# *Integrated intelligent LEARNing environment for Reading and Writing*
# *D7.1 – Evaluation plan*

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| Abstract | This report outlines evaluation aims and implementation plans in Greece and the UK. Research questions, data collection methods, |

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| | interpretation methodology and logistics are described in detail with appendices illustrating the tools used. This report outlines both large scale programme evaluation and the more exploratory design-based research evaluation. It also mentions evaluation efforts conducted in Malta. |
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Project information

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# 1. Introduction

The educational aims of ILearnRW are to enhance reading and writing skills of children with dyslexia, emphasizing on metalinguistic, memory skills and independent learning. These skills are addressed through a set of educational games designed to enhance morpho-phonological knowledge and memory skills and facilitate transferable skills and over-learning. The games are supported by a number of unique features like the personalized user profile and the Reader (described in Deliverable 6.2).

In order to ensure that the designed system will be able to fulfill the intended educational aims, a long process of evaluation has commenced since month 18 of the project. A software prototype has undergone a preliminary formative evaluation in both the UK and Greece, aiming to provide useful information on technical issues of usability and functionality. The feedback from this first evaluation phase has been used by the technical partners of the project in order to produce a revised, richer, close-to-final version of the software, which will be used for the final evaluation that is expected to commence in October 2014. The final evaluation of the software sets out to explore both usability/functionality as well as educational aspects of the system, ultimately aiming the answer the question as to whether the software is able to fulfill the purpose it was designed for.

In addition to the evaluation being conducted in the UK and in Greece, our consortium has recently been invited by the Maltese Ministry of Education to participate in its One Tablet Per Child initiative with regards to the game component of the iLearnRW software. The aforementioned tablet scheme will be piloted in Malta between November 2014 – March 2015. During this time, the University of Malta team, supported by the Maltese Specific Learning Difficulties (SpLD) Service from the Directorate for Quality and Standards in Education is expected to run an extra evaluation in Malta, informed both by the design-based research evaluation and the programme evaluation. As the intention of the scheme is to incorporate the use of tablets into the primary school system, we see this as an opportunity to observe first-hand how the game can and will be used in teaching environments that are already predisposed towards tablet use. Furthermore, the consortium will be in a unique position to gain insight into what happens when the iLearnRW software is rolled out across a country with regards to pedagogical, philosophical, cultural, technical, and infrastructural aspects.

The following document is structured as follows: *Section 2* describes the formative evaluation process, as it was conducted in the UK and in Greek; *Section 3* includes an introduction to the final evaluation process, providing a comparison between the two major aspects of this process, the *Literacy Instruction-based Evaluation*, conducted by Epirus in Greece and DYSACT in the UK, and the *Research Design Evaluation*, carried out by IoE. *Section 4* gives a detailed description of the Literacy Instruction-based Evaluation, as it has been designed to take place in Greece and in the UK, including relevant timetables. Finally, *Section 5* provides an account of the Research Design Evaluation.

# 2. Formative evaluation

A formative evaluation process was run in spring and summer 2014 in both the UK and Greece to test a prototype version of the software, aiming to perform a preliminary evaluation of the software usability.

## 2.1. Greek setting

### *2.1.1. Aims*

The objective of the formative evaluation was to perform a preliminary evaluation of the software usability, functionality and efficacy in enancing the willingness and self-confidence of children with regards to reading and writing difficulties, aiming to contribute to the development of the final version of the software.

### *2.1.2. Setting*

The formative evaluation was undertaken with two different groups of participants (pupils and undergraduate students) at the laboratory of Specific Learning Difficulties in the Department of Speech and Language Therapy of TEI of Epirus.

### *2.1.3. Participants*

In the process of the formative evaluation the following participants were recruited:

- 3 male 9-11-year-old pupils diagnosed with dyslexia,. They were selected by their teachers from three schools of the city of Ioannina. All of them had followed a specific intervention programme applied in the entrance classes of their schools during the last three years.
- 10 (8 female and 2 male) 21-year-old university students at the Department of Speech and Language Therapy in Ioannina. All students were asked to participate in the research and they would get a certification of participation in return.

The students of the Department had successfully passed the courses of "New Technologies applications in Education" and "Specific Learning Difficulties/Dyslexia" and after a call for participation, 10 students expressed an interest to participate in the phase of the formative evaluation of the software.

All the users participated in two sessions, which were held in separate days, under the supervision of two members of the research team of TEI of Epirus.

### *2.1.4. Methodology*

Two different protocols were applied for each group:

#### a. Group of pupils:

In the first session, the children along with their parents were informed about the general scope of the research, the aims and the content of the software. Parents were asked to complete a consent form (Appendix_1) giving permission to their child's participation in the sessions. In addition, each child

was provided with a consent form especially, designed for their age group (see Appendix 1 for Greek consent forms). In the second session, all the children worked in groups (at the lab of Learning Difficulties of TEI of Epirus). They were given explanations of the nature of the games and they run the games in separate PCs. Having tried out each game, the children had to fill in questionnaires about what they liked or disliked about the game, the way of playing the games, the possible learning outcomes of it and to suggest ideas for the game improvement. Even though the children asked whether they could play each game more than one time, each game was played only once. A researcher of the team of TEI of Epirus supervised the whole game-playing session in order to support or engage the children in the gameplay as well as to take keep notes about the whole procedure and the children's experience. The second session lasted approximately 1 and a half hour.

### b. Group of students:

Students participated only in one session, in which they were given explanations about the nature and the aims of the software in general and of each game individually. They were asked to run all the games and, afterwards, then they had to complete a short questionnaire (Appendix 1), including questions about the usability, the functionality and the adequacy of the games and the software in total. The students were observed by a researcher of the team of TEI of Epirus, who helped them and took notes about any problems they faced and any comments mentioned on the games. The session with the students lasted approximately 1 hour.

## *2.1.5. Results*

The findings raised from the formative evaluation sessions defined all these qualifications that the final type of the software should fulfil, as following:

### a. Improvement of specific learning skills:

The whole structure and the context of the games aims to strengthen the mechanisms of memory, (meta)cognition and multisensory perception, in order to facilitate activation of sufficient automatic learning strategies of reading and writing disorders.

Aiming to the above, most findings lead to the following suggestions:

- specific learning outcomes should be acquired during playing the games;
- no obscure instructions should be given;
- immediate verification for the correct answer should be given;
- consistency between games should be ensured;
- appropriate feedback should be given for every incorrect answer;
- pleasant music and joyful graphics and features are essential.

### b. Enhancing willingness and self-confidence:

The main goal of the software is to encourage independent learning, inspiring the child to continue to move from level to level and from game to game. Thus, the child keeps his self-confidence high and is motivated to achieve new, even more difficult targets.

Achieving the above, common findings led to the following suggestions:

- all the games should be interesting and fun;

- the possibility of personal choice of heroes should be given;
- game rules should be very clearly explained;
- games should enhance the feeling of accomplishment of the final goal;
- acknowledgment and praise for each correct answer should be given;

## 2.2. UK setting

### *2.2.1. Setting*

A usability evaluation was undertaken with groups of children at:

- two state primary schools in the UK,
- at two iLearnRW open days held at the University of Malta

In addition to this a separate usability evaluation was undertaken with a group of teachers who were undertaking a masters degree in specific learning difficulties (SpLD) - specializing in dyslexia, at the Institute of Education, UK.

### *2.2.2. Participants*

Within the UK 8 children participated, 4 male and 4 female all of whom were 9-10 years old. Two of the children had received a formal dyslexia diagnosis and all of the children received additional support for literacy difficulties. The male students participated in one session while the female students participated in two sessions.

Within Malta 4 children participated, 3 male and 1 female aged 7-12 years old. Three of the children had a dyslexia diagnosis.

Twenty-four teachers participated from the masters degree course. All of the teachers were fully qualified, based in a UK school and were working towards a qualification that enables them to be specialist teachers or practicing assessors of pupils with dyslexia. They had all already completed the theoretical part of their course, which included units on Understanding SpLD (dyslexia) and Evidence-based practice in SpLD (dyslexia).

### *2.2.3. Methodology*

The sessions with the children all followed the same protocol and lasted approximately 1 hour. Firstly the nature of the sessions was explained to the children and they were asked if they would like to participate, informed that they would be audio recorded and if they were happy to do so to complete the provided consent form (see Appendix 2). Each child's parents/guardians had also been given permission prior to the start of the session. The children worked in pairs around a single tablet and were given a worksheet that detailed 3-4 tablet-based games that they were asked to trial. After trying out each game the children completed a questionnaire asking what they thought about the game, whether they had any problems with playing the game, if they learned anything from playing it and if they had any ideas for improvement. The children also participated in a short discussion at the end of the session to allow them to expand on these responses verbally. Whilst the children were interacting with the games, a researcher also observed them and took written notes detailing whether they had any specific problems, if they had to ask for help, how engaged they were during the session and whether the were able to successfully complete the games.

The session with the teachers lasted approximately 1 hour. The nature of the session was explained to the teachers and they were asked if they were happy to participate and to be audio recorded. If they were happy to do so they were asked to complete the provided consent form (available in Appendix 2). All of the teachers gave their informed consent. The teachers were firstly introduced to the concept of heuristic evaluation, using Nielson's (1994) heuristics of user interface design:

- Visibility of system status
- Match between the system and real world
- User control and freedom
- Consistency and standards
- Error prevention
- Recognition rather than recall
- Flexibility and efficiency of user
- Aesthetic and minimalist design
- Help users recognize, diagnose and recover from errors
- Help and documentation

Next small groups of 3-4 teachers were provided with a tablet and a worksheet specifying a subset of the games for them to evaluate. They were also asked to complete a provided heuristic evaluation form for each of the games that helped them identify potential usability issues for a child with dyslexia. Each group was also audio and screen recorded using an app that had been installed on each of the tablets.

### *2.2.4. Findings*

In addition to identifying minor bugs with the games, these evaluation sessions also allowed us to produce a set of guidelines to ensure our software was dyslexia-friendly. The audio transcripts were examined alongside the written notes that the teachers made during the sessions and any implications for the software design identified within these were noted. These implications were then used as the basis for the design guidelines then structured using the features of specialist dyslexia teaching specified within the Rose Report (2009). We now present these guidelines that were used to guide the development of the final prototype software.

#### c. Structure:

There should be small steps with explicit links as well as a logical progression within the software, to help maintain focus, enabling an understanding of the learning process as well as allowing children to utilize previously learned skills and strategies.

- A series of short focused activities is preferable to a longer more complex activity as children with dyslexia can become tired and/or distracted more easily. This also provides more opportunities to experience small successes instead of potentially getting one thing wrong and failing the entire activity.
- At the start of any learning activity the learning aim should be made explicit to ensure children understand why they are undertaking the activity, what it will achieve and how it links to previous activities they have completed.
- Beware of mixing multiple skills within a single activity as this can become confusing for children with dyslexia who have multiple difficulties – where possible, focus on a single skill.

### d. Multisensory:

The learning activities within the software should engage multiple senses by including visual, auditory, kinesthetic and tactile elements where appropriate.

- Use images to support text to reinforce the meaning of what is being read and provide hints/prompts where children experience reading difficulties.
- Choose a dyslexia-friendly font that is plain, evenly spaced and sans serif, e.g. Century Gothic, Comic Sans; and a large font size to make it easier to read.
- Make sound optional during learning activities for children who may find it distracting.

### e. Metacognition:

The software should provide opportunities to reflect on learning, such as through the provision of detailed feedback or by including the flexibility to practice and evaluate different learning strategies/approaches.

- If a child fails an activity, highlight where the failure occurred, why and suggest what could be done about it next time to help them understand how to improve. Also allow opportunities to recover from errors.
- If a child completes an activity correctly, provide feedback to explain why it was correct to enable them to reapply the same skills/strategies in future.
- Integrate some form of scoring mechanism to provide a measurement of progress, to allow the child to reflect on their learning.

### f. Memory:

The software should be designed to reduce information overload and avoid any unnecessary burdens on memory.

- Keep any supportive text short and simple as well as keeping the screen clutter-free to make it easier for a child to remember what they need to do and not become distracted.
- Make learning activity instructions available during the activity as a reminder for the child in case they forget what they should be doing.
- Provide additional supports for any potential memory difficulties as well as including activities to help build spatial and working memory.

### g. Reinforcement:

Opportunities to practice previously mastered skills should be provided to help reinforce them.

- Allow for multiple attempts at the same activity to help reinforce particular skills as well as provide an opportunity for children to learn from their mistakes.
- Present the same content within different learning activities to reinforce the same skills within a different context.
- Integrate rewards or add on further layers of difficulty to encourage children to return to previously completed activities.

### h. Confidence:

Take into account the low self-confidence and anxiety that children with dyslexia can often experience and enable the building of self-efficacy.

