-face CPD providing scaffolded support and practice using the apps with researchers present, that more usage and better engagement may have resulted; especially with regard to using the advanced features of the Apps.
- Difficulty maintaining contact and relationships with schools due to COVID-19.
- Researcher support in some cases led to overreliance and lack of independence. In one country teachers felt their autonomy was challenged by the project offering CPD; though on reflection felt that they would have benefited from the support offered.

**Digitalisation of education as a result of COVID-19: What worked well.**

- Teacher newfound confidence with interacting with technology in general, has led to increased preparedness to engage with the iRead technologies.
- Benefits from practical developments, such as improved internet connections/connectivity and storage of equipment meant apps were more accessible and training more meaningful.
- Due to COVID-19 teachers were more familiar with online conferencing tools, making online CPD more accessible and viable.
- One partner shared that the strength of the iRead content had led to consideration this could replace core curriculum content.

**Digitalisation of education as a result of COVID-19: Challenges faced.**

- Additional demands placed on teachers to quickly learn to use technology to deliver the curriculum due to COVID-19, meant less time to focus on adopting the advanced functionalities of the apps such as the teacher tool.
- Adaptations made to content due to the change in mode of CPD delivery to an online format.
- Reflection that content shared in prior year's CPD sessions challenged cognitive load, leading to need for additional CPD consolidation sessions.
- Challenges related to technology failures during CPD demo sessions leading to lack of trust in usability of apps; especially in the case of the Amigo reader app.

**Impact of shift to online CPD delivery: What worked well.**

- Online 'virtual' CPD worked well.
- Flexibility of scheduling: Shorter or more frequent customised sessions supported transition to online delivery and led to innovative engagement. Longer sessions could be broken down into more frequent targeted shorter sessions.
- Online CPD made it easier to offer a varied programme of CPD and a flexible approach tailored to respond to individual needs. Training needs were identified and key areas for support and development targeted. These were, for example, refresher sessions for experienced teachers, introductory sessions for new teachers, follow up conference calls, CPD on how to use the teacher tool and 1:1 CPD sessions.
- Opportunities for teachers to meet online outside school environment to purposefully create a more accessible and relaxed atmosphere for teacher CPD without possible pressure from a school environment.
- Videos of training sessions enabled teachers to be active and revisit content.
- Opportunities to customise CPD content; creating a range of CPD resources in different and accessible formats, e.g., training slides; Q&As, and online teacher manual.

**Impact of shift to online CPD delivery: Challenges faced.**

- Many schools tended to use games in adaptive mode only and did not benefit from prior CPD, e.g., lesson plans that had been created. Similar issues were reported with regards to using the advanced features of the Amigo reader and Navigo game.
- It was felt by many partners that lack of opportunities to have face-to-face demos of the teacher tool led to lower usage of the advanced features available and missed opportunities to benefit from these.
- Some teachers expressed preference for face-to-face or telephone support or were unable to attend online sessions.
- Moves to online CPD provision resulted in additional demands on researcher time to support teachers.
- This led to the need for creation of additional resources to support the changes to online delivery, e.g., short instructional videos.

**CPD linked to home engagement: What worked well.**

- Transition of CPD approach to supporting use of apps at home providing usage and engagement reports/strategies which helped inform teachers of pupil progress.
- Hotline for parents/ teachers set up to support home use of tablets.
- Welcome pack created for parents to support use of IRead at home.

**CPD linked to home engagement: Challenges faced.**

- As the entire curriculum moved online parental concerns were raised in relation to child mental health and well-being and internet safe usage.
- Issues relating to excessive screen time for the core curriculum due to the pandemic may have impacted on use of iRead apps.
- Issues with the amount of time children were allowed to spend on tablets; in one country children had to negotiate use of two tablets.

**Partners also reported in this section how they found solutions for some of the challenges that emerged (and are summarised above) in 2020-2021. Solutions included:**

- Moving training online using varied formats.
- Only offering CPD to schools who agreed to participate.
- Redirecting tablets to schools who were using them more actively.
- Using researcher time to assign games on behalf of teachers.
- Using researcher time to support monitoring student progress and share outcomes with schools.
- One partner created a series of short 'how to' training videos focused on key topics plus a guidance poster.
- One partner used video conferencing to demonstrate the teacher tool, though this was described as 'ineffective' resulting in schools using the games in adaptive mode only.
- One partner developed a 2-phase approach to CPD provision: Phase 1 focused on supporting use of the basic functions through targeted, shorter, and more frequent online CPD sessions. Teachers identified needs leading to more personalised CPD sessions. Phase 2 focussed on the use of the advanced technologies and use of teacher tool.

## 5.3 Summary of comparison of CPD approach taken in 2019-20 and 2020-21.

| **iRead Project CPD dimensions 2019-2020** | **iRead Project CPD dimensions 2020-2021** |
|---|---|
| Support development of a positive ethos around incorporating game use in classrooms<br><br>Ensure teachers recognise intended outcomes and connect them to the apps | Continued as before plus in addition:<br>• Key changes in methods of communication due to pandemic.<br>• New challenges faced due to not being able to meet new teachers face-to-face.<br>• One partner described that adoption took a long time.<br>• Another partner identified teacher concerns on a variety of levels: psychological, physical experiential and external.<br>• One partner felt the original positive ethos had been challenged due to new negative attitudes to surplus screen time due to the pandemic. |
| Establish teacher/researcher partnerships beginning with co-creation of learning designs<br><br>Scaffolding for teachers to become involved with using technology in the classroom | Continued as before plus:<br>• Some researcher directed instruction was provided with pupils.<br>• Some partners identified a need for further upskilling of local champions.<br>• Modelling use of technology by researchers to scaffold teacher learning.<br>• Continued development of existing learning designs created in 19-20.<br>• Some reported teachers had less interaction with learning designs and some schools did not use the co-created lesson plans at all.<br>• Some reported there were less opportunities to further consolidate |

| | |
|---|---|
| | relationships of trust and confidence and further scaffold teacher learning. |
| Teacher manual designed to support the incorporation of lesson plans created by teachers, and evidencing the methods of teaching with technology<br><u>English teacher manual</u><br><br>Teacher manual designed to include a curriculum section to facilitate the creative links between the learning (content), methods of teaching (pedagogies), and the appropriate tools (technology) in order to effectively implement the technologies in their classroom | In addition, partners reported:<br>• Development of additional resources and strategies to encourage and support use of the manual, for example, a game record sheet, video overviews of manual content, use of social media to highlight particular aspects (e.g. lesson plans).<br>• In some cases, partners interacted with the teacher manual and refined its use and application (in one case rewrote it)<br>• Many reported a lack of manual usage and hence less effective implementation of technologies: due to usability / lack of time to read the lengthy document.<br>• Teaching manual was created pre-pandemic and did not always reflect the needs of teaching in a pandemic. |
| The CPD sessions occurred directly within the schools, with follow up sessions in classrooms if needed | In addition, partners reported:<br>• The key move to online delivery of CPD in most countries or a combination of face-to-face and online sessions where this remained possible.<br>• A staggered approach to online CPD sessions giving opportunities to put learning into practice in the classroom before moving onto new learning.<br>• Use of recorded CPD sessions provided opportunities to refresh skills and revisit material as much as needed.<br>• Opportunity to focus on smaller and self-chosen topics and work in smaller groups or have 1:1 follow up.<br>• Online sessions were shorter than face-to-face. |
| Scaffolded teacher learning process<br>Gradual withdrawal process applied<br><br>Follow up support offered | In addition to last year:<br>• Partners continued as before to scaffold the learning process and offer follow up support.<br>• Initial CPD was offered for new teachers/schools and follow up CPD to extend learning was offered for experienced teachers/schools e.g., extending knowledge of the teacher tool's functionalities.<br>• The offer of follow-up CPD was not always taken up by schools. |

| | |
|---|---|
| | • Many partners offered a more scaffolded and personalised support package to schools e.g., support with challenges teachers faced with the apps and/or the tablets, and with any technical needs such as updating the apps.<br>• Some partners provided strategies for use at home as well as technical support direct to parents.<br>• Some schools withdrew from the project terminating the CPD offering.<br>• One partner created a series of instructional 'how to...' videos and classroom poster that supported:<br><br>Navigo game play basics<br>Navigo game play top tips<br>Assigning games with the teacher tool<br>A student's guide to playing the Navigo game<br>Classroom poster on playing Navigo |
| Supported schools to set up their teaching by identifying the differing starting points/ varied levels of prior knowledge and working from teachers' perspective/needs | In addition to last year:<br>• Teachers identified individual learning needs leading to personalised tailored CPD sessions.<br>• Use of apps and applied learning designs in the classroom.<br>• One partner described less integration of the technology into the teachers' syllabus.<br>• One partner had worked directly with pupils in year 1 and transferred this to the teachers in Year 2.<br>• Change is school priorities due to curriculum lag was also reported. |
| Researchers' and practitioners' relationship based on 'knowledge exchange' | This continued as before – ongoing support was offered. In addition to last year:<br>• 'Experience exchange' as well as 'knowledge exchange' was offered.<br>• It was reported in some cases that the pandemic had led to issues with lack of time for Knowledge Exchange |
| Establish a 'research champion' in each school | This continued as before – ongoing support was offered. In addition to last year:<br>• Where possible, a school would assign a lead person, or a local champion, who could give support to teachers and upskill staff. Because this was not possible across all sites, some alternatives were developed such as 'technical' or 'project' champions or 'reference teachers' in place of research champions. |

| | |
|---|---|
| Researcher's presence in the CPD delivery and ongoing support | This continued as before - though ongoing support was more focused towards online provision. |

## 5.4 Follow up CPD collaborative evaluation sessions with all partners

Partner representatives met for a series of online calls scheduled by UCL, where CPD processes and outcomes were discussed. Partners used an online tool (https://metroretro.io/) which captured the discussion and reflections on the CPD offered during the duration of the project. The outcomes of these discussions are summarised in Appendix 3 P 118-21.