- The usability of the software is paramount, it should be user-friendly and interaction needs to be as straightforward as possible – it is important that a child who is already struggling does not fail an activity because of bad interaction design as this can be extremely damaging.
- Integrate lots of positive and supportive feedback to help build self-confidence.
- Make the timing element of any learning activity optional to ensure children are not put under undue pressure.

# 3. Final Evaluation

The summative evaluation of the software includes two approaches, the *programme evaluation* and the *design-based research evaluation*. The two approaches were conducted in parallel by different members of the research team, setting to explore different aspects of the software use and application but both aiming to investigate the software use and effectiveness in the educational context. The two approaches are described in the following sections.

### *3.1.1. Programme evaluation description*

Programme evaluation is a medium-scale medium-term evaluation of the iLearnRW system as a stand-alone literacy intervention programme. It investigates both how the system will function in the school environment in the context of specialist instruction and at home as an independent study tool. It will investigate both the effectiveness of the system as an instructional tool and an instrument for raising and maintaining motivation of children with literacy difficulties. It will span two countries with two languages and comprise 120 children (60 in each countries). The programme will be delivered through a combination of school-based teacher-supported groups work and independent study at home. The evaluation will collect quantitative data related to student progress as well as their perceptions of the system. The data gathered in this manner will be supported by an analysis of usage logs and qualitative observations gathered from teachers, lesson observations and sample interviews with parents. The evaluation will also provide ongoing feedback to developers regarding usability.

### *3.1.2. Design-based research (DBR) evaluation description*

The DBR evaluation is a small-scale evaluation that intends to investigate in depth the context of use within an existing classroom scenario within the UK. This is important due to the greater amount of autonomy given to UK teachers and the resulting high degree of variation in how the English national curriculum is applied in England. It aims to determine how the iLearnRW software can fit within existing curriculum and teaching practices; explore how given the freedom to choose teachers actually use the software and to identify best teaching practices within this usage; to define the additional support and resources required to enable the successful use of the software by teachers with varying degrees of literacy specialism. This aspect of the evaluation will be undertaken at the very start of the evaluation period, for 2 months, to work alongside teachers from 3 different schools as co-designers of the software intervention, iterating on the intervention at various points in the process to introduce solutions for any issues that have been identified at that point. Predominantly qualitative data will be collected through interviews, diaries and observations, to determine how the software intervention has been implemented and the impact this intervention has had on the specific teaching strategies of the teachers, learning experience of the student and potentially the wider culture of the school. The intention is that the findings from this evaluation will additionally help to inform the later stages of the larger programme evaluation.

### *3.1.3. Comparison chart*

A brief comparison between the two approaches is provided in Table 1.

| | **Programme Evaluation - EPIRUS/DysAct** | **Design-Based Research Evaluation - IoE** |
|---|---|---|
| **Focus/Aims** | How the system works as a stand-along literacy intervention programme in the context of school and home-based study. | How software fits with existing curriculum and teaching practices<br>Explore teacher use of the software and identify best teaching strategies<br>Define additional resources required to support software integration (particularly for non-specialist teachers) |
| **Context** | School-based<br>Specialist teachers<br>Specialist intervention session combined with independent home use | School-based<br>Teachers have varying degrees of literacy specialism<br>Teachers given freedom to choose frequency and form of intervention |
| **Research methods** | Primarily quantitative, with qualitative elements to inform interpretation of quantitative data | Mixed methods with predominantly qualitative focus |
| **Curriculum** | Provide literacy curriculum in the context of existing curriculum | Integrate into existing curriculum |
| **Teacher role** | Conducts small group sessions while providing students with guidance.<br><br>Provides feedback on the utility of the software. | Teachers as co-designers<br>Leads integration of software within existing teaching practices<br>Makes suggestions for changes within later iteration of intervention |
| **Student selection** | Carefully monitored, screened with assistance from schools | Selected by schools within target age group |
| **Period of evaluation** | 6 months (part independent and part teacher led) | 2 months (with multiple iterations of intervention design and teacher involvement throughout) |
| **Scope** | UK / Greece<br>120 students (60 in each country) | UK only<br>11 students |

**Table 1 Literacy instruction-based evaluation and Design-based Research evaluation compared**

# 4. Research design: Literacy instruction-based evaluation

## 4.1. Research questions

This part of the software evaluation aims to test the system use and evaluate a number of aspects, concerning its usability and functionality as well as learning aspects related to effectiveness in improving users' reading skills. A quantitative research design will be mainly used to measure the following dependent variables:

- DV1: Software functionality and usability
- DV2: Specific language skills related to the linguistic categories included in the user profile

The third dependent variable (DV3) involves the learning outcomes of the software use and will be addressed in relation to the following independent variables:

- IV1: Use of software (initial evaluation before software use – final evaluation after use)
- IV2: Teacher guidance (used at school or at home)

The variables described above formulate the following the research questions to be addressed by the evaluation:

**Q1: Is the software usable and functional?**
This question is defined by the following sub-questions:

- Is the software easy to use?
- Are the game instructions clear?
- Is the feedback given in the games helpful?

These questions will be addressed by collecting both qualitative and quantitative data throughout the evaluation process. Both types of data will be collected through three types of sources:

- by observation during the software use;
- by analyzing data provided by the *Statistic Reports App*, an online application provided in the software, which record usability reports and will enable both teachers and the research team to monitor the software use;
- through questionnaires that will be administered to the users, which will include a number of statements addressing the criteria to be assessed, asking them to rate each criterion on a scale between 1 and 5. The content of the questionnaires will be appropriately worded for children aged 9-11 years.

**Q2: Does the software require teacher guidance?**
This question involves the ability of the software for independent use without any teacher guidance. It will be addressed by administering the software to a small sub-group of children, who will be given the opportunity to use the software at home, while parents will be instructed to only encourage the software use without giving any instructions. The non-guided group of children will be screened and assessed using exactly the same language materials (Screening/Re-assessment Tool) and on the same time frame as the guided group so as to enable comparison across groups.

**Q3: Is the software effective in improving users' reading/writing skills?**
This question involves the educational outcomes of the software use. It will be addressed by evaluating the users' difficulties in the language structures included in the user profile as these are manifested in both reading and writing.

## 4.2. Greek evaluation

The evaluation of the Greek version of the software will begin in October 2014. The following research design will be used.

### *4.2.1. Selection of participants*

Two groups of children will be recruited in the study, a teacher-guided group of 60 children and a non-guided control group of maximum 30 children, depending on availability. All children are aged between 9 and 11 years and are students in special education classes in primary schools in Ioannina, Greece. They are all formally diagnosed with dyslexia and/or reading/writing difficulties by state health services. The children will be selected using the following inclusion criteria:

- Monolingual native speakers of Greek
- Typically developing in non-literacy areas
- History of speech/language therapy will be held constant across both groups

All children will be assessed prior to the beginning of the study using the specialized screening tool constructed for the purposes of the study (see below). Children whose performance significantly deviates from that of the cohort, indicating severe difficulties owed to another condition (physiological or mental) will be excluded from the study.

### *4.2.2. Materials*

The following materials will be used to collect the evaluation data.

#### a. Usability / Functionality questionnaires

In order to evaluate the usability and functionality of the software, questionnaires will be distributed to teachers working with the participating children as well as to the children themselves at the end of the intervention phase. The questionnaires that will be given to teachers will include both questions requesting quantitative ratings and open-ended questions, while those given to children will only include rating questions, appropriately worded and providing children-friendly rating scales (e.g. using smiling or frowning faces).

#### b. Hardware: Tablets

Sixty (60) tablets will be used for the evaluation of the software. The tablet specifications are as follows:

- Screen: 7’’ LED 1280x720 IPS Panel
- Hard disk: 8GB
- RAM: 1GB
- CPU: Quad core 1.2 GHz
- Sensors: G-sensor, E-compass, Hall sensor
- Battery: Lithium, up to 10 hrs
- Operational system: Google Android 4

Thirty (30) of the tablets will be used in schools by the teacher-guided group, while the other 30 will be given to the non-guided group to use at home.

### c. Screening and Re-assessment Tool (SRT)

The Screening and Re-assessment Tool (SRT) is a language skills evaluation tool, which will be used to assess the children's skills prior to the beginning of the study as well as to re-assess them after 6 months of software use, so as to establish whether there has been any progress. The SRT will comprise three sections, engaging children in three different tasks.

Section 1 will require oral responses of children, who will be asked to read aloud a number of words, presented to them on paper or on a tablet screen. Section 2 will engage children in an identification task, where they will be presented with words, word pairs and phrases and they will be asked to identify specific language chunks, e.g. letters, syllables, suffixes or prefixes, etc. Stimuli will be presented on paper and children will be required to circle or underline the identified parts on the same paper. Finally, Section 3 will be a spelling test, where teachers will dictate words and short phrases for children to write.

The words used in the screening/re-evaluation tool were selected to match the categories included in the user profile, representing the whole scale of index numbers in each difficulty. To that end, the user profile categories were processed so that the specific instances of each difficulty (i.e. its indexes) were grouped into broader clusters. The grouping was performed based on the linguistic characteristics of each instance (i.e index), so that each cluster contains instances that are very closely related and are most likely to constitute a broader unit in the children's repertoire. An example of the clustering performed on the "Syllable Division" category is illustrated in Table 1, while the whole clustered user profile is available in Appendix 3.

| Clusters | 1 | | | | 2 | | 3 | | | 4 | | 5 | | 6 | | | 7 | | 8 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Difficulty | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Syllable Division | cv-cv | cv-cv | v-cv | cv-cv | vc-c v(c) | cvc-cv(c) | cv-cc v(c) | ccv-c v(c) | ccv-cc v(c) | cv-cc cv(c) | v-cc cv(c) | ιά/ειά | ιά/ίαα | αί/αΐ, εί/εΐ, οί/οΐ | αί/άι, οί/όι | άι, όι (diphthongs) | αι/αϊ, οι/οϊ, ει/εϊ | ου/οϋ, ού/οϋ | α υ/α ϋ, α ύ/α ΰ | ε ύ ω |

**Table 2 Clustering performed on difficulty "Syllable Division"**

Two words from each cluster were included in the screening, so that each child can be tested on words across the whole difficulty scale of "Syllable Division". The same procedure was performed on all language difficulties included in the user profile.

The SRT will be created by the research team experts with the use of the *Screening Test Tool* (see Deliverable 6.2) and administered by teachers during an introductory session (1st week of intervention). Section 1 (oral part) will be administered individually, while Sections 2 and 3 (written) will be administered either individually or in small groups of 4 or 5 children, depending on the school facilities. The duration of the screening procedure will be 10-15 minutes for Section 1 and another 15 minutes for Sections 2 and 3. All teachers will be appropriately trained on the screening process by the research team experts.

Scoring will be performed on a binary scale (Correct / Incorrect), while a required field with the option of Confident / Hesitant and a No Response option will also be provided. Teachers will mark the children's responses on specific answer sheets and will later have to enter these responses in the software, filling in a particular form provided by the *Screening Test Tool*. Both the SRT stimuli, administration instructions and the answer sheets will be provided on pdf files by the software for teachers to print.

The use of the initial screening results entered by the teachers in the software will be twofold; it will be used for profile initialization, that is, to inform each child's profile with his/her particular difficulties and skills. The information used by the software for profile initialization will only include the Correct / Incorrect marking of the responses, while those marked as No Response will also be counted as incorrect for that purpose. The profile initialization is described in Deliverable 6.2.

A second use of the screening results will be for the evaluation process, as the children's performance at that initial point of the evaluation will be compared to their results after using the software for 6 months. Correct / Incorrect, Confident / Hesitant and No Response markings will be analysed separately in this case.

### d. Online activity reports

The system will also be equipped with a *Statistic Reports App* (described in Deliverable 6.2), which will provide statistical information on the software use by the children. The information provided by the *Statistic Reports App* will be available both to teachers and the research team and will be analysed throughout the intervention period.

### *4.2.3. Procedure*

The evaluation procedure will comprise two phases: the *screening phase*, where the initial assessment of children's skills will take place, and the *re-assessment phase*, conducted after 6 months of continuing use of the software. Specific quantitative data will be collected in the two phases using the SRT, enabling us to perform direct comparisons to determine the efficiency of the software in inducing progress in the children's performance. During the 6-month period of use, information drawn from the software logs and profile updating information will also be analysed.

### *4.2.4. Evaluation contexts*

The contexts of evaluation include two types of settings: the school setting, used for the teacher-guided group of 60 children, and the home setting, used for the non-guided control group.

### *4.2.5. Teacher training*

Two-hour training sessions will be offered to teachers, aiming to familiarize them to the software and the evaluation process. Specifically, teachers will be familiarized with the game world, the user profile, the activities and the reader, while special training sessions on the screening/re-evaluation process will also be provided. Training sessions will be carried out in the participating schools.

#### *4.2.6. Measurements and analyses*

Generalized linear models for repeated measurements will be analyzed to examine the changes recorded between children practicing under guided intervention and children practicing without guidance, as well as differences within the participants, at the beginning and at the end of the procedure. Comparisons of the percentages of correct answers will be adjusted for the recorded factors that could influence the participants' performance such as demographic data or tablet familiarity. Statistical significance will be set at $p<0.05$ for all outcomes.

#### *4.2.7. Evaluation timeline*

The time frame of the evaluation is as follows:

- 2nd week of October 2014: Teacher training
- 3rd week of October 2014: Screening phase
- 3rd-4th week of October 2014: Beginning of software use
- November 2014 – April 2014: Continuing software use
- May 2014: Re-evaluation phase
- June – July 2014: Data analysis

#### *4.2.8. Ethical issues*

All teachers and parents will be given an information sheet, providing all relevant information to the study, and will be asked to sign written consent for participation.

## 4.3. English evaluation

The triple aim of the English evaluation is to discover the effectiveness of iLearnRW as a teaching/learning tool, its ability to engage students and impart better literacy practice and finally its suitability within the UK school system. In particular, the last two aspects of the aim necessitated a divergence from the model used by Greek partners. They derive from English cultural differences as well as differences in the organisation of the UK school and school year.

The main difference between the Greek and UK evaluation design is that in the UK design, students will receive specialist teacher support for the first three months of the use of the tablet and will use the tablets independently for three months with support from the project.

a. It is not feasible to run a six-month programme within a school. Schools cannot dedicate sustained resources and the danger of dropout is significant.
b. Home use of tablets is widespread in the UK and it is essential to know how such a system can be used independently.
c. School / home continuity is an important theme in UK education and has been highlighted as an issue in previous projects. (e.g. Load2Learn)
d. Survey of literacy interventions 'What works in Dyslexia' highlighted the importance of teacher support for the success of all technology-based interventions and therefore fully independent use is not recommended.

### *4.3.1. Selection of participants*

Participants for the English evaluation will be selected based on the school tracking of reading progress. Children kept on the school register of being 2 or more years behind their expected reading progress will be eligible to participate. This is also a requirement for the children being able to use Load2Learn as a source for texts (see below). To avoid confounding factors such as low IQ, the following exclusion criteria apply:

- Children identified as having a learning difficulty that may interfere with reading. In particular, poor comprehension, specific-language impairment, learning disability (low IQ). Children identified as having dyspraxia or ADHD will be included since these difficulties co-occur with dyslexia in a non-confounding manner.
- Children who are receiving or have in the past received any support for English as an additional language. Based on the information available, it is not possible to exclude children who speak another language at home, however, their participation will be discouraged.
- Children with impaired vision or impaired hearing.
- Children diagnosed with mental disorders.

In total, 60 children from 4-6 schools will take part in the evaluation. The children will be divided into two cohorts. One starting in late November and one starting in mid-January 2015. This was chosen in accordance with the school term-times in the UK and software availability.

### *4.3.2. Materials and resources*

#### a. Teachers

The evaluation will rely on specialist literacy teachers who work for or have been trained by Dyslexia Action. Each teacher will be expected to provide guidance to a group of 5 students during weekly sessions as well as provide feedback to the development team.

#### b. Screening and Screening and Re-assessment Tool

The screening tool in English will be administered in two sections: Reading and identification. Reading will be used to assess the child's skills in reading vowels, consonants and blends. Identification will be used to assess skills in prefixes, suffixes and syllabification. The administration of the screening should not last longer than 15 minutes per child and will be conducted at the start and at the end of the study. See Appendix 4 for examples. The design was tested during a small study of readability conducted in England (parallel with Greece).

The screening tool will also be used to initialise the profile for individual students to allow them to start at a level appropriate to their individual needs.

For the purposes of sampling, the screening tool uses clusters, a new concept added to the profile to allow for more fine-tuned differentiation. In English, the clusters also play the role of facilitating progress through the profile and therefore individual clusters span multiple categories of the profile. In this, they function differently from Greek. However, for the purposes of sampling the profile and screening, they function in the same way. Since samples will be selected per category, the screening will only use samples selected from a subcategory of the cluster.

For example, the first cluster is a combination of four categories:

| Category | Index | Description |
|---|---|---|
| 1 Consonants | t-t | Pronounce 't' as 't'.For example: stress's, timed, stressing |

| | | |
|---|---|---|
| 1 Consonants | p-p | Pronounce 'p' as 'p'.For example: possibly, payments, president's |
| 1 Consonants | n-n | Pronounce 'n' as 'n'.For example: chickened, answer, payments |
| 1 Consonants | s-s | Pronounce 's' as 's'.For example: schooled, stress's, stressing |
| 1 Consonants | s-z | Pronounce 's' as 'z'.For example: relies, finals, chairs |
| 2 Vowels | i-ɪ | Pronounce 'i' as 'ɪ'.For example: approving, chickened, stressing |
| 2 Vowels | i-aɪ | Pronounce 'i' as 'aɪ'.For example: timed, finals, timer |
| 3 Blends and Letter Patterns | ip-ɪp | Pronounce 'ip' as 'ɪp'.For example: relationship, chip, lip |
| 3 Blends and Letter Patterns | in-ɪn | Pronounce 'in' as 'ɪn'.For example: brain, in, contain |
| 3 Blends and Letter Patterns | st-st | Pronounce 'st' as 'st'.For example: stress's, stressing, steeling |
| 3 Blends and Letter Patterns | sp-sp | Pronounce 'sp' as 'sp'.For example: spends, spanish, space |
| 3 Blends and Letter Patterns | sn-sn | Pronounce 'sn' as 'sn'.For example: snows, snow, snowed |
| 5 Suffixes | s | Suffix 's' adds to the word with no changes. For example: stress's, payments, finals |

However, samples will be collected from each category separately in the cluster rather than simply randomly choose from the cluster as a whole.

During the creation of the clusters, we found it necessary to make revisions to the assignment of indexes and labelling of categories in the profile. The new updated profile for English is included in the Appendix 5. More details of the changes to the profile are described in Deliverable 6.2.

### c. Questionnaires

Simple questionnaires regarding software usability and general experiences will be administered at specific times of the evaluation to gather specific feedback.

### d. Online reports

Online reports generated by the system (available in the *Statistic Reports App*, see Deliverable 6.2) will be used to monitor the progress of evaluation as well as to provide further information to the researchers as to the use of the system.

### e. Hardware used

All students and teachers will receive a tablet for the duration of the evaluation. 70 7-inch tablets were purchased to account for losses and damage.

The tablet model is: Acer Iconia B1-720, Dual-core A7 Cortex, 1GB RAM, 8GB storage, 1024 x 600 screen resolution.

### f. Additional software

The free device management service Meraki by Cisco will be used to monitor the use of the tablets and to distribute updated versions of the software. An app called AppLocker will be used to limit the use of some preinstalled apps on the tablets.

### *4.3.3. Procedure for quantitative data collection and analysis*

The procedure of the English evaluation is identical to that of Greek, viz initial screening followed by re-assessment at 6 months. The English evaluation may generate additional qualitative data points through observation and log analysis, which will inform the interpretation of the quantitative data points.

### *4.3.4. Evaluation contexts*

The evaluation will take place in schools with specialist teachers provided or trained by Dyslexia Action.

Each student will be observed for a total of 6 months. The first three months will consist of weekly teacher-guided group sessions combined with short independent study sessions. The second three months will consist of independent study with remote guidance from the team.

We have also recruited one school who will trial the software using their own tablets with their own literacy teachers who will receive one-hour training from Dyslexia Action. This will complement the evaluation done at IoE to provide more information about how iLearnRW can be used without specialist teacher intervention.

#### a. Teacher guided intervention (3 months)

- Students attend one 30-45 minute group session a week with a qualified teacher providing guidance
- Students are expected to spend another 3 sessions (15-20 minutes each) a week with using the system
- The independent use will be monitored and the student will receive regular reminders to do more work
- Research team will follow up with a sample of parents once during this period via a 5-10 minute phone interview
- Teachers answer online questionnaire about software use

#### b. Independent use (3 months)

- Students will not be given mandatory targets but they will receive regular reminders by the system and via email and will be given suggestions for futher work
- Researchers will follow up with sample teachers and/or parents on the student progress and use of the system via a phone interview
- Students will be able to attend online support sessions
- Simple online questionnaire will be administered to students/parents

### *4.3.5. Teacher training*

All teachers participating in the project will be expected to be specialist literacy teachers. The teachers will receive training covering the following aspects of software use:

- Use of the game

- Game world: Understand how the students engage with the game world and the underlying story
- Games: Purpose of individual games
- Ghost book: Understand how success in the games is used to track progress
- Profile: Understand how the profile is structured and what is recorded and how
- Use of the reader
- Use the key functionality of the reader from loading texts to loading annotations
- Understands how annotations work with respect to the profile
- Use of the web interface
- Survey progress of individual students
- Send notifications to students
- Use of the screening interface

### *4.3.6. Measurements and analyses*

The analyses will be similar to the referred within the Greek context. There will though be an extra factor measured to account for possible differences between the two groups.

### *4.3.7. Evaluation timeline*

The evaluation will proceed in two cohorts. The make up of the cohorts had to be adjusted to take into account the availability of all key features of the software.

#### a. Initial cohort

The initial cohort will consist of 10-15 students commencing in the first week of November following the end of English mid-term holidays. All students taking part in the initial cohort will receive the full intervention, however, their experiences will be used both to refine the pedagogical approach and give feedback to the software developers as to necessary features. The initial cohort will take part in teacher-guided sessions until the beginning of February and proceed with independent study from February to May.

#### b. Main cohort

The main cohort will consist of 45-50 students commencing in the third week of January and taking part in teacher guided sessions until the end of March. The independent study period will proceed until the end of June.

| | **Initial Cohort** | **Main Cohort** |
|---|---|---|
| **November** | Start of teacher guided sessions | |
| **January** | | Start of teacher-guided sessions |
| **February** | Start of independent study | |
| **March** | | Start of independent study |
| **May** | End of study | |
| **June** | | End of study |

### *4.3.8. Ethical issues*

All parents and schools will receive full information about the system, the evaluation process and the evaluation purpose. Participation in the evaluation will be voluntary. The participants in the evaluation are expected to receive substantial benefits from participating in the programme.

# 5. Design-based Research Evaluation

The success of the iLearnRW software is not solely dependent upon whether it is usable by our target user group and that it can be shown to improve literacy skills. We need to consider the wider context in which the software will be used. The success of any new educational technology can be dependent upon the learning scenario in which it is used, the culture of the learning institution (for example whether technology-enhanced learning is actively encouraged), the technical skills and motivation of the teaching staff supporting the use of the software and the children's technological experience and attitudes towards this form of intervention. The examination of the variations in contexts of use is particularly crucial within the English school system, where schools are given a high degree of autonomy in how they implement the national curriculum and provide additional literacy support for those who have difficulties as well as in their choice and use of educational technology. In contrast the Greek education system is one of the most centrally governed in Europe, with many aspects of schooling including teacher recruitment being controlled by the government; in addition to this Greece has the lowest reported level of school responsibility in developing curricula and assessments among the Organisation for Economic Co-operation and Development (OECD) countries (OECD, 2011). We therefore decided that it would be necessary to undertake an additional qualitative aspect of the evaluation in order to further examine this context of use within the English education system. It is also intended that at the end of the qualitative evaluation the overall findings will also be used to help guide the implementation of the larger English programme evaluation.

For our qualitative evaluation we have chosen to follow a design-based research (DBR) methodology. Barab and Squire (2009) define DBR as having a focus on "producing new theories, artifacts, and practices that account for and potentially impact learning and teaching in naturalistic settings". DBR follows an interventionist methodology, which means that it involves some form of design, allowing researchers to make changes during the intervention. It is also an iterative methodology and split into a number of different stages, with these changes being made at the end of each stage. DBR recognizes the "messiness of real-world practice" (Barab & Squire, 2009) making it particularly applicable for school-based research and allows the exploration of the complexities of a learning situation, in order to understand what worked well within an intervention, what could be improved and how this differed between different contexts. Following a DBR approach allows us to identify both the local impact of our software intervention as well as consider the implications for the wider body of learning theory for children with dyslexia.

## 5.1. Specific research questions

It is intended that the approach to learning integrated within the iLearnRW software will complement the existing approach of the teachers who are providing specialist literacy support to children with dyslexia, allowing the software to be successfully incorporated into existing literacy intervention plans. However, due to the high degree of autonomy given to schools within the UK in the implementation of the national curriculum for literacy, we need to determine how exactly this would work in practice and how this works across different school contexts. Therefore our research questions for this part of the evaluation are as follows:

1. To what extent do the theoretical approaches incorporated into the iLearnRW software (i.e. multisensory, bottom-up learning, promoting metacognition, overlearning) fit in with existing teaching practices within the UK for children with literacy difficulties and how does this differ between different school contexts?