Figure 4. Screen capture depicting collaborative work between iRead project partners during a Metro Retro board 'thought gathering' session to help identify different dimensions regarding CPD practice across all sites relating to achievements, learnings, challenges faced, and ideas for the future.

## 5.5 Conclusions: Learning from the process and key takeaway messages

These conclusions draws upon the partner reflections and learning described in the prior sections and propose a series of recommendations/take away messages for CPD organised around the following significant themes that were identified: developing the relationship with the school; developing the relationship with teachers; developing content; developing a learning approach for CPD; encouraging 'Knowledge Exchange'.

**Developing the relationship with the school**

- Support from school leadership is important to establish at the onset. It ensures the introduction of technology is aligned with teachers' professional goals. It secures further support from IT especially at the set-up phase. It also helps to coordinate the new relationships with individual teachers at the start. Uptake of technology is unlikely to happen if school leadership does not evidence consistent communication with their teaching team and coordination of the initial set up phase.
- It is useful to ask about existing CPD structures in the school for scheduling purposes as well as identifying the expected size of the teacher group, especially if the school takes a whole-school training approach.
- Agree on who will be responsible for delivering the technology intervention. If TAs are involved, ensure they are included in the training, communication and have agency.
- If the school is recruited as part of a research project, it is important to agree technology usage expectations against which school involvement will be assessed.

**Developing the relationship with teachers**

- Once the set-up phase is finished and the first CPD has taken place, a deeper relationship building with the teachers begins.
- It is important to reaffirm with teacher's technology usage expectations previously agreed with senior leadership. Sharing engagement learning analytics with teachers on a weekly basis is one way for teachers to assess their own involvement.
- Ensure teachers have clarity regarding whom to contact for technical or support questions.
- Training includes scheduled CPD sessions and ad-hoc/goal-oriented support via email or a visit/call. In the latter case, the lead contact must ensure the teachers drive the questioning and the researcher supports them to achieve their goals.
- Student learning analytics can be used to identify teachers who require more support. Additionally, as part of the overall training, there should be periodic check-ins initiated by the lead contact asking teachers how they are using the functionality introduced in a previous CPD session. Based on email exchanges, content may be shared, or for more complex issues a call/visit arranged.

**Developing Content**

- Create tailored CPD materials that enable and support the building of confidence with using the technologies
- Teachers and their students must learn how to access the technology without effort that takes time away from the lesson. Teachers must also learn how to customise the technology to their pedagogical needs through the available functionality. CPD should train teachers and students to access the technology first. Following this, CPD can be customised to address the teacher's goals. This can be achieved by providing a checklist of different functionalities used by teachers to select the focus of subsequent CPD sessions. This will also determine the number of CPD sessions in a school.
- During sessions, teachers may introduce questions around specific tasks they wish to accomplish. CPD PowerPoints can be shared with the teacher after the session including additional 'custom' FAQ slides that reiterate answers to their questions.
- Keep it focused: use of abbreviated materials preferable over lengthy documents
- Teachers will not engage with lengthy materials, such as a long comprehensive manual. CPD content should be broken down into short units. These units should be communicated through different media depending on the means of delivery. In face-to-face CPD, PowerPoint presentations are more suitable. However, it is often required to share CPD content outside designated sessions. Short 'how to' videos or printable 'how to' worksheets/posters are ideal for this.

**Developing a learning approach for CPD**

- Allow hands-on experience with technology/app right from the start
- CPD is most effective when teachers put to practice the training. CPD training sessions should be broken down into units where teachers try out the technology. There should be a time interval between CPD sessions to allow teachers additional practice.

**Encourage 'Knowledge Exchange'**

- The lead contact should facilitate knowledge exchange wherever possible. This can be fostered by sharing with a teacher what other schools are doing, or how they have overcome a particular challenge. It can be achieved by closely working with one teacher who then acts as mentor for new teachers signing up in that particular school. If the opportunity arises, the lead contact can make learnings within a school explicit whilst speaking with teachers to encourage a culture of sharing.

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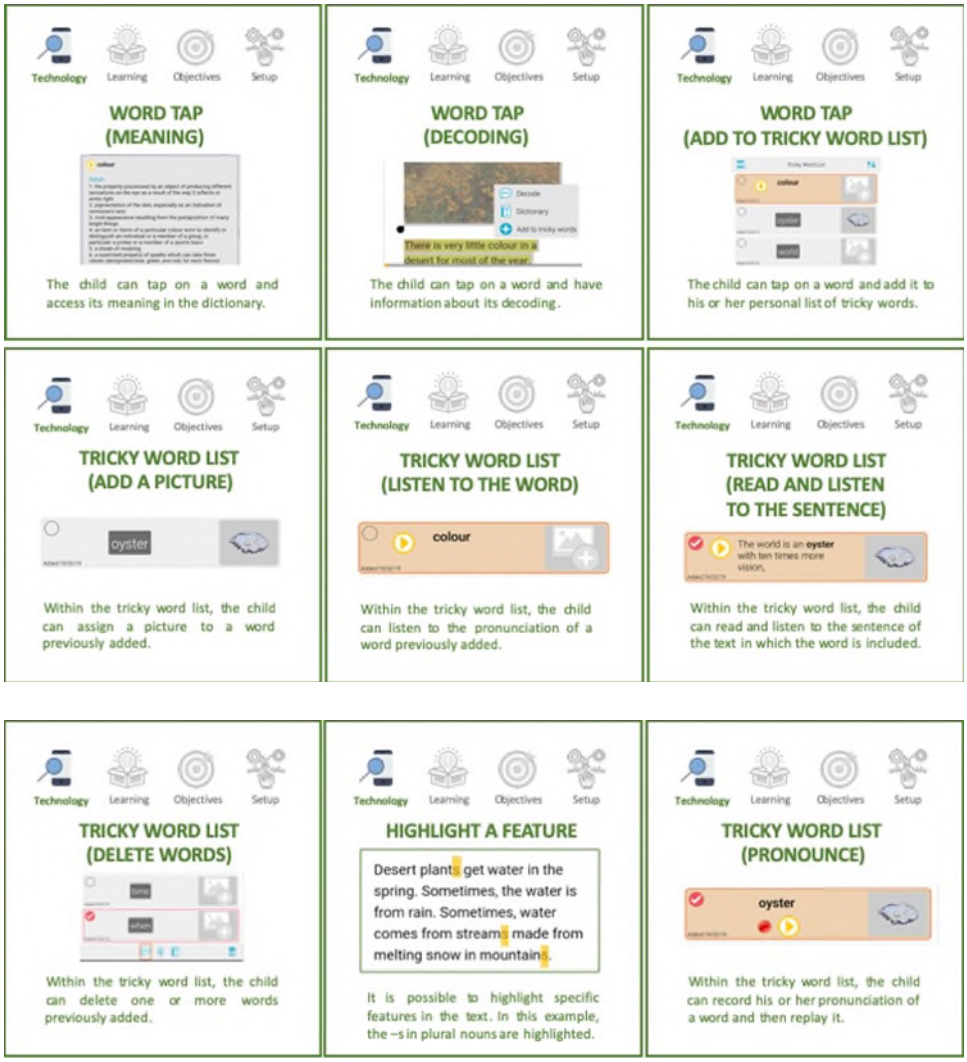
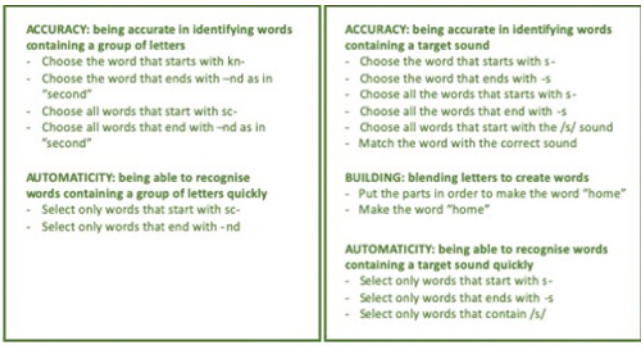
# 7 Appendices

## 7.1 Appendix A – Inspiration Cards designed for the Learning Design Workshops


Technology Learning Objectives Setup
INDIVIDUAL ACTIVITY
Individual activities are designed for learners working autonomously on a task.
Technology Learning Objectives Setup
GROUP ACTIVITY
Group activities are designed for learners working in groups on the task.
Technology Learning Objectives Setup
WHOLE CLASS ACTIVITY
Whole class activities are designed for learners working all together on the same task.
Technology Learning Objectives Setup
TIME
0
15
30
45
Each activity should last not more than 60 minutes. Set the time!
Technology Learning Objectives Setup
ORAL LANGUAGE
The activities targeting oral language aim to develop speaking and listening skills.
Technology Learning Objectives Setup
READING
The activities targeting reading aim to develop decoding and reading comprehension skills.
Technology Learning Objectives Setup
WRITING
The activities targeting writing aim to develop spelling and written communication skills.
Technology Learning Objectives Setup
PRE-READING ACTIVITIES
Before starting reading a text, the child is offered one pre-reading activity on a feature included in the text.
Technology Learning Objectives Setup
HIGHLIGHT SENTENCES
When a child taps on a word, the reader highlights the sentence in which that word is included.
Technology Learning Objectives Setup
LISTEN TO THE TEXT
Then we get some seeds. We get lots of seeds. We put the seeds into the dirt.
The child can listen to the text thanks to a text-to-speech component. The technology highlights words and sentences while they are read.
Technology Learning Objectives Setup
READ THE TEXT
Desert plants get water in the spring. Sometimes, the water is from rain. Sometimes, water comes from streams made from melting snow in mountains.
The child can read the text as he or she would do with traditional books.
Technology Learning Objectives Setup
SEARCH FOR WORDS
The child can search for a word, obtaining a list of sentences in which the word is included.