2. What are the best teaching strategies used in conjunction with the software?

3. What additional resources are required in order to successfully support the integration of the iLearnRW software within schools and as part of existing teaching strategies?

## 5.2. Methodology

One goal of DBR is to improve the design of the software intervention through practice in a real world context, with teachers working alongside researchers as co-designers of the intervention. Therefore it is necessary to identify any problems and reasons for failure during the evaluation and propose solutions that can be implemented during the next stage. This is typically done through a mixed-methods approach, gathering data from multiple sources, which we will be following with a predominantly qualitative focus.

### *5.2.1. Description of context*

Setting
The software intervention will be undertaken in three different English state primary schools across London, described below.

**School A:** located in an affluent area of south-west London. This school is average in size, with around half of all its' pupils coming from a wide range of minority ethnic backgrounds and a low number of children who are at the early stages of learning English. The school has just above average number of pupils with special educational needs and disabilities (SEND) and pupils with dyslexia form the largest proportion of this.

**School B:** located in a deprived area of east London. This school is larger than average, with the majority of its' pupils from a wide range of minority ethnic backgrounds, with many pupils at an early stage of learning English. The school has an average number of pupils with SEND and also more pupils than average join or leave this school part way through their primary education.

**School C:** located in a deprived area of north London. This school is larger than average, with the majority of its' pupils from a wide range of minority ethnic backgrounds and an above average number of children with English as an additional language. This school has a higher than average number of pupils with SEND.

Participants
Within each school the setup of the intervention will be coordinated by one teacher who is involved in the planning and/or delivery of the literacy curriculum within the school for our target age group.

3-4 pupils aged 9-11 years old either with a dyslexia diagnosis or receiving additional support for literacy will participate from each of the schools, as selected by their teachers. Each participating child will receive a tablet for the duration of the intervention.

### *5.2.2. Implementation of intervention*

Prior to the commencement of the intervention the participating children will be screened, using the screening tool described in Section 4.3.2, for their current literacy level to ensure the software is set at the appropriate level for them. An initial observation of existing literacy teaching practices and interview with the coordinating teacher will also be used to tailor the implementation for each specific school.

At the start of the intervention the coordinating teacher will receive one hour of initial training on the software and be provided with a detailed user guide (see D6.2) as well as quick start instructions. A researcher will also be present during early sessions (where needed) to provide technical support for the software use. Based on the early observations each teacher will also be provided with suggested lesson plans to support the integration of the software into their existing practices as well as the current literacy curriculum. Moreover, the teachers will be provided with materials detailing the additional resources that are provided with each of the tablets to encourage the integration of the tablets across the curriculum more generally including a selection of targeted texts and a number of freely available dyslexia-friendly apps. These guides, technical support, lessons plans and additional resources will then be adapted as appropriate at the various design iteration points specified below.

### *5.2.3. Data collection methods*

Following the mixed methods approach to data collection used within DBR we will be employing the following data collection methods:

- **Observations** – we will be using observations to establish current practice for literacy teaching within each of the schools as well as during selected sessions throughout the intervention where the iLearnRW software is used.
- **Interviews** – we will be interviewing both the participating children and their teachers at the start of the intervention to establish the children's background, attitudes towards literacy and experience of technology as well as the teacher's background teaching experience, previous experience of technology as well as the general culture/support within the school with regard to technology usage. We will also be conducting interviews with the same participants at the end of the intervention to establish experiences and opinions of the software.
- **Diaries** – each of the teachers will be provided with a paper-based diary in which they can note down any successes or problems experienced during the intervention.
- **System Logs** – we will log the children's use of the software so we can establish usage frequency, patterns and progress within the system to contrast against the self-reported experiences and opinions. System logs and diaries will be used as prompts for further discussion during the final interviews.

### *5.2.4. Initial research plan*

Below is an approximate timetable for the overall qualitative evaluation.

16th Jun – 11th July:
Observations of and discussions with subset of children using early prototype software
Observations of and discussions with specialist dyslexia teachers using early prototype software

Design iteration point

1st - 12th Sept:
Technical setup
Discuss timetable with teacher, provide consent forms for parents and agree dates

29th Sept - 10th Oct:
Initial teacher training on software
Interview teacher about each child
Provide consent forms for children
Interview child plus initial screening

Observe software use and provide technical support during first teaching session

Design iteration point

3rd – 14th Nov:
Observations of a session with each child - document using audio/gesture app
Discuss with teacher about any issues

Design iteration point

1st – 5th Dec:
Observations of a session with each child – document using audio/gesture app
Discuss with teacher about any issues

Design iteration point

15th – 19th Dec:
Interviews with teachers + debrief
Interviews with children + debrief

### *5.2.5. Description of iterations*

We intend to undertake four iterations with observations at each stage to identify any potential problems that need to be solved in next iteration, as detailed below:

- Iteration 1: Observation of children and teachers using very early versions of the software to identify major interaction issues from both points of view (July – already completed, full details of the findings can be found in the Section 2)
- Iteration 2: Observation of first teaching session at each school using the software to establish if sufficient support is in place for the software to be used successfully. Minor software issues will be dealt with and additional documentation produced where necessary (Early Oct)
- Iteration 3: Observation of teaching session at each school to establish if all difficulties using the software have been overcome and if any particular usage patterns have been established. Minor software issues will be dealt with and additional documentation produced or existing documentation adapted where necessary (Late Oct/Early Nov)
- Iteration 4: Observation of teaching session at each school to establish what features of the software have been continued to be used over an extended period of time. Minor software issues will be dealt with and additional documentation produced or existing documentation adapted where necessary (Late Nov/Early Dec).

### *5.2.6. Analysis of findings*

DBR involves a continual evaluation process, which then feeds into the iteration of the intervention design at various points in the process. It is important to evaluate the software intervention from multiple aspects including from different stakeholder perspectives as these will all impact upon the success of the intervention. Therefore the findings will be analysed taking into account the following levels:

- Personal level: what is the experience of both the student and teacher in the introduction of the software, particularly considering any impact on the student's learning experience and the teaching practices of the teacher.
- Interpersonal level: how does the introduction of the software impact the relationship and interaction between the student and the teacher as well as potentially with the student's peers.

- Resources level: how easy are the supporting resources provided to understand and use, how are they utilized during the teaching sessions.
- School level: what is the impact of the software on the wider school context, does it change any higher-level processes or perceptions/expectations of literacy support.

Identified issues at any of these levels will impact the proposed changes to the design of the software intervention (including the software design, supporting resources and teaching practices) to try and address these issues.

### *5.2.7. Ethical considerations*

As we are conducting this research with a vulnerable population it is important that we ensure our methodology is ethically sound and we will therefore be following the ethical guidelines set out by the British Educational Research Association (BERA).

We will be asking for voluntary informed consent from all participants (including teachers and children) as well as the children's parent or guardian. Consent forms have been adapted as appropriate (see Appendix 6) for each of the different groups and the children's information leaflet and consent form will additionally be read aloud to them to ensure there are no difficulties with reading and comprehending the text. Participants will be made aware that they can withdraw the evaluation at any point without giving a reason and will also be fully informed about the nature of the research and what will happen to their data.

All data that is collected will be stored confidentially and anonymously on a centralised repository with only members of the project evaluation team being given access, with any audio recordings transcribed anonymously and then the original recordings deleted.

All researchers that will be undertaking the research in schools have already has the DBS (criminal record) check as required by UK law.

An extension of the original ethics approval has also been applied for internally within the Institute's Research Ethics Committee to include the additional research activities planned for within the evaluation stage of the project.

# 6. Appendices

## 6.1. Appendix 1. Formative evaluation forms: Greek

### *6.1.1. Children's Consent Form*

Τίτλος ερευνητικού προγράμματος

ILearnRW: Ένα λογισμικό πρόγραμμα ενίσχυσης της ανάγνωσης και γραφής για παιδιά 9-11 ετών

Περιγραφή της έρευνας

- Στόχος της παρούσας έρευνας είναι η ανάπτυξη ενός λογισμικού προγράμματος προκειμένου να ενισχυθούν οι δεξιότητες γραφής και ανάγνωσης
- Το νέο αυτό πρόγραμμα περιλαμβάνει ένα σύνολο διαφορετικών παιχνιδιών που μπορείς να παίξεις
- Θέλουμε να τα δοκιμάσεις και να μας πεις τη γνώμη σου γι΄ αυτά

Συμμετέχοντας στην έρευνα

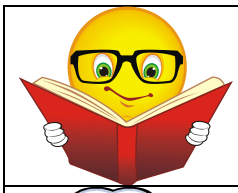
- Έχεις επιλεγεί να συμμετέχεις στην ομάδα παιδιών που θα παίξουν και θα αξιολογήσουν τα παιχνίδια
- Θα σου ζητηθεί να παίξεις κάποια παιχνίδια και στη συνέχεια να συμπληρώσεις ορισμένα φυλλάδια σχετικά με τι σου άρεσε ή όχι στα παιχνίδια
- Στο τέλος θα θέλαμε να κάνουμε και μία μικρή συζήτηση για τις ιδέες σου αφότου ολοκληρώσεις τα παιχνίδια
- Θα κρατάμε κάποιες σημειώσεις την ώρα που θα παίζεις τα παιχνίδια
- Στο τέλος της συνεδρίας, κατά τη διάρκεια της συζήτησης, θα θέλαμε να ηχογραφήσουμε τη συζήτησή μας, έτσι ώστε να μη χάσουμε καμία από τις απόψεις και τις ιδέες σου για να κάνουμε καλύτερα τα παιχνίδια.
- Το να πάρεις μέρος στα παιχνίδια είναι δική σου επιλογή και εάν δε θελήσεις ή θέλεις να αποχωρήσεις προτού ολοκληρωθούν τα παιχνίδια, μπορείς απλά να μας το δηλώσεις, χωρίς να υπάρχει κανένα πρόβλημα.
- Εάν έχεις ερωτήσεις ή αντιμετωπίσεις κάποιο πρόβλημα κατά τη διάρκεια των συνεδριών, μπορείς να το πεις στο συνεργάτη μας που θα είναι δίπλα σου.

Ενημέρωση για τη συμμετοχή σου στην αξιολόγηση των παιχνιδιών

- Τις ιδέες σου και τις προτάσεις σου θα τις μοιραστούμε με την ομάδα των σχεδιαστών των παιχνιδιών στη Μάλτα, έτσι ώστε να τις χρησιμοποιήσουν για τη βελτίωση των παιχνιδιών.
- Λόγω της συμμετοχής σου σε αυτή την πρώτη φάση κατασκευής των παιχνιδιών, εάν θέλεις, θα μπορείς να έχεις τα παιχνίδια και στην τελική τους μορφή.

**Φόρμα συγκατάθεσης**

Διάβασε τις παρακάτω προτάσεις και σημείωσε με ένα X εάν συμφωνείς με αυτές

| | | |
|---|---|---|
|  | Διάβασα και κατάλαβα το φυλλάδιο πληροφοριών | |
|  | Μου δόθηκε ο χρόνος να σκεφτώ σχετικά με τις πληροφορίες | |
|  | Κατανοώ ότι συμμετέχω εθελοντικά και μπορώ να σταματήσω όποτε θέλω χωρίς να πρέπει να πω γιατί | |
|  | Κατανοώ ότι μπορώ να μοιραστώ τις πληροφορίες και με άλλους που συμμετέχουν στο πρόγραμμα | |
|  | Δέχομαι να συμμετέχω στην αξιολόγηση των παιχνιδιών | |
|  | Ευχαρίστως θα δεχτώ να ηχογραφηθώ κατά τη διάρκεια της συζήτησης | |

_____

Γράψε ολόκληρο το όνομά σου

_____

Ημερομηνία

### *6.1.2. Parent's consent form*

Αγαπητέ γονέα
(……),

Ονομάζομαι Βικτωρία Ζακοπούλου και είμαι Επίκουρος Καθηγήτρια του Τμήματος Λογοθεραπείας του ΤΕΙ Ηπείρου. Την τρέχουσα περίοδο υλοποιούμε ένα ερευνητικό πρόγραμμα κατασκευής λογισμικού προγράμματος ενίσχυσης των δεξιοτήτων της ανάγνωσης και γραφής, το οποίο απευθύνεται σε παιδιά ηλικίας 9-11 ετών και τα οποία αντιμετωπίζουν ειδικές μαθησιακές δυσκολίες (Δυσλεξία, Δυσαναγνωσία, Δυσορθογραφία).
Προκειμένου για την υλοποίηση του προγράμματος αυτού, απευθυνόμαστε στα σχολεία με τα οποία ήδη συνεργαζόμαστε στο πλαίσιο υλοποίησης της Κλινικής Άσκησης των φοιτητών του Τμήματος Λογοθεραπείας. Σε συνεργασία με τους εκπαιδευτικούς των Τμημάτων Ένταξης και τους μαθητές οι οποίοι παρακολουθούν τα τμήματα αυτά, επιδιώκουμε την εφαρμογή του προγράμματος αυτού ως ένα πρόσθετο υποστηρικτικό υλικό παρέμβασης. Στην παρούσα φάση, απευθυνόμαστε σε μαθητές της ΣΤ' Δημοτικού, οι οποίοι φοιτούν στο τμήμα ένταξης και οι οποίοι έχουν επιλεγεί τυχαία, προκειμένου να μας ενισχύσουν στην προσπάθειά μας να «τρέξουμε» σε πιλοτική φάση το λογισμικό πρόγραμμα.
Επισημαίνεται ότι η τελική εφαρμογή του λογισμικού θα πραγματοποιηθεί σε διάστημα 6 μηνών (1/10/2014-31/3/2015) σε μαθητές 9-11 ετών με ειδικές μαθησιακές δυσκολίες, οι οποίοι παρακολουθούν τα τμήματα ένταξης, σε συνεργασία με τους ειδικούς παιδαγωγούς των τμημάτων ένταξης.
Δεδομένου του γεγονότος ότι ολοκληρώνεται η σχολική χρονιά, θα θέλαμε να σας ζητήσουμε να έρχεται ο μαθητής στους χώρους του ΤΕΙ, 3 φορές την εβδομάδα, όπου σε διάρκεια 45 λεπτών, σε συνεργασία με καταρτισμένο συνεργάτη θα συμμετέχει στη μαθησιακή διαδικασία. Ο συνεργάτης θα βρίσκεται δίπλα στο παιδί προκειμένου να το βοηθήσει στη διαδικασία εφαρμογής των παιχνιδιών και θα συζητήσει μαζί του για τις προτάσεις και τις ιδέες που μπορεί να μας προτείνει για τη βελτίωση των παιχνιδιών.
Θα θέλαμε να καταγράψουμε τις απόψεις του παιδιού για τα παιχνίδια, ώστε να έχουμε ολοκληρωμένες τις απόψεις του, εάν και εσείς είσαστε σύμφωνος. Σε αντίθετη περίπτωση, θα κρατηθούν σημειώσεις. Καθώς, όλες τις πληροφορίες τις συγκεντρώνουμε για ερευνητικούς σκοπούς, θα θέλαμε να ζητήσουμε τη συγκατάθεσή σας. Το ίδιο θα κάνουμε και με το παιδί σας.
Οι πληροφορίες που θα συλλεχθούν θα καταχωρηθούν σε μία βάση δεδομένων και θα έχουν πρόσβαση σε αυτές μόνο τα πιστοποιημένα μέλη του προγράμματος. Όλα τα δεδομένα των συζητήσεων θεωρούνται εμπιστευτικά. Οι πληροφορίες θα ανήκουν μόνο στο ΤΕΙ Ηπείρου και θα χρησιμοποιηθούν μόνο για τους σκοπούς της έρευνας και τη στατιστική επεξεργασία (σε συνεργασία με τα Παν/μια της Μάλτας, το Εθνικό Μετσόβειο Πολυτεχνείο, της Ρουμανίας (Sibiu) και το ερευνητικά κέντρα Institute of Education, Dyslexia Action και Dolphin Computer Access.
Παρέχοντας τις πληροφορίες, συναινείτε ώστε το ΤΕΙ Ηπείρου να συγκεντρώσει τις πληροφορίες σας για τους παραπάνω σκοπούς. Οι πληροφορίες προστατεύονται από τις αρχές Προστασίας Προσωπικών Δεδομένων. Όλα τα δεδομένα θα διατηρηθούν υπό την προστασία δεδομένων για 10 χρόνια και στη συνέχεια θα καταστραφούν. Για όλο αυτό το διάστημα, καμία ταυτοποίηση πληροφοριών δε θα δημοσιοποιηθεί.
Τα αποτελέσματα της έρευνας θα δημοσιευθούν σε ανακοινώσεις Συνεδρίων και δημοσιευμένες εργασίες σε επιστημονικά περιοδικά. Επίσης, περισσότερες πληροφορίες θα διατίθενται στην ιστοσελίδα: : http://www.ilearnrw.eu
Υπογράφοντας το έντυπο αυτό, επιβεβαιώνετε ότι έχετε διαβάσει και κατανοήσει το περιεχόμενο του κειμένου. Η συμμετοχή του παιδιού σας στην αξιολόγηση είναι εθελοντική και διατηρείτε το

δικαίωμα να αποσύρετε το παιδί σας οποιαδήποτε στιγμή, χωρίς να πρέπει να δώσετε κάποια αιτιολόγηση. Με την αποχώρηση του παιδιού σας, όλα τα δεδομένα που το αφορούν, θα καταστραφούν.

Σας ευχαριστώ πολύ!

Με εκτίμηση,
Βικτωρία Ζακοπούλου
Επιστημονική Υπεύθυνος του έργου
Επίκουρος Καθηγήτρια
Τμήματος Λογοθεραπείας
ΤΕΙ Ηπείρου
E-mail: vzakop@ioa.teiep.gr

**Κατανοώ και συναινώ το παιδί μου να λάβει μέρος στο πρόγραμμα**
**Συναινώ να ηχογραφηθούν οι απαντήσεις του παιδιού για τις ανάγκες της έρευνας (παρακαλώ σημειώστε)** ☐
Εάν έχετε περαιτέρω ερωτήσεις για την έρευνα αυτή ή κάποιες αμφιβολίες για τη συμμετοχή του παιδιού σας, παρακαλώ επικοινωνήστε μαζί μας στο ακόλουθο e-mail:

Βικτωρία Ζακοπούλου
Επιστημονική Υπεύθυνος του έργου
Επίκουρος Καθηγήτρια
Τμήματος Λογοθεραπείας
ΤΕΙ Ηπείρου
Email: vzakop@ioa.teiep.gr

| |
|---|
| **Όνομα γονέα:** _____ **Όνομα παιδιού:**_____<br><br>**Υπογραφή γονέα:** _____**Ημερομηνία:**_____ |
| **Όνομα ερευνητή:** _____**Ημερομηνία:**_____<br><br>**Υπογραφή ερευνητή:** _____ |

*6.1.3. Teacher's consent form*

Αγαπητέ εκπαιδευτικέ,
……..

Ευχαριστούμε για το ενδιαφέρον σας να συμμετέχετε στην πρώτη φάση αξιολόγησης του ερευνητικού προγράμματος ILearnRW, κατά την οποία κύριος στόχος είναι η δοκιμασία εφαρμογής ενός καινοτόμου λογισμικού σε tablet, κατάλληλου για παιδιά με δυσλεξία, το οποίο αναπτύχθηκε στο πλαίσιο αυτού του ερευνητικού προγράμματος, έτσι ώστε να το υλοποιήσουμε με τη δική σας παρέμβαση, στην τελική του εφαρμογή, για διάστημα 6 μηνών στα τμήματα ένταξης, ως συμπληρωματικό υλικό παρέμβασης στο υποστηρικτικό πρόγραμμα που ακολουθείται στο πλαίσιο της Ειδικής Αγωγής.
Κατά τη διάρκεια της αρχικής αυτής αξιολόγησης, θα θέλαμε να συγκεντρώσουμε πληροφορίες τόσο από τους μαθητές όσο και τους ειδικούς παιδαγωγούς για την πρώτη έκδοση της εφαρμογής του λογισμικού. Τις πληροφορίες αυτές θα τις μοιραστούμε με τους σχεδιαστές του λογισμικού, προκειμένου να βελτιώσουμε περαιτέρω το λογισμικό. Η διαδικασία προβλέπει 45λεπτες συνεδρίες στο σχολείο, 2-3 ημέρες την εβδομάδα, για διάστημα ενός μήνα, προκειμένου να «τρέξουμε» τα παιχνίδια σε πιλοτική μορφή. Ωστόσο, δεδομένου του ότι το σχολικό έτος ολοκληρώνεται άμεσα, θα θέλαμε οι συνεδρίες αυτές να πραγματοποιηθούν στο χώρο (εργαστήρια) του ΤΕΙ. Στις συνεδρίες αυτές θα συμμετέχουν μέλη της ερευνητικής ομάδας, τα οποία θα υποστηρίζουν το μαθητή ώστε να ολοκληρώσει όσο το δυνατόν περισσότερα παιχνίδια και να μοιραστούν ιδέες και προτάσεις, προκειμένου τα παιχνίδια να τύχουν βελτίωσης. Επίσης, θα θέλαμε να μας μεταφέρετε και τις δικές σας απόψεις για το λογισμικό και πως θα μπορούσαμε να το βελτιώσουμε, ώστε να γίνει πιο ευχάριστο για τους μαθητές σας.

Θα θέλαμε επίσης, εάν και εσείς συμφωνείτε με αυτό, να ηχογραφήσουμε τις συζητήσεις και μαζί σας και με τα παιδιά. Σε αντίθετη περίπτωση, θα κρατηθούν γραπτές σημειώσεις. Καθώς οι πληροφορίες που θα συλλεχθούν αφορούν σε ερευνητικούς σκοπούς, θα πρέπει να σας ενημερώσουμε για τον τρόπο με τον οποίο θα αξιοποιηθούν τα δεδομένα και να ζητήσουμε τη συγκατάθεσή σας.

Οι πληροφορίες που συγκεντρώνουμε θα καταχωρηθούν σε μία βάση δεδομένων και πρόσβαση σε αυτές θα έχουν μόνο τα πιστοποιημένα μέλη του προγράμματος ILearnRW. Όλα τα δεδομένα θα χρησιμοποιούνται ως εμπιστευτικά. Οι πληροφορίες θα κρατηθούν από το ΤΕΙ Ηπείρου και θα χρησιμοποιηθούν μόνο για το τους σκοπούς της έρευνας και για στατιστική ανάλυση (σε συνεργασία με τα Παν/μια της Μάλτας, της Ρουμανίας (Sibiu), the Institute of Education of London, Dyslexia Action και Dolphin Computer Access (Worchester) .
Με την παραχώρηση των πληροφοριών συναινείτε το ΤΕΙ Ηπείρου να καταχωρήσει και επεξεργαστεί τις πληροφορίες σας για τους σκοπούς της έρευνας που υλοποιεί. Οι πληροφορίες θα τύχουν των αρχών προστασίας προσωπικών δεδομένων. Κανένα προσωπικό δεδομένο δεν θα δημοσιοποιηθεί.

Τα αποτελέσματα της έρευνας θα ανακοινωθούν σε ανακοινώσεις διεθνών συνεδρίων και σε εργασίες δημοσιευμένες σε επιστημονικά περιοδικά διεθνούς κύρους. Οποιαδήποτε άλλη πληροφορία θα είναι διαθέσιμη στην ιστοσελίδα: http://www.ilearnrw.eu.