Technology
Learning
Objectives
Setup
WORD TAP (MEANING)
The child can tap on a word and access its meaning in the dictionary.
WORD TAP (DECODING)
There is very little colour in a desert for most of the year.
The child can tap on a word and have information about its decoding.
WORD TAP (ADD TO TRICKY WORD LIST)
The child can tap on a word and add it to his or her personal list of tricky words.
TRICKY WORD LIST (ADD A PICTURE)
oyster
Within the tricky word list, the child can assign a picture to a word previously added.
TRICKY WORD LIST (LISTEN TO THE WORD)
colour
Within the tricky word list, the child can listen to the pronunciation of a word previously added.
TRICKY WORD LIST (READ AND LISTEN TO THE SENTENCE)
The world is an oyster with ten times more vision.
Within the tricky word list, the child can read and listen to the sentence of the text in which the word is included.
TRICKY WORD LIST (DELETE WORDS)
Within the tricky word list, the child can delete one or more words previously added.
HIGHLIGHT A FEATURE
Desert plants get water in the spring. Sometimes, the water is from rain. Sometimes, water comes from streams made from melting snow in mountains.
It is possible to highlight specific features in the text. In this example, the –s in plural nouns are highlighted.
TRICKY WORD LIST (PRONOUNCE)
oyster
Within the tricky word list, the child can record his or her pronunciation of a word and then replay it.


Technology
Learning
Objectives
Setup
ADAPTIVE MODE
The adaptive mode automatically assigns the most appropriate game to the child on the basis of his or her previous performance.
GAME DIFFICULTY: HARD
It's possible to choose between game mechanics classified as "easy", "medium" or "hard" for most of the activities.
GAME DIFFICULTY: EASY
It's possible to choose between game mechanics classified as "easy", "medium" or "hard" for most of the activities.
GAME DIFFICULTY: MEDIUM
It's possible to choose between game mechanics classified as "easy", "medium" or "hard" for most of the activities.
DECODING WORDS: GRAPHEME-PHONEME CORRESPONDENCES
ACCURACY
BUILDING
AUTOMATICITY
This category refers to tasks targeting the correspondences between letters and their sound.
DECODING WORDS: CLUSTERS
ACCURACY
AUTOMATICITY
These tasks require the blending of different letters within a word e.g. B + L or P + L.


ACCURACY: being accurate in identifying words containing a group of letters
- Choose the word that starts with kn-
- Choose the word that ends with –nd as in "second"
- Choose all words that start with sc-
- Choose all words that end with –nd as in "second"
AUTOMATICITY: being able to recognise words containing a group of letters quickly
- Select only words that start with sc-
- Select only words that end with -nd
ACCURACY: being accurate in identifying words containing a target sound
- Choose the word that starts with s-
- Choose the word that ends with -s
- Choose all the words that starts with s-
- Choose all the words that end with -s
- Choose all words that start with the /s/ sound
- Match the word with the correct sound
BUILDING: blending letters to create words
- Put the parts in order to make the word "home"
- Make the word "home"
AUTOMATICITY: being able to recognise words containing a target sound quickly
- Select only words that start with s-
- Select only words that ends with -s
- Select only words that contain /s/

Technology Learning Objectives Setup

**DECODING WORDS: SYLLABIFICATION**

ACCURACY

This category of tasks requires to chunk words in their syllables.

Technology Learning Objectives Setup

**RECOGNISING WORDS: COMMON SIGHT WORDS**

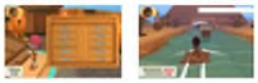
ACCURACY AUTOMATICITY

These tasks require pupils to recognise frequent words, e.g. this, was, too.

Technology Learning Objectives Setup

**RECOGNISING WORDS: CONFUSING LETTERS**

ACCURACY AUTOMATICITY



In this case pupils have to recognise words with confusing letters, such as "d" in "dad" or "b" in "bad".

Technology Learning Objectives Setup

**USING GRAMMAR: ADJECTIVES, PRONOUNS**

ACCURACY BUILDING AUTOMATICITY

These tasks require learners to use adjective or pronouns within sentences e.g. "nice" in "your dress is nice" or "him" in "I saw him".

Technology Learning Objectives Setup

**USING GRAMMAR: VERBS**

ACCURACY BUILDING AUTOMATICITY

The tasks focus on different verb tenses, and modal verbs such as "will", "would" and "shall".

Technology Learning Objectives Setup

**USING GRAMMAR: COMPLEX SENTENCES**

ACCURACY BUILDING

This category of cards refers to complex constructions such as sentences expressing a condition ("If you are careful, we can get at the top") or infinitive sentences (e.g. "You must go early to get there on time").

**ACCURACY: being accurate in identifying the correct adjectives and pronouns within sentences**
- Select the words that describe the word "dress"
- Select the word that completes the sentence
- Select the word that could be changed to "Rita"

**BUILDING: using adjectives and pronouns to complete sentences**
- Fill the gaps to complete the sentence

**AUTOMATICITY: using adjectives and pronouns to complete sentences quickly**
- Fill the gaps to complete the sentence

**ACCURACY: being accurate in identifying the correct verbs within sentences**
- Select the verb phrase in the sentence
- Look at the word in red, select a word that plays the same role as this in the bottom sentence

**BUILDING: using the correct verbs to complete sentences and ordering words to compose a sentence**
- Select the correct verb for the sentence
- Select the correct order of words to complete the sentence
- Select the word that completes the sentence
- Turn the cogs to make a correct sentence
- Fill the gap to complete the sentence

**AUTOMATICITY: choosing the correct verb for a sentence quickly**
- Turn the cogs to make a correct sentence

**ACCURACY: being accurate in identifying common words starting from their sound**
- Choose the word "this"

**AUTOMATICITY: match words pronunciation and their spelling quickly**
- Match the word with the correct sound

**ACCURACY: being accurate in identifying words containing a certain syllable**
- Choose the word with –bo
- Choose all the words with –bo

**ACCURACY: being accurate in identifying common words starting from their sound**
- Choose the word "this"

**AUTOMATICITY: match words pronunciation and their spelling quickly**
- Match the word with the correct sound

**ACCURACY: being accurate in identifying words starting with confusing letters**
- Choose the word that starts with d-

**AUTOMATICITY: choosing words starting with confusing letters quickly**
- Select only words that starts with d-

Technology Learning Objectives Setup

**USING GRAMMAR: PLURALS**

BUILDING AUTOMATICITY

This category of tasks involves work on plurals by adding for example –s or –es to a noun.

Technology Learning Objectives Setup

**USING GRAMMAR: QUESTIONS**

ACCURACY BUILDING AUTOMATICITY

Questions involve the –wh questions (e.g. What? Why?) and yes/no questions (e.g. Do you like it?)

Technology Learning Objectives Setup

**USING GRAMMAR: PREPOSITIONS, DETERMINERS**

BUILDING AUTOMATICITY

These tasks involve the use of prepositions (e.g. put "down" the cup) and determiners (e.g. a "few" dogs are in the garden) within sentences.

Technology Learning Objectives Setup

**USING GRAMMAR: COMPARATIVES, SUPERLATIVES**

ACCURACY BUILDING AUTOMATICITY

These tasks involve the use of comparative adjectives such as "warmer", and superlative ones such as the "happiest".

Technology Learning Objectives Setup

**USING PREFIXES AND SUFFIXES**

ACCURACY BUILDING

The tasks involve the use of prefixes such as –re and –co, and suffixes such as –ful and –less, with different words.

Technology Learning Objectives Setup

**USING GRAMMAR: NEGATIONS**

ACCURACY

These tasks involve the use of and the use of negations such as "did not" within sentences.