Εάν έχετε οποιαδήποτε άλλη ερώτηση σχετικά με αυτή την έρευνα ή τη συμμετοχή σας, παρακαλώ επικοινωνήστε μαζί μου:
Βικτωρία Ζακοπούλου
Επιστημονική υπεύθυνος του έργου
Επίκουρος Καθηγήτρια ΤΕΙ Ηπείρου
Email: vzakop@ioa.teiep.gr

**Κατανοώ τις παραπάνω πληροφορίες και συναινώ να μετέχω στη συνέντευξη ως μέρος της έρευνας (παρακαλώ σημειώστε)** ☐

**Συμφωνώ να ηχογραφηθούν οι συζητήσεις μας για τις ανάγκες της έρευνας (παρακαλώ σημειώστε)** ☐

| |
|---|
| **Όνομα εκπαιδευτικού: _____Ημερομηνία:_____**<br><br>**Υπογραφή εκπαιδευτικού: _____** |
| **Όνομα ερευνητή: _____ Ημερομηνία:_____**<br><br>**Υπογραφή ερευνητή: _____** |

## Γενικές Παρατηρήσεις – Σημειώσεις: Συμπληρώνεται από τον εκπαιδευτή (ερευνητή)

| |
|---|
| **Παρατηρήσατε κάποια γενικά σφάλματα με το σύστημα;** |
| |
| **Αντιμετωπίσατε κάποια τεχνικά προβλήματα με την εγκατάσταση των tablet στο σχολείο;** |
| |
| **Παρατηρήσατε κάποιες ιδιαίτερες δυσκολίες των παιδιών στην αλληλεπίδρασή τους με το tablet; Εάν παρουσιάστηκαν δυσκολίες, πώς προσπάθησαν τα παιδιά να τις αντιμετωπίσουν;** |
| |
| **Πόση ώρα πέρασαν τα παιδιά κοιτώντας και αλληλεπιδρώντας με το "το βιβλίο των φαντασμάτων";** |
| |

# Παρατηρήσεις – Σημειώσεις για το Παιχνίδι - Συμπληρώνεται από τον εκπαιδευτή (ερευνητή)

| **Όνομα Παιχνιδιού** |
|---|
| |
| **Διάρκεια που περνάει με το παιχνίδι το κάθε παιδί** |
| |
| **Πόσο αφοσιωμένα φαίνεται να ήταν τα παιδιά όταν έπαιζαν το παιχνίδι (δηλαδή, στάση του σώματος, συχνές διακοπές, συζητήσεις με άλλους για το παιχνίδι);** |
| • **στάση του σώματος: σταθερός στην καρέκλα σε όλη τη διάρκεια του παιχνιδιού– με έντονες κινήσεις των μελών του σώματος-**<br>• **συχνές διακοπές**<br>• **συζητήσεις με άλλους για το παιχνίδι** |
| **Τι συνέβαινε όταν τα παιδιά ολοκλήρωναν με επιτυχία μία δραστηριότητα του παιχνιδιού; (Περιγράψτε με μια πρόταση την αντίδρασή τους)** |
| |
| **Τι συνέβαινε όταν τα παιδιά ολοκλήρωναν ανεπιτυχώς μία δραστηριότητα του παιχνιδιού; (Περιγράψτε με μια πρόταση την αντίδρασή τους)** |
| |
| **Πόσες φορές τα παιδιά ζητούσαν επιπρόσθετη βοήθεια από έναν ενήλικο (τον εκπαιδευτή ή τον ερευνητή); Για ποιο λόγο;** |
| |
| **Πόσες φορές ο ενήλικας παρενέβαινε χωρίς να έχει ζητηθεί βοήθεια από το παιδί; Για ποιο λόγο;** |
| |

# Ερωτηματολόγιο παιδιού

| | |
|---|---|
| **Όνομα παιδιού** | |
| **Όνομα παιχνιδιού** | |

1. Πόσο σου άρεσε να παίζεις το παιχνίδι; Διάλεξε ένα από τα πρόσωπα για να δείξεις πόσο σου άρεσε ή δεν σου άρεσε αυτό.

**Απαίσιο** | **Όχι τόσο καλό** | **Καλό** | **Πραγματικά καλό** | **Θαυμάσιο**

2. Θα διάλεγες να παίξεις το παιχνίδι και πάλι; Σημείωσε ένα κουτί.

| | |
|---|---|
| Ναι | |
| Όχι | |

3. Μήπως είχες κάποια προβλήματα όταν έπαιζες το παιχνίδι; Γράψε τα στο παρακάτω πλαίσιο.

4. Τι νομίζεις ότι ήταν καλό στο παιχνίδι;

5. Τι νομίζεις ότι **δεν** ήταν καλό στο παιχνίδι;

| |
|---|
| |

6. Έμαθες κάτι παίζοντας το παιχνίδι;

| | |
|---|---|
| Ναι | |
| Όχι | |

7. Γράψε έως 5 πράγματα που έμαθες παίζοντας το παιχνίδι στο παρακάτω κουτί.

| |
|---|
| 1…….<br>2……<br>3. …….<br>4……<br>5. ……. |

8. Εάν ήσουν ο σχεδιαστής του παιχνιδιού θα άλλαζες κάτι στο παιχνίδι; Γράψε έως 5 ιδέες σου στο παρακάτω κουτί.

| |
|---|
| 1…….<br>2……<br>3. …….<br>4……<br>5. ……. |

**Ερωτήσεις για συζήτηση με τα παιδιά αφού έχουν παίξει το παιχνίδι (με ομάδα παιδιών)**

1.Μπόρεσες να καταλάβεις πώς να παίζεις τα παιχνίδια χωρίς καμιά βοήθεια;

| | |
|---|---|
| Ναι | |
| Όχι | |

2.Δυσκολεύτηκες σε κάποιο συγκεκριμένο παιχνίδι; Εάν ναι, ποιο ήταν αυτό;

| | |
|---|---|
| Ναι | |
| Όχι | |

3.Ήταν εύκολο να «κυκλοφορείς» στο σύστημα (για το παιχνίδι και τα κείμενα);

| | |
|---|---|
| Ναι | |
| Όχι | |

4.Όταν διάβαζες το κείμενο είχες κάποιο πρόβλημα; Εάν ναι, είχες πρόβλημα να διαβάσεις κάποιες λέξεις (1)– κάποιες προτάσεις (2) - και τα δύο (3);

| | | | |
|---|---|---|---|
| Ναι | 1 | 2 | 3 |
| | | | |
| Όχι | | | |

5.Ποια είναι η γνώμη σου για τους ήχους; Υπήρχαν κάποιοι ήχοι που έκαναν το παίξιμο των παιχνιδιών εύκολο ή δύσκολο;

| Παίξιμο | Ήχοι |
|---|---|
| Εύκολο | |
| Δύσκολο | |

6.Υπάρχει κάτι που πραγματικά δε σου άρεσε στην εμφάνιση των παιχνιδιών; Εάν ναι, ποιο ήταν αυτό;

| | |
|---|---|
| Ναι | |
| Όχι | |

7.Ποια παιχνίδια βρήκες πραγματικά διασκεδαστικά και γιατί;

| Παιχνίδι | Διασκεδ. | Γιατί |
|---|---|---|
| 1 | | |

| | | |
|---|---|---|
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |

8.Ποια παιχνίδια βρήκες πραγματικά βαρετά και γιατί;

| Παιχνίδι | Βαρετό | Γιατί |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |

9.Θα διάλεγες να παίξεις κάποιο από τα παιχνίδια και πάλι; Γιατί / εάν όχι, γιατί;

| Παιχνίδι | Ναι/Όχι | Γιατί |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |

10.Θα έπαιζες κάποιο από τα παιχνίδια στο σπίτι;

| Παιχνίδι | Ναι/Όχι | Γιατί |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |

11.1. Ποια είναι η γνώμη σου για το «βιβλίο των φαντασμάτων»;
11.2. Ποιοι χαρακτήρες σου άρεσαν ή δε σου άρεσαν;

| Χαρακτήρες | Πολύ | Λίγο | Καθόλου |
|---|---|---|---|
| Ονομαστικά | | | |
| Ονομαστικά | | | |
| Ονομαστικά | | | |
| Ονομαστικά | | | |
| Ονομαστικά | | | |
| Ονομαστικά | | | |
| Ονομαστικά | | | |
| Ονομαστικά | | | |

11.3.Ποια είναι η γνώμη σου για τις ιστορίες των χαρακτήρων;
……
……
……..

12.Τι νομίζεις ότι σημαίνει η δημιουργία φιλίας με έναν από τους χαρακτήρες; Μήπως η φιλία με ένα συγκεκριμένο χαρακτήρα σε κάνει να θέλεις να συνεχίζεις να παίζεις;

**Ερωτήσεις για τη συνέντευξη με το δάσκαλο (εκπαιδευτή) (αφού τα παιδιά έχουν αποχωρήσει από τη συνεδρία / αίθουσα)**

Σχόλια για το Σύστημα

1.Πιστεύετε ότι το σύστημα ήταν εύκολο να χρησιμοποιηθεί από τα παιδιά; Υπήρχε κάποιο σημείο που νομίζετε ότι μπορεί να ήταν ιδιαίτερα πολύπλοκο για αυτά;

2.Παρατηρήσατε εάν τα παιδιά αντιμετώπισαν τυχόν δυσκολίες στην κατανόηση της λειτουργίας των παιχνιδιών; Είναι οι οδηγίες σαφείς;

3.Πιστεύετε ότι τα παιδιά αντιμετώπισαν προβλήματα στην ανάγνωση κάποιου κειμένου;

4.Πιστεύετε ότι ήταν εύκολο ή δύσκολο για τα παιδιά να περιηγούνται στο σύστημα;

5.Νομίζετε ότι οι ήχοι ήταν κατάλληλοι; Υπήρχαν κάποιοι που θα τους αλλάζατε;

6.Υπάρχει κάτι που μπορεί να είναι πολύ ενοχλητικό για τα παιδιά (να διασπά την προσοχή των παιδιών);

7.Θεωρείτε ότι τα παιδιά είχαν κίνητρο να χρησιμοποιήσουν το σύστημα; Περιμένετε να συνεχιστεί αυτό για μια παρατεταμένη περίοδο;

8.Πιστεύετε ότι η πρόοδος κάθε παιχνιδιού μέσω των επιπέδων δυσκολίας προχωράει πολύ γρήγορα ή πολύ αργά;

9.Πιστεύετε ότι η ανατροφοδότηση είναι κατάλληλη / επαρκής;

10.Πώς νομίζετε ότι θα αισθάνεται ένα παιδί όταν κάνει κάτι λάθος / σωστό;

11.Νομίζετε ότι το σύστημα υποστηρίζει το παιδί να κατανοήσει και να ξεπεράσει τα λάθη και να μάθει από αυτά;

12.Τι πιστεύετε για το «βιβλίο των φαντασμάτων»:
- Είναι σαφές πόση πρόοδο έχει κάνει το παιδί;
- Το παιδί αντιλαμβάνεται την πρόοδό του;

13. Υπάρχει σωστή ισορροπία μεταξύ του παιχνιδιού και της γλωσσικής ανάπτυξης;

14. Ποιες δεξιότητες νομίζετε ότι προβάλλει κάθε ένα από τα παιχνίδια; Είναι ξεκάθαρο με ποια δεξιότητα ασχολούνται τα παιδιά; Είναι σαφής ο εκπαιδευτικός στόχος του κάθε παιχνιδιού;

15. Υπάρχει κάτι στην εφαρμογή αυτή που νομίζετε ότι μπορεί να έχει αρνητικές συνέπειες στην αυτοεκτίμηση του παιδιού ή στη μάθησή τους;

## 6.2. Appendix 2. Formative evaluation forms: English

### *6.2.1. Children's Consent Form*

Research project title

ILearnRW: A computer program to help with reading and writing

Description of the research

- We are working on a research project that has been developing a new computer program to help children improve their reading and writing skills
- This new program includes lots of different games that you can play
- We would like you to test them out and let us know what you think about them

Taking part in our research

- You have been chosen to take part in this games testing group by your teacher
- I will be asking you to work in pairs to play some of the games and then fill in some worksheets about what you like or dislike about the games
- I will then have a discussion as a group about your thoughts and ideas after you have finished playing all of the games
- I will be writing notes whilst you play the games
- At the end of the session when we discuss the games I will be audio recording this so we don't miss any of your great feedback or suggestions.
- During the session I will also be taking some photographs for our website, but please tell me if you don't want to be in them.
- Taking part in the games testing session is your choice and if you do not want to take part or wish to leave during the session then just tell me or your teacher
- If you have any questions or problems during the session then please tell me or your teacher

Information from games testing session

**CONSENT FORM**

Please read the statements and tick the boxes if you agree with them

| | | |
|---|---|---|
|  | I understand the information sheet | |
|  | I have had enough time to think about the information | |
|  | I understand that I am volunteering to be involved and can leave the computer games testing session at any time without giving a reason | |
|  | I understand that the information I give may be shared with others who work on the research project | |
|  | I agree to take part in the games testing session | |

| | | |
|---|---|---|
|  | I am happy to be audio recorded during the discussion | |
|  | I am happy to be in any photographs | |

_____

(Please write your full name)

_____

(Date)

*6.2.2. Teacher Consent Form*

Dear

Thank you for your interest in participating in the preliminary evaluation stage of the iLearnRW research project, which is looking to trial new tablet-based literacy software for children with dyslexia that has been developed as part of our research project.

During this preliminary stage of the evaluation we would like to gather feedback from both pupils and teachers on the early versions of our tablet-based literacy software, which will then be shared with the project developers to help to improve the software further. This will involve us visiting your school on 2 occasions to run a 'games testing' session with a group of 4-6 children with dyslexia or children who have been receiving additional literacy support. Each session will involve us observing the children trying out a number of different literacy games and then asking them to tell us about what they thought of the games and how they could be made better. We would also like to ask you about your thoughts on the software and how it could be improved to make it more appropriate and engaging for the pupils you work with.

We would like to audio record the discussions with both yourself and the children, if you are happy for us to do so, or alternatively written notes can be taken. We would also like to take some photographs during the sessions. Because we are collecting this information for research purposes, we need to inform you about how the data will be used and ask you for your consent.