**ACCURACY: being accurate in selecting the correct answer to the question**
- Jim is the most polite boy in his class. Who is the most polite? (Select the correct answer)

**BUILDING: inserting the correct word in a sentence or ordering words to create a sentence**
- Select the word that completes the sentence
- Fill the gap to complete the sentence
- Put the words in the correct order

**AUTOMATICITY: inserting the correct word in a sentence or ordering words to create a sentence quickly**
- Fill the gap to complete the sentence
- Put the words in the correct order

**ACCURACY: being accurate in identifying the correct verbs within sentences**
- Select the verb phrase in the sentence
- Look at the word in red, select a word that plays the same role as this in the bottom sentence

**BUILDING: using the correct verbs to complete sentences and ordering words to compose a sentence**
- Select the correct verb for the sentence
- Select the correct order of words to complete the sentence
- Select the word that completes the sentence
- Turn the cogs to make a correct sentence
- Fill the gap to complete the sentence

**AUTOMATICITY: choosing the correct verb for a sentence quickly**
- Turn the cogs to make a correct sentence

**ACCURACY: being accurate in selecting words with negative meanings, and negative contractions.**
- Select the word that has a negative meaning
- Match the word(s) to the contraction

**BUILDING: adding the correct plural noun to complete a sentence**
- Fill the gap to complete the sentence

**AUTOMATICITY: using adjectives and pronouns to complete sentences quickly**
- Complete the sentence by finding the missing words

**ACCURACY: being accurate in answering a question and in finding a question starting from the answer**
- Select a possible answer to the question
- Select the words that answer the question
- Select the question that matches the answer

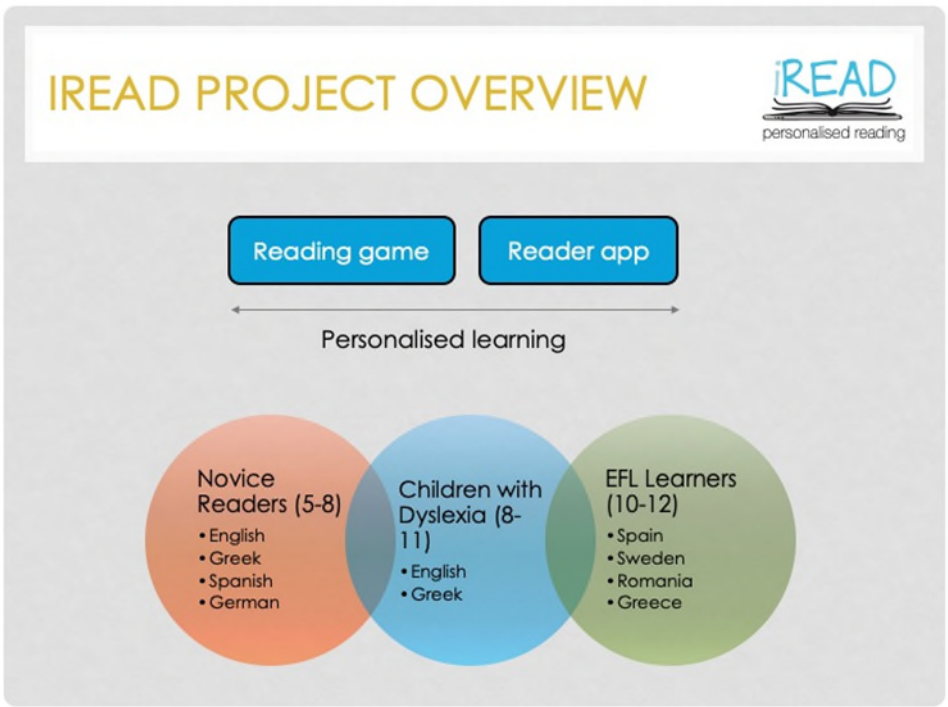
**BUILDING: constructing correct questions**
- Putting words in the correct order
- Turn the cogs to make a correct question

**AUTOMATICITY: inserting the right word into a question quickly**
- Fill the gap to complete the sentence

**BUILDING: constructing sentences including prepositions and determiners**
- Put the words in the correct order
- Turn the cogs to make a correct sentence

**AUTOMATICITY: constructing sentences including prepositions and determiners quickly**
- Fill the gap to complete the sentence

## 7.2 Appendix B CPD slides

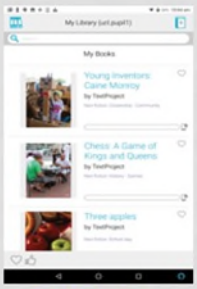
## RESEARCH GOALS

iREAD personalised reading

- UK pilot - 10 schools, min 600 pupils
- Support the children's reading process through personalised content and activities
- Foster children's motivation in reading through game play and new ways of engaging with texts
- Support teachers with a new digital resource whose use in the classroom we jointly design

## IREAD SYSTEM

iREAD personalised reading



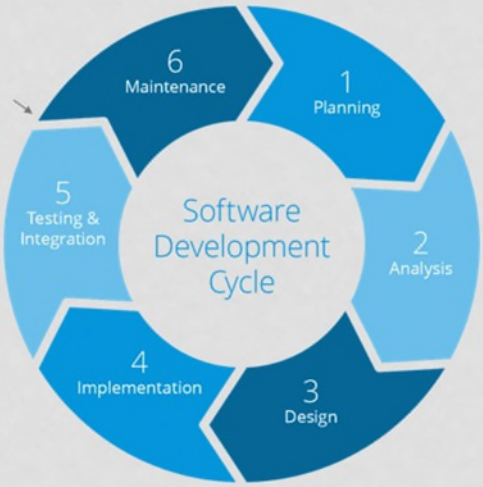
Amigo Reader

Navigo

**Used in conjunction with a teacher tool**

## TESTING AND MAINTENANCE

iREAD personalised reading

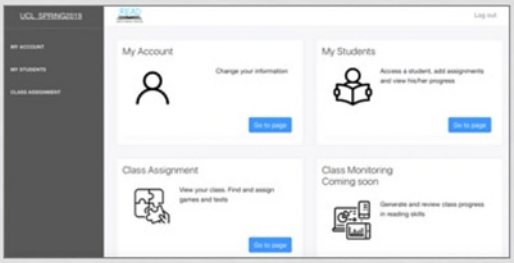



## GOALS FOR TODAY'S SESSION

iREAD personalised reading


- Make game/text **assignments** with the teacher tool
- Use the Reader and game **functionality**
- Learn how to use the teacher **manual**

## TEACHER TOOL – WHAT IT DOES




- Assign books and games to class and individual students
- View analytics about the students to understand their progress (not covered today)

## TEACHER TOOL – ACCESS

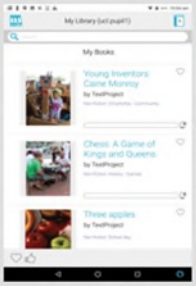
To access the teacher tool:

http://iread.image.ece.ntua.gr/ireadinfrastructuredemo/

- Username: ucl_spring2019
- Password: uclireadteacher

## Amigo Reader ADVANTAGES

iREAD personalised reading



- **Personalised to the child**: Provides pre-reading activities and text highlights that match the child's level
- **Diversity of digital content**: 240 fiction and non fiction
- **Lexical and non-lexical support for reading**: tricky word list reinforces word semantics, GPC, and reinforces child's word reading

## Amigo Reader KEY LEARNING AREAS

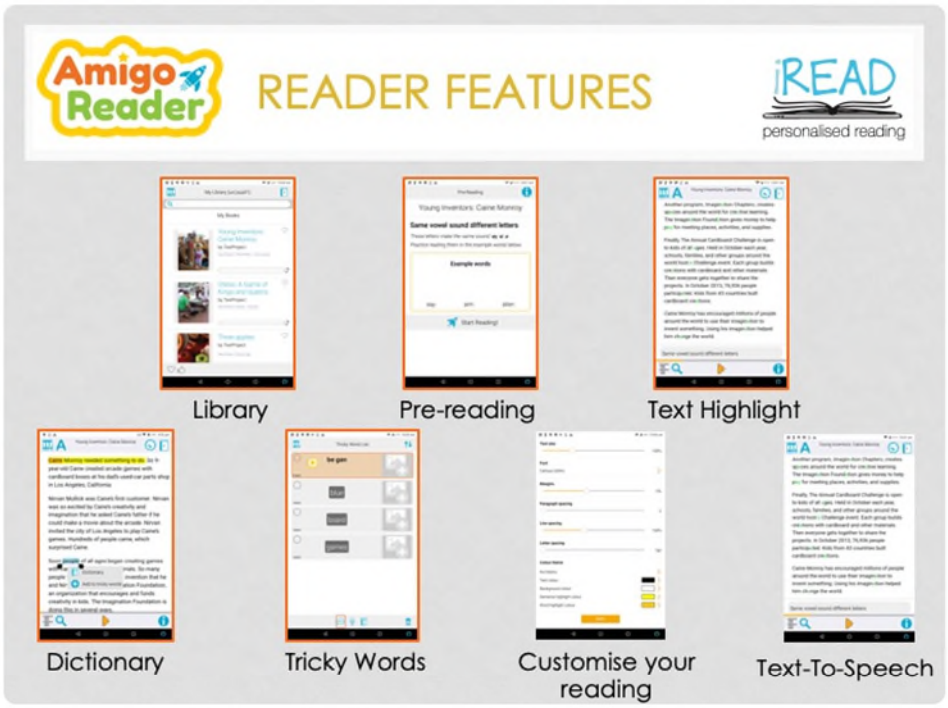
iREAD personalised reading

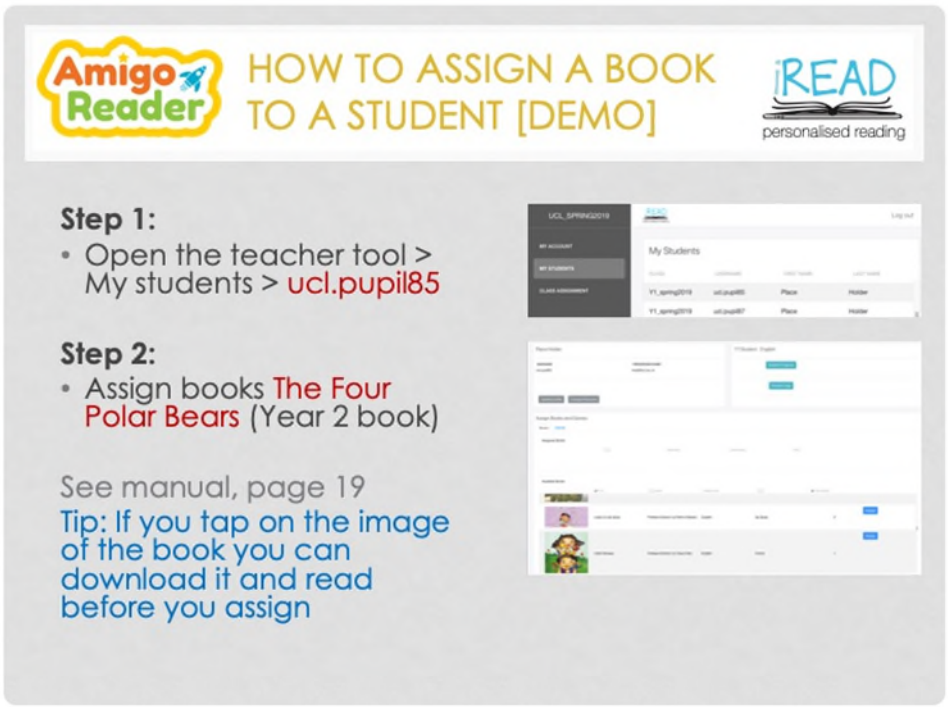
**Decoding Words: Phonic Skills and Blends**

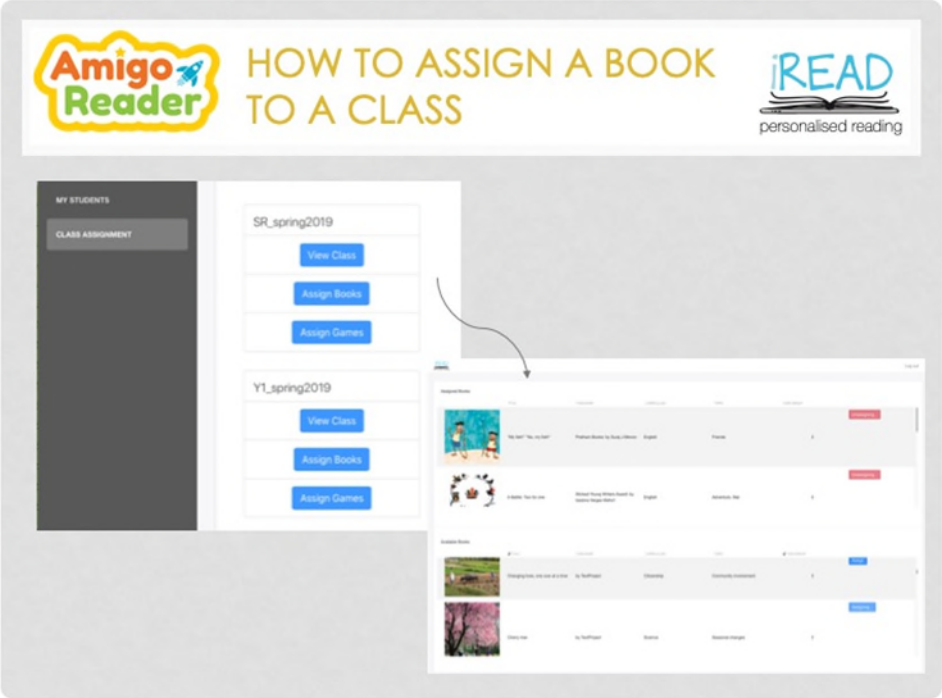
- Consonants
- Vowels
- Consonant Digraphs
- Vowels Digraphs and Trigraphs
- Blends

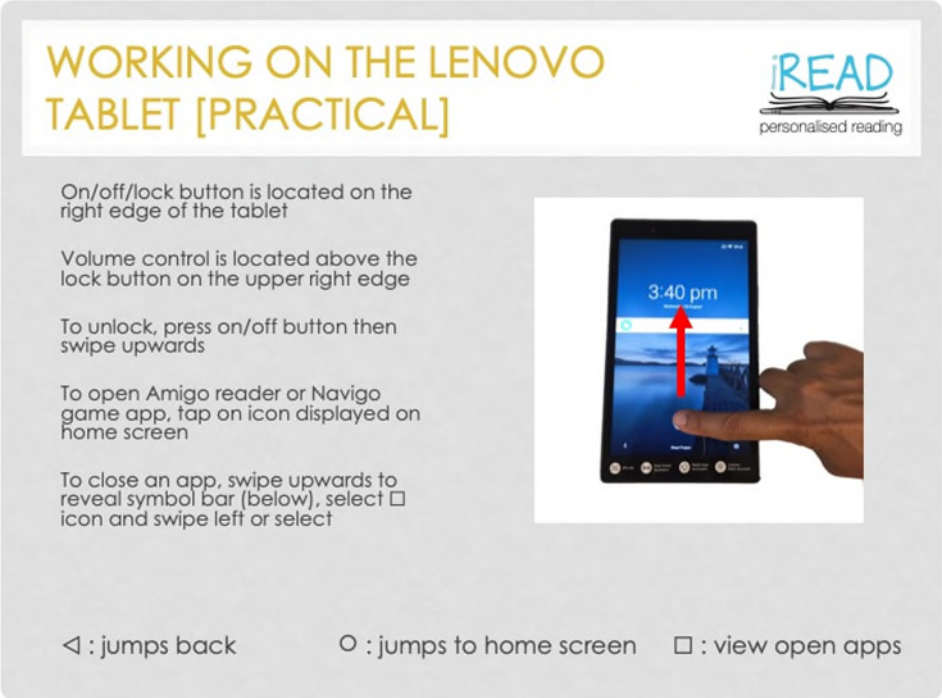
**Using Prefixes and Suffixes**

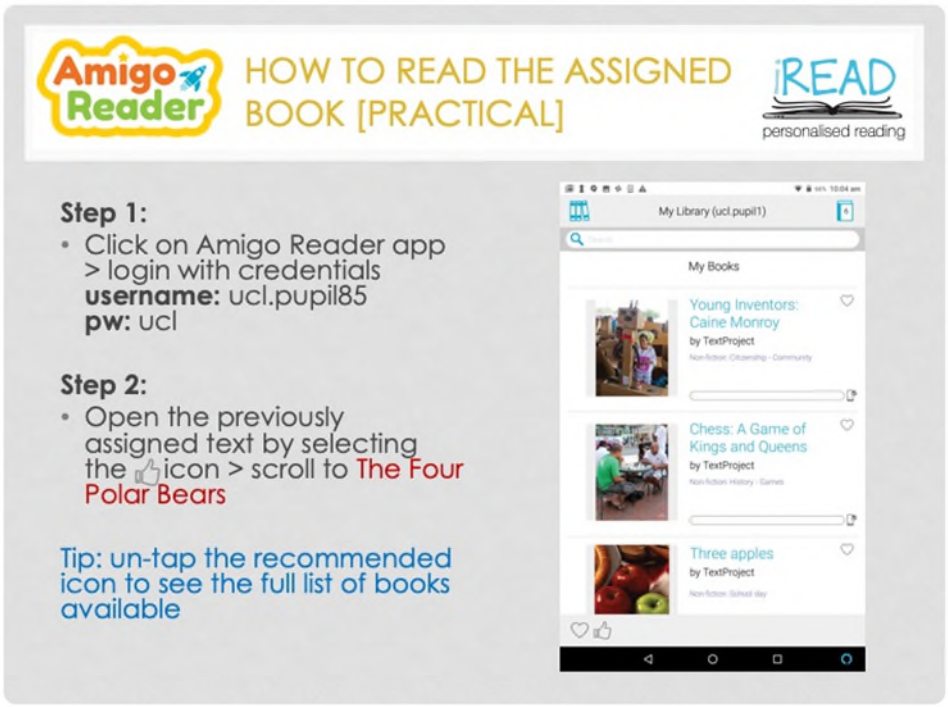
- Prefixes
- Suffixes

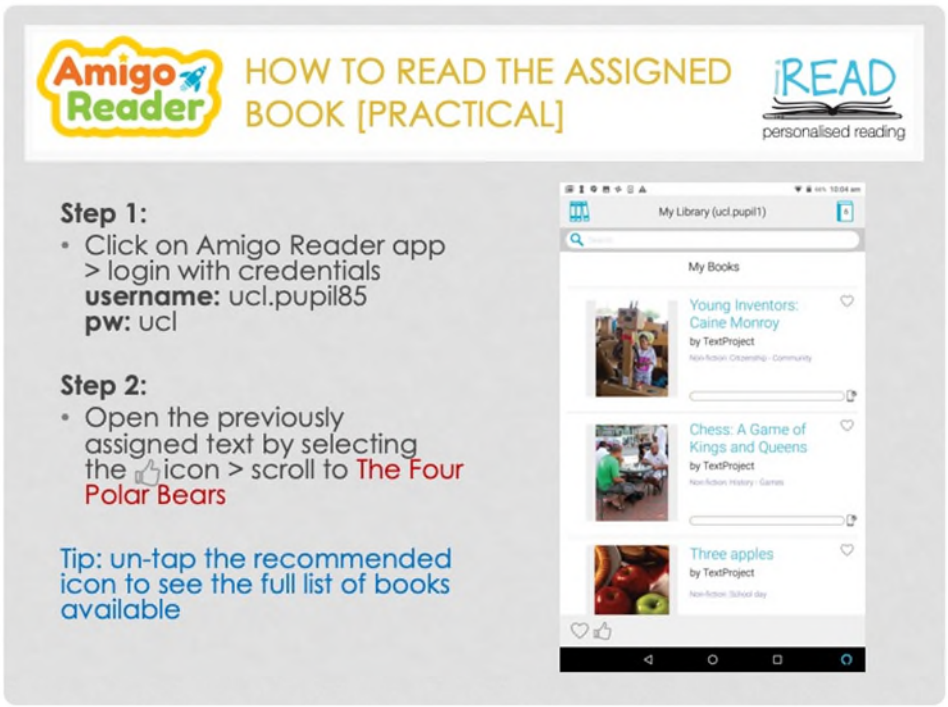

Amigo Reader
READER FEATURES
iREAD
personalised reading
Library
Pre-reading
Text Highlight
Dictionary
Tricky Words
Customise your reading
Text-To-Speech