The information which we collect will be entered into a database and will only be accessed by authorised personnel involved in the iLearnRW project. All data collected from the discussions will be treated as confidential. The information will be retained by the Institute of Education and Dyslexia Action and will only be used for the purpose of research, and statistical and audit purposes (in collaboration with the National Technical University of Athens, University of Malta, Technological Institution of Epirus, Lucian Blaga University of Sibiu, and Dolphin Computer Access). By supplying

this information you are consenting to the Institute storing your information for the purposes stated above. The information will be processed in accordance with the provisions of the Data Protection Act 1998. All data will be stored in accordance with the Data Protection act for 10 years, after which time it will be destroyed. No identifiable personal data will be published.

The results of this research will be written up for conference papers and peer-reviewed journal articles, and further information will also be made available on our website: http://www.ilearnrw.eu.

By signing this form you are confirming that you have read and understand this document. Participation in this evaluation is voluntary and you are free to withdraw at any time without giving any reason. If you withdraw your data will be removed and will be erased.

Thank you very much!

Best wishes,

Dr. Laura Benton
Institute of Education

I understand the above information and consent to being interviewed as part of this research project (please tick) ☐

I consent to being audio recorded as part of this research project (please tick) ☐

I am happy to appear in photographs, which may be reproduced and used for promoting or publicizing the iLearnRW project and may include printed publications, presentations and our project website (please tick) ☐

Participant Name: _____ Date:_____

Participant Signature: _____

If you have any further questions about this research or concerns regarding your participation then please contact us:
Dr. Laura Benton
Research Fellow, Institute of Education
Email: L.Benton@ioe.ac.uk

### *6.2.3. Parent Consent Form*

Dear

My name is [insert name] and I am a researcher at the [insert institution]. I am currently working on a research project called iLearnRW (http://www.ilearnrw.eu), which is aiming to develop new tablet-based software to help children improve their reading and writing skills. We are currently trialing our software and would like your child to help us with this. They have been selected to take part by their teacher as they are currently receiving additional support for reading and/or writing.

We will be visiting your child's school on two days [insert dates] to run a 'games testing' session with a group of 4-6 children as well as a teacher from the school. Each session will last no longer than 1 hour and will involve myself (and potentially another researcher on the iLearnRW project) observing the children trying out a number of different literacy games on a tablet computer and then asking them to tell us about what they thought of the games and how they could be made better.

We would like to audio record our discussions with the children to ensure we capture all of their feedback and also to take some photographs during the session, if you are happy for us to do so please indicate on the form below. If you have any concerns about this we can alternatively take written notes and ensure that your child does not appear in any photographs, please feel free to contact me to discuss any concerns. Because we are collecting this information for research purposes, we need to inform you about how the data will be used and ask you for your consent. We will also be asking your child at the start of the session if they are happy with this too.

The information which we collect will be entered into a database and will only be accessed by authorised personnel involved in the iLearnRW project. All data collected from the verbal discussions will be treated as confidential. The information will be retained by the Institute of Education and Dyslexia Action and will only be used for the purpose of research, and statistical and audit purposes (in collaboration with the National Technical University of Athens, University of Malta, Technological Institution of Epirus, Lucian Blaga University of Sibiu, and Dolphin Computer Access). By supplying this information you are consenting to the Institute storing your child's information for the purposes stated above. The information will be processed in accordance with the provisions of the Data Protection Act 1998. All data will be stored in accordance with the Data Protection act for 10 years, after which time it will be destroyed. No identifiable personal data will be published.

The results of this research will be written up for conference papers and peer-reviewed journal articles, and further information will also be made available on our website: http://www.ilearnrw.eu.

By signing this form you are confirming that you have read and understand this letter. Participation in this project is voluntary and you are free to withdraw your child at any time without giving any reason. If you withdraw your child then their data will be removed and erased.

Thank you very much!

Best wishes,
Dr. Laura Benton
Institute of Education

Please complete the form below and return to your child's class teacher as soon as possible.

I understand the above information and consent to my child taking part in this project (please tick) ☐

I am happy for my child to be audio recorded as part of this research project (please tick) ☐

I am happy for my child to appear in photographs, which may be reproduced and used for promoting or publicizing the iLearnRW project and may include printed publications, presentations and our project website (please tick) ☐

Parent Name: _____ Child's Name:_____

Parent Signature: _____

Date:_____

If you have any further questions about this research or concerns regarding your child's participation then please contact me:

Dr. Laura Benton
Research Fellow, Institute of Education
Email: L.Benton@ioe.ac.uk

## 6.3. Appendix 3. Greek clustered profile

| | **Clusters** | **1** | | | | **2** | | **3** | | | **4** | | **5** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Difficulty** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** |
| 1 | **SYLLABLE DIVISION** | cv-cv | cv-v | v-cv | cv-vc | vc-cv(c) | cvc-cv(c) | cv-ccv(c) | ccv-cv(c) | ccvc-cv(c) | cv-cccv(c) | v-cccv(c) | ιά/ει ά | ιά/ία |

| | **Clusters** | **6** | | | **7** | | **8** | |
|---|---|---|---|---|---|---|---|---|
| | **Difficulty** | **14** | **15** | **16** | **17** | **18** | **19** | **20** |
| 1 | **SYLLABLE DIVISION** | αί/αΐ, εί/εΐ, οί/οΐ | αί/άι, οί/όι | άι, όι (diphthongs) | αι/αϊ, οι/οϊ, ει/εϊ | ου/οϋ, ού/οΰ | αυ/αϋ, αύ/αΰ | εύω |

| | **Clusters** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Difficulty** | **1** | | | **2** | | **3** | | **4** | | | **5** | |
| 2 | **PHONEMES** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| 2a | Consonants (sound similarity) | /t/-/d/, /p/-/b/ | /k/-/p/, /k/-/t/ | /m/-/n/ | /θ/-/ð/, /f/-/v/, /χ/-/γ/ | /k/-/γ/, /k/-/χ/ | /s/-/z/ | /l/-/r/ | /ð/-/v/, /f/-/θ/, /f/-/v/, /θ/-/ð/ | /kt/-/pt/ | /ks/-/ps/, /ks/-/sk/, /ps/-/sp/ | /ðr/-/θr/, /fr/-/χr/ | /χθ/-/fθ/ |

| | **Clusters** | **1** | | | **2** | | |
|---|---|---|---|---|---|---|---|
| | **Difficulty** | **1** | **2** | **3** | **4** | **5** | **6** |
| 2b | Vowels | εϋ: /ει/ | οϋ: /οι/ | αϊ: /αι/ | αη: /αι/ | οΰ: /oi/ | αΐ: /ai/ |

| | **Clusters** | **1** | | **2** | |
|---|---|---|---|---|---|
| | **Difficulty** | **1** | **2** | **3** | **4** |
| **4** | **SUFFIXING** | | | | |
| 4a | **Derivational** | NOUNS&ADJs: Diminutives: -άκι-άκης,-άκος,-ίτσα,-κας,-οπούλα,-όπουλο,-ούδι,-ούλα,-ούλης,-ούλης/α/ούλικο,-ούτσικος/η/ούτσικο | NOUNS&ADJs: Enlargement: -άκλα,-άρα,-αράς,-αρόνα,-αρος,-ούκλα | NOUNS: Profession/person: -άς,-έας,-ιάς,-δόρος,-άρης,-ιάρης,-ιέρης/-ιέρα,-ίτης,-ιώτης,-ίστας,-ιστής/-ίστρια,-της/-τής/-τρια/-τισσα,-τζής/-τζού,-τίας,-τορας | NOUNS: Place: -είο,-ιά,-ία,-ικο,-δικο |

| | **Clusters** | **3** | | | **4** | | | **5** | |
|---|---|---|---|---|---|---|---|---|---|
| | **Difficulty** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| **4** | **SUFFIXING** | | | | | | | | |
| 4a | **Derivational** | NOUNS: Instrument/means/container: -έας,-ερό,-ιέρα,-τήρας,-τήρι,-τήριο,-τρα,-της | NOUNS: Colours: -ί, Plants: -ιά | NOUNS: Activity/activity outcome: -άλα,-εία,-ειά,-εια,-(σ/ξ/ψ)η,-(σ)ία,-(σ/ψ/ξ/ματ)ιά,-(σ/ξ/ψ)ιμο,-(α/η/ω/σ/γ/)μα,-μός,-(η/α/κ/χ/φ/π)τό | ADJs: -ικός/-ική/-ικό,-σιμος/-σιμη/-σιμο,-ιάρης/-ιάρα/άρικο,-ερός/-ερή/-ερό,-τός/-τή/-τό,-άτος/-άτη/-άτο,-ινος/-ινη/-ινο,-ιακός/-ιακή/-ιακό,-ανός/-ανή/-ανό,-ούρης/-ούρα/-ούρικο | ADJs: -ίστικος/-ίστικη/-ίστικο,-ήσιος/-ήσια/-ήσιο,-λέος/-λέα/-λέο,-αίος/-αία/-αίο,-ωπός/-ωπή/-ωπό,-ένιος/α/ο,-τέος/-τέα/-τέο,-ώδης/-ώδες | VERBS: -ίζω/-άζω/-ιάζω,-αίνω,-ώνω,-ύνω,-εύω,-άρω | VERBS: lexical suffixes: -βολώ,-λογώ,-ποιώ | ADJs: lexical suffixes: -ειδής/-ειδές, -μελής/-μελές, -ετής/-ετές |

| | **Clusters** | **1** | | | **2** | | |
|---|---|---|---|---|---|---|---|
| | **Difficulty** | **1** | **2** | **3** | **4** | **5** | **6** |
| 4b | **Inflectional / Grammatical** | freq. noun classes (nom./acc.sing): -ος/-ο, -ας/-α, -ης/-η, -α, -η, -ο | freq.noun classes (nom./acc.pl): -οι/-ους, -ες, -εις, -α. | Freq. noun classes (gen.sing&pl): -ου/-ων, -ες/-ων, -εις/-εων, -ες/-ών/-ων,-ου/-ων | less freq.noun classes (nom/acc.sing.): -ες/-ε, -άς/-ά, -ούς/-ού, -ού, -ι, -ον, -ος, -ας, -α, -υ | less freq.noun classes (nom/acc.pl): -έδες, -άδες, -ούδες, -οντα, -ά, -η, -ατα | less freq.noun classes(gen.sing &pl): -έ/-έδων, -ά/-άδων, -ού/-ούδων, -ούς/-ούδων, -ιού/-ιών, -οντος/-όντων, -ατος/-άτων |

| | **Clusters** | **3** | | | | **4** | | **5** | |
|---|---|---|---|---|---|---|---|---|---|
| | **Difficulty** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** |
| 4b | **Inflectional / Grammatical** | freq.adjective classes (nom/acc.sing.): -ος/-η/-ο, -ος/-α/-ο, -ός/-ιά/-ό, -ης/-α/-(ικ)ο, -άς/-ού/-άδικο | less freq.adj. classes (nom/acc.sing.): -ύς/-ιά/-ύ, -ής/-ιά/-ί, -ής/-ές, πολύς/πολλή/πολύ | freq.adjective classes (nom./acc.pl.): -οι/-ες/-α, -ηδες/-ες/-ικα, -άδες/-ούδες/-άδικα | less freq.adj. classes (nom/acc.pl.): -ιοί/-ιές/-ιά, -είς/-ή, πολλοί/-ές/-ά | freq.adjective classes (gen.sing.& pl.): -ου/-ης/-ου, -ου/-ας/-ου, -ού/-ιάς/-ού, -η/-ας/-(ικ)ου, -ά/-ούς/-άδικου | less freq.adj. classes (gen.sing.& pl.): -ιού/-ιάς/-ιού/-ιών, -ούς/-ών | verbs,present/active: -ω/-εις/-ει/-ουμε/-ετε/-ουν, -ώ/-άς/-ά(ει)/-άμε/-ούμε/-άτε/-ούν(ε)/-άν(ε)/-ούν, -ώ/-είς/-εί/-ούμε/-είτε/-ούν(ε) | verbs,past/active: -α/-ες/-ε/-αμε/-ατε/-αν(ε), -αγα/-αγες/-αγε/-άγαμε/-άγατε/-αγαν(ε), -ούσα/-ούσες/-ούσε/-ούσαμε/-ούσατε/-ούσαν(ε) |

| | **Clusters** | **6** | | **7** |
|---|---|---|---|---|
| | **Difficulty** | **15** | **16** | **17** |

| | | | | |
|---|---|---|---|---|
| 4b | **Inflectional / Grammatical** | verbs, present passive: -ομαι/-εσαι/-εται/-όμαστε/-όσαστε/-εστε/-ονται, -ιέμαι/-ιέσαι/-ιέται/-ιόμαστε/-ιέστε/-ιούνται/-ιόνται, -ιούμαι/-είσαι/-είται/-ούμαστε/-είστε/-ούνται, | verbs, past simple passive: -όμουν(α)/-όσουν(α)/-όταν(ε)/-όμασταν/-όμαστε/-όσασταν/-όσαστε/-ονταν(ε)/-όντουσαν, -ούμουν(α)/-ούσουν(α)/-ούνταν/-ούμασταν/-ούμαστε/-ούσασταν/-ούσαστε/-ούνταν(ε), -ηκα/-ηκες/-ηκε/-ήκαμε/-ήκατε/-αν | adjectival participles: -ών/-ούσα/-όν, -είς/-είσα/-έν |