Amigo Reader
HOW TO ASSIGN A BOOK TO A STUDENT [DEMO]
iREAD
personalised reading
Step 1:
• Open the teacher tool > My students > ucl.pupil85
Step 2:
• Assign books The Four Polar Bears (Year 2 book)
See manual, page 19
Tip: If you tap on the image of the book you can download it and read before you assign
My Students


Amigo Reader
HOW TO ASSIGN A BOOK TO A CLASS
iREAD
personalised reading
MY STUDENTS
CLASS ASSIGNMENT
SR_spring2019
View Class
Assign Books
Assign Games
Y1_spring2019
View Class
Assign Books
Assign Games


WORKING ON THE LENOVO TABLET [PRACTICAL]
iREAD
personalised reading
On/off/lock button is located on the right edge of the tablet
Volume control is located above the lock button on the upper right edge
To unlock, press on/off button then swipe upwards
To open Amigo reader or Navigo game app, tap on icon displayed on home screen
To close an app, swipe upwards to reveal symbol bar (below), select ☐ icon and swipe left or select
3:40 pm
◁ : jumps back
○ : jumps to home screen
☐ : view open apps

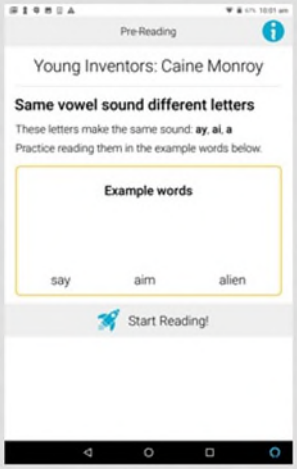

Amigo Reader
HOW TO READ THE ASSIGNED BOOK [PRACTICAL]
iREAD
personalised reading
Step 1:
• Click on Amigo Reader app > login with credentials
username: ucl.pupil85
pw: ucl
Step 2:
• Open the previously assigned text by selecting the icon > scroll to The Four Polar Bears
Tip: un-tap the recommended icon to see the full list of books available
My Library (ucl.pupil1)
My Books
Young Inventors: Caine Monroy
by TextProject
Chess: A Game of Kings and Queens
by TextProject
Three apples
by TextProject


Amigo Reader
HOW TO READ THE ASSIGNED BOOK [PRACTICAL]
iREAD
personalised reading
Step 1:
• Click on Amigo Reader app > login with credentials
username: ucl.pupil85
pw: ucl
Step 2:
• Open the previously assigned text by selecting the icon > scroll to The Four Polar Bears
Tip: un-tap the recommended icon to see the full list of books available
My Library (ucl.pupil1)
My Books
Young Inventors: Caine Monroy
by TextProject
Chess: A Game of Kings and Queens
by TextProject
Three apples
by TextProject

## PRE-READING AND HIGHLIGHT FEATURE [PRACTICAL]

**Step 1 (pre-reading):**

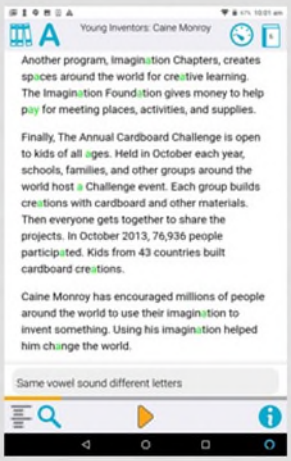
- The Reader recommends a personalized pre-reading activity
- To change it, tap on the ℹ icon on the right hand corner
- Select 'Learning Topic': Same vowel sound different letters
- Select 'Language Feature': (29) vowel digraph, /i/ -ee
- Click on 'Start Reading' to enter text




## PRE-READING AND HIGHLIGHT FEATURE [PRACTICAL]

**Step 2 (highlight):**

- When reading the text, tap the ℹ icon to highlight the target feature
- Toggle the icon to switch it on/off

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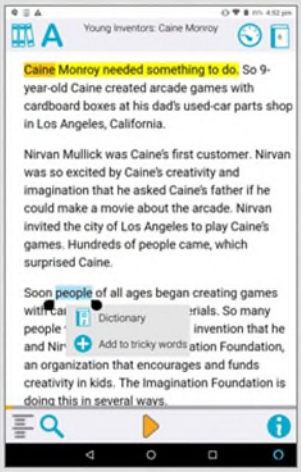
## TRICKY WORD ADDITION / DICTIONARY [PRACTICAL]

**Step 1:**
- When reading a text, tap on the word 'iceberg'

**Step 2:**
- Tap on the dictionary icon > pop up screen shows the meaning

**Step 3:**
- Tap on + to add to tricky word list
- Tap on icon on top right hand corner to enter the tricky words




18

## USING THE TRICKY WORD LIST FEATURE [PRACTICAL]

**Step 4:**
- Practice breaking down the word into syllables by selecting the abc icon

**Step 5:**
- Add an image for the selected tricky word

**Step 6:**
- Record a personal version of the word using icon (the microphone is at the bottom of the tablet)

**Step 7:**
- View the word within a sentence using icon


19

## Amigo Reader COLLABORATIVE ACTIVITY USING A LESSON PLAN

iREAD personalised reading

- Work in pairs
- Choose a lesson plan for your Year Group
- Use the Teacher Tool to assign the correct texts
- Use the tablets to access the texts and complete the activity as your students would do
- *Repeat the activity with the second lesson plan if there is time*

See manual, page 36 for full lesson plans

## Navigo ADVANTAGES

iREAD personalised reading

- **Personalised to the child**: Provides content (words) and games (activities) that match the child's level
- **Transferability**: More than 900 games – the ability to practice a learning aim through different games
- **Exposure to language**: Using a dictionary of 12,000 words rather than limited word lists and 1,000 sentences
- **Scaffolding:** Provides task feedback when the child makes an error
- **Motivation**: Game rewards and avatar construction

21


Navigo
KEY LEARNING FEATURES
iREAD
personalised reading
Decoding words : Phonic skills and blend
Consonants
Vowels
Consonant Digraphs
Vowel Digraphs and Trigraphs
Blends
Chunking Words
Syllables
Recognising Words
Common Sight Words
Confusing letters
Using Prefixes and Suffixes
Prefixes
Suffixes
Using Suffixes and Grammar
Verb Tenses
Comparative Adjectives
Superlative Adjetives
Superlatives and Comparatives
Plurals
Using grammar
Articles
Determiners
Adjectives
Pronouns
Prepositions
Adverbs
Using grammar
Wh- Questions
Yes/No Questions
Passives
Modal Verbs
Negations
Complex Sentences


Navigo
15 GAME PUZZLES
iREAD
personalised reading
Perilous Paths
Cleomatchra
Crocotiles-Timed
Watch Your Step
Raft Rapide Fire
Crocotiles
Cogelisk
Sliceophagus
Anubrick
Saheara
Remove The Runes
Hearoglyphs
Bridgyptian
Cart-astrophe
Pillar Pusher

## LEARNING PHASES

| Accuracy | Constructing and Manipulating | Automaticity |
|---|---|---|
| Understand and apply the correct linguistic rule | Use and combine different linguistic rules in context | Development of reading fluency |

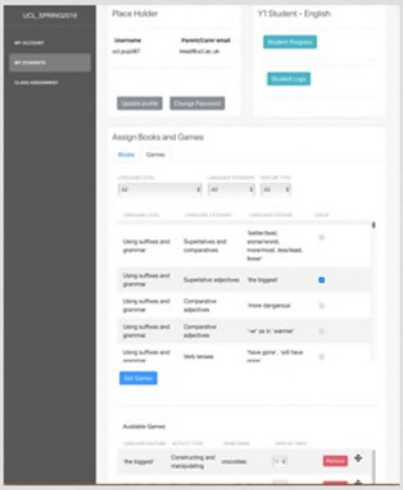
## HOW TO ASSIGN A GAME TO A STUDENT [DEMO]

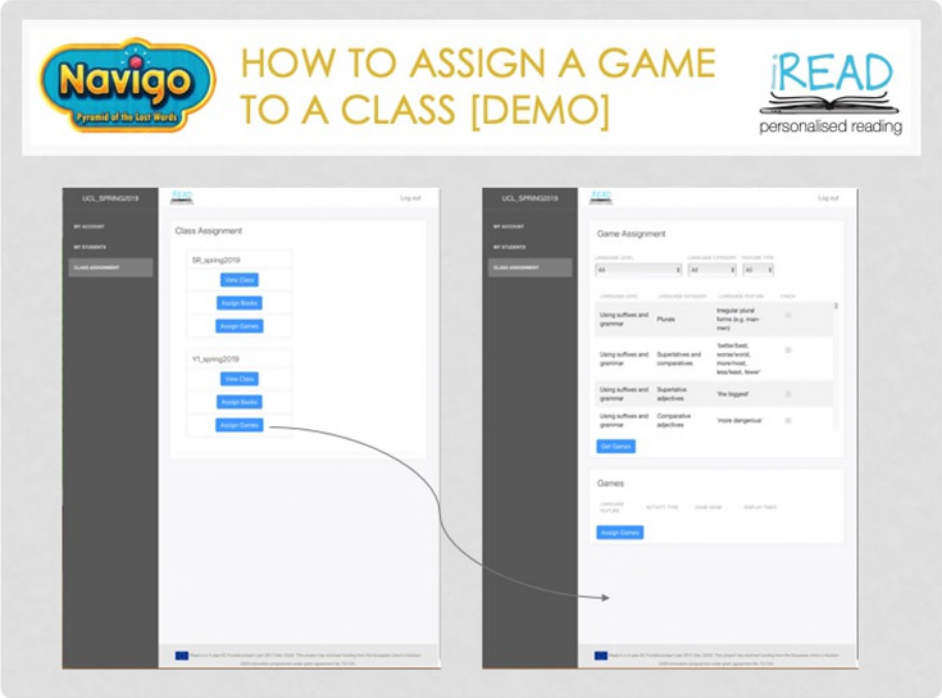
**Step 1:**
- Open the teacher tool > My students > ucl.student1

**Step 2:**
- Select 'games' tab

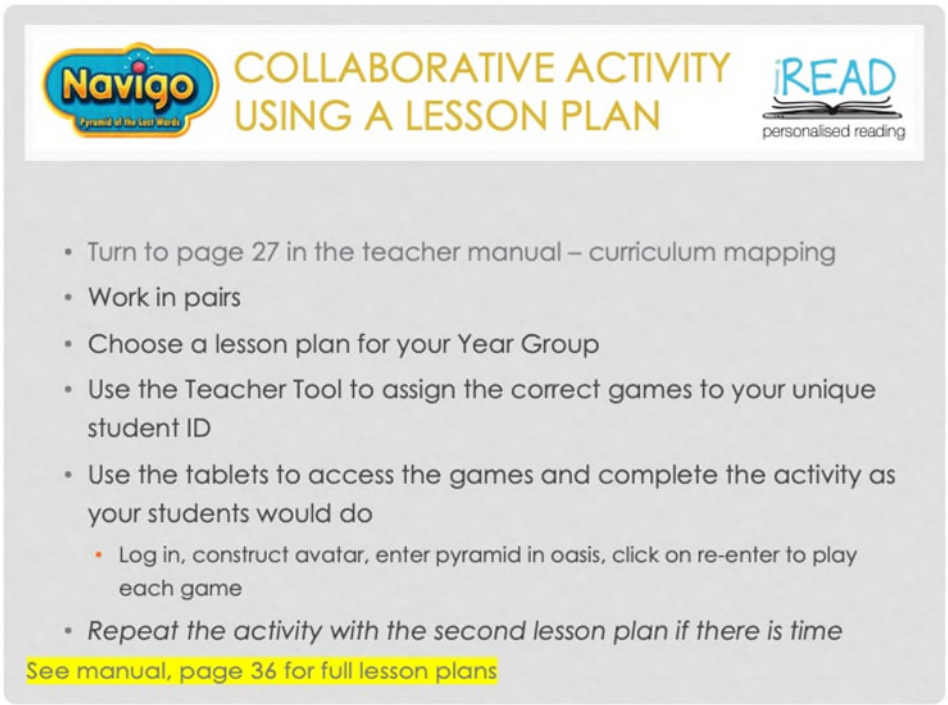
**Step 3:**
- Language level > pick 'Decoding words'
- Language category > pick 'Phonics skills'
- Feature type > 'Consonants'
- Check '/f/ as in fan'
- Select 'Get games' – games appear below, select activity type
- Select relevant games by pressing 'Assign games'

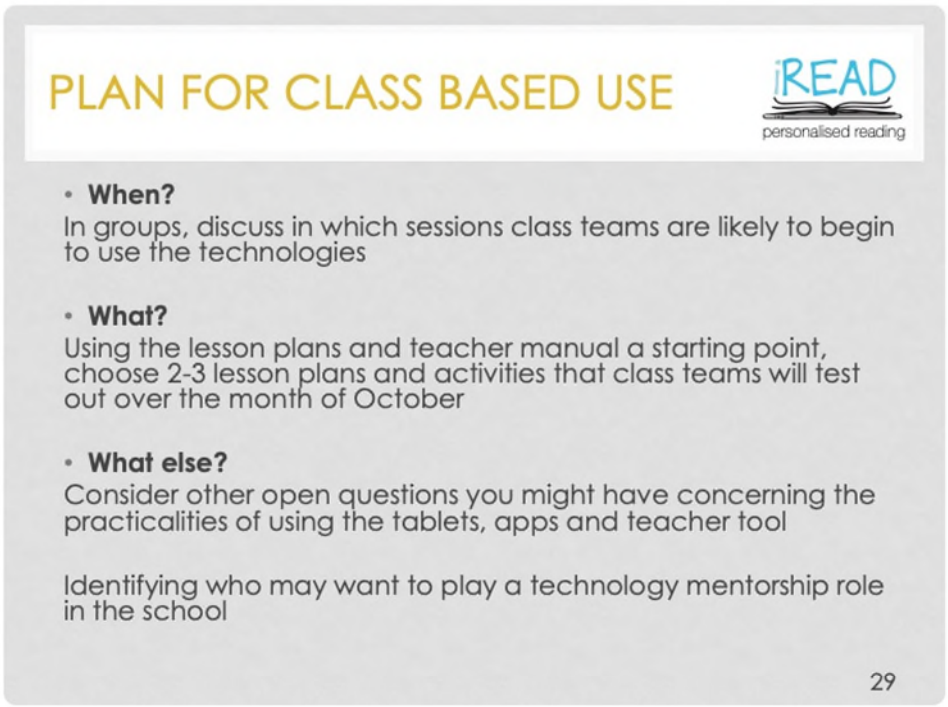
See manual, page 22 and 26

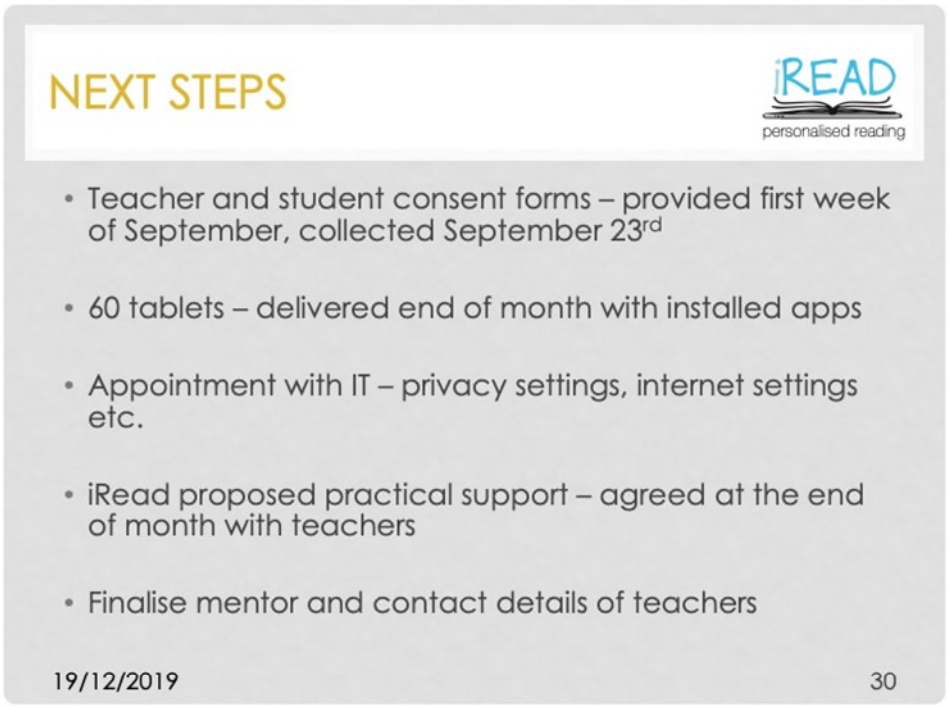



Navigo
Pyramid of the Lost Words
HOW TO ASSIGN A GAME TO A CLASS [DEMO]
iREAD
personalised reading
Class Assignment
Game Assignment
Games


Navigo
Pyramid of the Lost Words
HOW TO PLAY THE ASSIGNED GAME
iREAD
personalised reading
Step 1:
• Click on Navigo app > login with student credentials
Step 2:
• Follow the introduction and design your avatar
Step 3:
• You land on an oasis > walk towards the steps to enter the pyramid > the child then reaches the games that you have assigned them
Step 4:
• Turn off music. Play the 2 games > after each game press 're-enter'


Navigo
COLLABORATIVE ACTIVITY USING A LESSON PLAN
iREAD
personalised reading
• Turn to page 27 in the teacher manual – curriculum mapping
• Work in pairs
• Choose a lesson plan for your Year Group
• Use the Teacher Tool to assign the correct games to your unique student ID
• Use the tablets to access the games and complete the activity as your students would do
• Log in, construct avatar, enter pyramid in oasis, click on re-enter to play each game
• Repeat the activity with the second lesson plan if there is time
See manual, page 36 for full lesson plans


PLAN FOR CLASS BASED USE
iREAD
personalised reading
• When?
In groups, discuss in which sessions class teams are likely to begin to use the technologies
• What?
Using the lesson plans and teacher manual a starting point, choose 2-3 lesson plans and activities that class teams will test out over the month of October
• What else?
Consider other open questions you might have concerning the practicalities of using the tablets, apps and teacher tool
Identifying who may want to play a technology mentorship role in the school
29


NEXT STEPS
iREAD
personalised reading
• Teacher and student consent forms – provided first week of September, collected September 23rd
• 60 tablets – delivered end of month with installed apps
• Appointment with IT – privacy settings, internet settings etc.
• iRead proposed practical support – agreed at the end of month with teachers
• Finalise mentor and contact details of teachers
19/12/2019
30

## 7.3 Appendix C Summary of outcomes from CPD partner discussions.

**Relationships**

*What worked well:*

- Developing key relationships with leading school staff created a feeling of moving forward (UCL)

*Challenges:*

- Online community groups established by partners did not enhance dialogue amongst participating teachers despite initial excitement. Partners reported only a few participants contributing to closed Facebook groups created for teachers with mainly partners themselves initiating and engaging in conversation (UGOT, Spain, LP Doukas).

**Scheduling**

*What worked well:*

- In addition to group sessions, including one-to-one sessions between teachers experienced in using Navigo with new teachers supported CPD (Spain and Ioannina)
- Having extended CPD over time e.g. not just a one-off session but flexible approach to adding follow-up with teachers (UCL).

**Strategies**

*What worked well:*

- Having a flexible approach to CPD based on teachers' preference supported CPD. This included editing the manual from the teachers' mindset and developing new CPD resources drawing from the manual including (1) instructional videos, (2) a classroom poster, and (3) a curriculum mapping document. Other supportive strategies included email instructions and video chats with teachers (UCL).
- Teachers experienced in using Navigo modelled technology use to new teachers successfully supporting training (Spain and Greece Ioannina). Modelling included class demonstrations, showing how to combine games and texts during the class sessions, and in some cases showing the teacher tool in class and one-to-one sessions supporting sustained engagement over time (Spain).
- Training was enhanced by opportunities created for schools to share experiences about how other schools have used Navigo, for example about optimal group size for technology use in the classroom (UCL).
- Agreeing on future follow-up dates and activities during CPD sessions supported training and relationship with school (UCL).
- Creating a team responsible for troubleshooting helped meet schools' needs and enhanced technology adoption and use in the classroom (UCL)

**Training content**

*What required adapting:*

- The time restrictions with teachers meant that CPD content needed to be focused (UCL). However, initial CPD sessions and PPT were perceived as having too much information and goals packed into one session by teachers (UCL). Subsequently, the CPD PPT was abbreviated and adjusted to what suited the needs of teachers at different phases of CPD (UCL and UGOT). The following changes were made: adjusting PPT for smaller groups of teachers involved (UGOT) and excluding information addressed to new schools that was redundant for those continuing (UCL).

*Challenges:*

- There was a lack of independent exploration of the teacher manual and an overreliance on research team (UCL, LP Doukas and Ioannina), with only a few teachers using teacher tool to assign games (UCL). Furthermore, teachers found it difficult to apply Learning Designs in the classroom (LP Doukas) and reported inability to make connections between designs, classroom practice and dyslexia (UCL) suggesting that teacher manual had not been used by all teachers.

**Ongoing Support**

*Challenges:*

  - Some teachers were less motivated to engage with the technology, and one partner listed two reasons for this: schools' initiating teacher participation instead of teachers themselves signing-up, and not being to have the tablet for their own personal use (Greece Ioannina)
- Teachers found it difficult to apply Learning designs in the classroom (LP Doukas). One partner reported teachers perceiving learning designs as "hypothetical" and a prospect of adopting a new line of pedagogical reasoning was perceived as challenging and affected teachers' perceived autonomy over classroom practice (UGOT). The partner thought enabling teachers to familiarise themselves with Learning Designer online before CPD could have helped (UGOT). However, this was described as a strategic choice by another partner to save teachers from having to use another online repository for CPD – the Learning Designs were available in the manual instead (UCL). Overall, this posed questions around how to address the question of transferability and re-usability of learning designs (UCL).
  - One partner found it challenging to gauge teachers' confidence in using the technology at different times of CPD (UCL).

**Personalising CPD**
*What required adapting:*
- Identifying what teachers would like to learn more about, and areas they find challenging with a check list helped develop a flexible and personalised approach to CPD that supported teachers' and schools' overall goals. This was found supportive as some schools wanted to augment what they were already doing without adopting a whole new practice (UCL).
- Developing an analytics tool to understand how tablets are used in class, e.g. how regularly children used the tablet and how many teachers were using them to help identify schools that could benefit from re-engagement or additional training. (UCL)
- Adapting the curriculum mapping document helped teachers to date when they had assigned a language feature in the game and keep track of what language functions had been covered (UCL).

**CPD format**
*What required adapting:*
- Starting with small group and moving to a class level where appropriate ensuring the pragmatic aspects of CPD worked at each different stage (UCL)
- Recruitment strategy for 2020 changed CPD focus and order in which elements of CPD were incorporated during training. Achieving practical orchestration first and subsequently developing pedagogical use was a novel approach that helped break CPD into smaller, more focused and digestible topics. Thus, building towards full technology use through small steps supported CPD. As a practical example, in the adjusted CPD format the technology was presented to teachers right from the beginning of the session as a hands-on approach, and teacher tool was introduced only after this (UCL).
- Teachers were given the opportunity to open dummy accounts to enhance engagement in-between sessions and increase opportunities to become familiar with the technology (UCL and LP Doukas)
- Abbreviated CPD format (see Training Content for more information)

**Teacher Concerns**
*What was learned:*
  - Teachers felt overwhelmed with the number of digital technologies they needed to adopt for their work due to the pandemic which contributed to or may have exaggerated an already existing lack of motivation (British Council/EFL and UCL)
  - Teachers were worried about understanding and using the teacher tool which resulted in lack of motivation to engage with the tool (Greece LP Doukas)

**Researcher support**
*What was learned:*
  - Being clear about communication channels for continued support and how much of it is available supported CPD (UCL)
  - Setting up class groupings required discussion with teachers (UCL)

**School context**
*What was learned:*

- Professional training that happens over a longer period of time tended to be more effective than having one-off sessions with teachers. Schools with an existing CPD policy and setup in place could implement new learning into an existing structure and follow-up sessions thus increasing chances of successful training. Some schools in the UK had implemented a structured approach to CPD using an existing framework supporting CPD activities while others only used staff meetings. (UCL)
- Having school senior leadership on board supported CPD delivery (UCL).
- There was a need for leadership model for supporting professional development (communication) in schools. Some schools allocated Teaching Assistants (TAs) who were not given agency over planning were less confident in introducing the technologies in class. There were also added workload pressures. Teachers needed responsibility in order to gain ownership over technology use in the classroom. (UCL)
- Being flexible about the different pilots that teachers joined (e.g. by creating different accounts) was important for schools where teachers took part both in the Greek and the EFL pilot, however, it was not straightforward to do this when a teacher was not part of the iRead project (LP Doukas)
- Researchers spent a lot of time supporting and demonstrating the application in the classroom resulting in time management issues (British Council/EFL) and a reliance on ongoing support (UCL). This was further developed into an idea of further exploitation of CPD under work package 9 to develop a service that could be offered to schools (UCL).

**Future ideas**

- Video walk through of the teacher manual as teachers feel more confident when the guidance is offered through videos (UCL and LP Doukas)
- Incorporating CPD best practice theory and frameworks to inform structure of CPD (e.g. Cordingley et al.) especially to those schools with no CPD policies or setup ready at the start of the project (UCL)
- Involve teachers and pupils to do some short videos on “How to do …” (UCL)
- Before using iRead apps at school, it could be beneficial to include more mandatory CPD sessions for teachers (Ioannina)
- GDPR was flagged as an important issue to be incorporated in the future CPD training package given several schools had questions about this (UCL and LP Doukas). Schools received enquiries from parents worrying for example about sharing information about students’ addresses being passed on. Schools passed these queries on to project partners (LP Doukas). One partner reported some schools reporting as not having been able to alleviate concerns with information about GDPR available (LP Doukas). One school asked all students’ names to be anonymised which may have caused difficulty in using the teacher tool. No participants dropped out or opted out as a result of GDPR concerns (LP Doukas).

  At present, iRead apps being standalone, they cannot be integrated with existing teacher online platforms. However, teachers working at multiple locations using different platforms for online tools could benefit if it was possible to integrate apps across such platforms in the future (British Council/EFL).