| | **Clusters** | **1** | | **2** | | **3** | |
|---|---|---|---|---|---|---|---|
| | **Difficulty** | **1** | **2** | **3** | **4** | **5** | **6** |
| 4c | **Prefixing** | ADJS: Privative/Opposite/Difficulty: α-,αντι-,δυσ- | ADJS&NOUNS:Quantity (over/under): υπερ-/υπο-, κατα- | VERBS: Quantity(over/under): | Lexical prefixes: δι-/τρι-,πρωτο-,αυτο-,πολυ-,μικρο-,ψιλο-,ημι- | VERBS: ανα-,αντι-,απο-,δια-,εισ-,εκ-/εξ-,εν-,επι-,κατα-,μετα-,παρα-,περι-,προ-,προσ-,συν- | VERBS: Lexical prefixes: ψιλο-,μισο-,κουτσο-,ψευτο- |

| | **Clusters** | **1** | | | | | **2** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Difficulty** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| 5 | **G-P CORRESPONDENCE** | 2-syll, initial: /sp/,/st/,/sk/ | 2-syll, initial: /pr/,/tr/,/kr/, | 2-syll, initial: /gr/,/dr/,/br/ | 2-syll, initial: /fr/,/ðr/,/χr/,/vr/,/γr/,/θr/ | 2-syll, initial: /spr/,/skr/,/str/,/sfr/ | 3-syll, initial: /sp/,/st/,/sk/ | 3-syll, initial: /pr/,/tr/,/kr/ | 3-syll, initial: /gr/,/dr/,/br/ | 3-syll, initial: /fr/,/ðr/,/χr/,/vr/,/γr/,/θr/ | 3-syll, initial: /spr/,/skr/,/str/,/sfr/ |

| | **Clusters** | **3** | | | | | **4** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Difficulty** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** |
| 5 | **G-P CORRESPONDENCE** | 2-syll, internal: /sp/,/st/,/sk/ | 2-syll, internal: /pr/,/tr/,/kr/, | 2-syll, internal: /gr/,/dr/,/br/ | 2-syll, internal: /fr/,/ðr/,/χr/,/vr/,/γr/,/θr/ | 2-syll, internal: /spr/,/skr/,/str/,/sfr/ | 3-syll, internal: /sp/,/st/,/sk/ | 3-syll, internal: /pr/,/tr/,/kr/, | 3-syll, internal: /gr/,/dr/,/br/ | 3-syll, internal: /fr/,/ðr/,/χr/,/vr/,/γr/,/θr/ | 3-syll, internal: /spr/,/skr/,/str/,/sfr/ |

| | **Clusters** | **1** | | **2** | | | | **3** | | **4** | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Difficulty** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| 6 | **Grammar: function words** | Indef. article, nom | Indef. article, gen | Definite article, singular nom | Def. articles, singular, gen. | Def. article, plural nom: | Def. article, plural, gen | Prepositions: σε | prepositions: με | prepositions: για | prepositions: από |

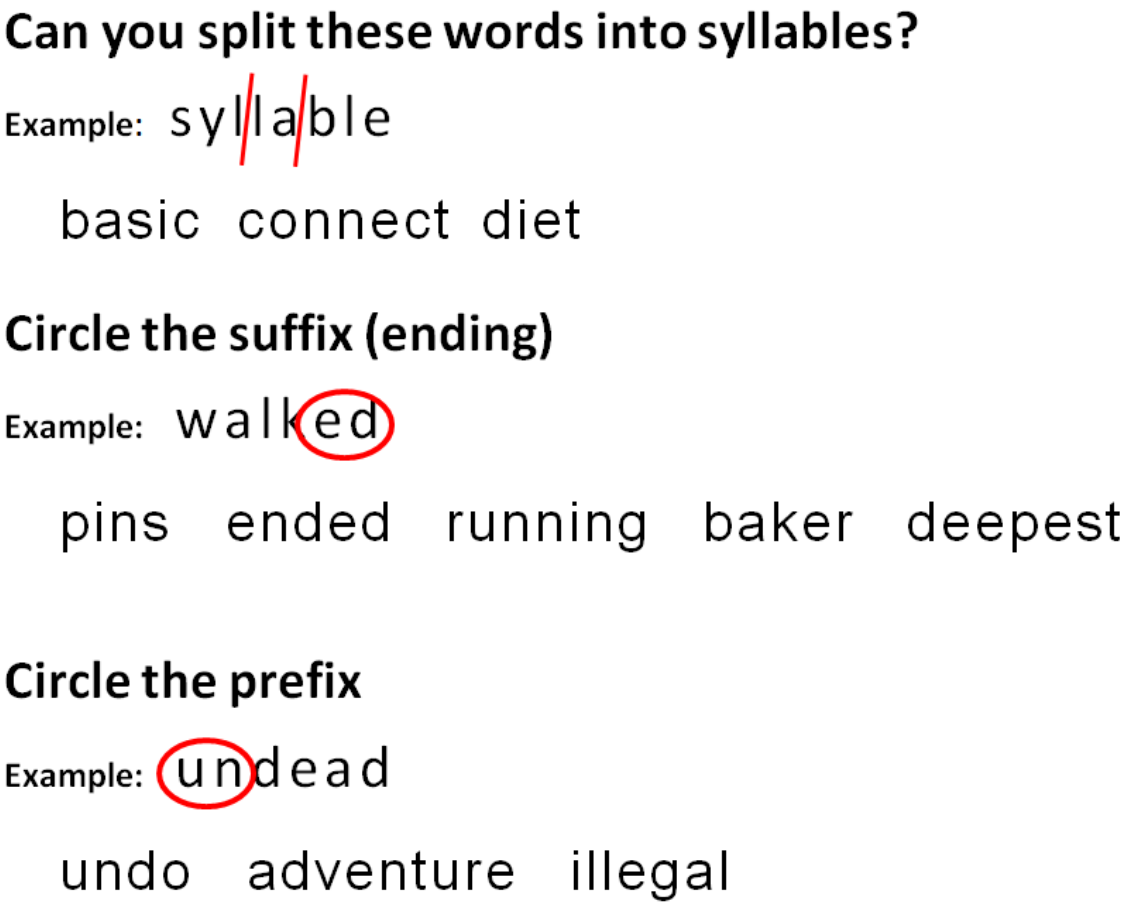
## 6.4. Appendix 4. Screening tool sample format

These tools were piloted during a small study of readability. The appendix only contains formatting samples. The actual screening used will be generated by the online tool developed for this purpose.

### *6.4.1. Child prompt sheet for reading [SAMPLE]*

| | | |
|---|---|---|
| cap | sure | earn |
| cape | queen | weigh |
| lick | measure | build |
| like | did | ear |
| trip | live | poor |
| tripe | alive | key |
| butter | good | illegal |
| carrot | food | giant |
| shop | low | special |
| | cow | science |

*6.4.2. Child prompt sheet for identification [SAMPLE]*



*6.4.3. Interviewer scoring sheet [SAMPLE]*

| | | Correct | Incorrect | No answer | Other word |
|---|---|---|---|---|---|
| **Syllables** | cap | **1** | **0** | - | **?** |
| | cape | **1** | **0** | - | **?** |
| | lick | **1** | **0** | - | **?** |
| | like | **1** | **0** | - | **?** |
| | trip | **1** | **0** | - | **?** |
| | tripe | **1** | **0** | - | **?** |
| **Graphemes** | butter | **1** | **0** | - | **?** |
| | carrot | **1** | **0** | - | **?** |
| | shop | **1** | **0** | - | **?** |
| | sure | **1** | **0** | - | **?** |
| | queen | **1** | **0** | - | **?** |
| | measure | **1** | **0** | - | **?** |
| **Vowels** | did | **1** | **0** | - | **?** |
| | live | **1** | **0** | - | **?** |
| | alive | **1** | **0** | - | **?** |
| | good | **1** | **0** | - | **?** |
| | food | **1** | **0** | - | **?** |
| | low | **1** | **0** | - | **?** |
| | cow | **1** | **0** | - | **?** |
| | earn | **1** | **0** | - | **?** |

## 6.5. Appendix 5. English updated profile with clusters

This table represents the complete English profile sorted by clusters and thereby simulating linear progress across the profile.

| Category | Cluster | Index | Character | Description |
|---|---|---|---|---|
| 1 Consonants | 1 | 0 | Single letter | t-t |
| 1 Consonants | 1 | 2 | Single letter | p-p |
| 1 Consonants | 1 | 4 | Single letter | n-n |
| 1 Consonants | 1 | 6 | Single letter | s-s |
| 1 Consonants | 1 | 43 | Single letter | s-z |
| 2 Vowels | 1 | 0 | Short vowel | i-ɪ |
| 2 Vowels | 1 | 3 | Short vowel | i-aɪ |
| 3 Blends and Letter Patterns | 1 | 0 | End of word | ip-ɪp |
| 3 Blends and Letter Patterns | 1 | 1 | End of word | in-ɪn |
| 3 Blends and Letter | 1 | 2 | Beginning of | st-st |

| | | | | |
|---|---|---|---|---|
| Patterns | | | word | |
| 3 Blends and Letter Patterns | 1 | 3 | Beginning of word | sp-sp |
| 3 Blends and Letter Patterns | 1 | 4 | Beginning of word | sn-sn |
| 5 Suffixes | 1 | 0 | Add | s |
| 1 Consonants | 3 | 8 | Single letter | c-s |
| 1 Consonants | 3 | 9 | Single letter | d-d |
| 1 Consonants | 3 | 11 | Single letter | h-h |
| 1 Consonants | 3 | 26 | Single letter | c-k |
| 2 Vowels | 3 | 1 | Short vowel | a-æ |
| 2 Vowels | 3 | 2 | Short vowel | o-ɒ |
| 3 Blends and Letter Patterns | 3 | 6 | End of word | ad-æd |
| 3 Blends and Letter Patterns | 3 | 7 | End of word | and-ænd |
| 3 Blends and Letter Patterns | 3 | 9 | End of word | act-ækt |
| 3 Blends and Letter Patterns | 3 | 10 | Beginning of word | sc-sk |
| 7 Confusing letters | 3 | 0 | Letter pairs | n/h |
| 7 Confusing letters | 3 | 1 | Letter pairs | a/o |
| 4 Syllables | 4 | 0 | Polysyl | 1 syllable |
| 4 Syllables | 4 | 1 | Syllable split rules | Closed syllables |
| 4 Syllables | 4 | 2 | Syllable split rules | Open syllables |
| 1 Consonants | 5 | 12 | Single letter | r-r |
| 1 Consonants | 5 | 14 | Single letter | m-m |
| 2 Vowels | 5 | 4 | Short vowel | e-e |
| 3 Blends and Letter Patterns | 5 | 8 | Beginning of word | de-de |
| 3 Blends and Letter Patterns | 5 | 11 | Beginning of word | cr-kr |
| 3 Blends and Letter Patterns | 5 | 12 | Beginning of word | dr-dr |
| 3 Blends and Letter Patterns | 5 | 13 | Beginning of word | pr-pr |
| 3 Blends and Letter Patterns | 5 | 14 | Beginning of word | tr-tr |
| 3 Blends and Letter Patterns | 5 | 15 | Beginning of word | str-str |
| 3 Blends and Letter Patterns | 5 | 16 | Beginning of word | spr-spr |
| 3 Blends and Letter Patterns | 5 | 17 | Beginning of word | scr-skr |
| 3 Blends and Letter Patterns | 5 | 20 | End of word | am-æm |
| 3 Blends and Letter Patterns | 5 | 21 | End of word | amp-æmp |
| 3 Blends and Letter Patterns | 5 | 22 | End of word | im-ɪm |
| 7 Confusing letters | 5 | 2 | Letter pairs | r/t |
| 7 Confusing letters | 5 | 3 | Letter pairs | m/n |
| 7 Confusing letters | 5 | 4 | Letter pairs | m/h |

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|---|---|---|---|---|
| 4 Syllables | 6 | 3 | Syllable split rules | vc/cv |
| 1 Consonants | 7 | 16 | Single letter | b-b |
| 1 Consonants | 7 | 18 | Single letter | l-l |
| 3 Blends and Letter Patterns | 7 | 23 | Vowel pattern | _V_b-b |
| 3 Blends and Letter Patterns | 7 | 24 | Beginning of word | br-br |
| 3 Blends and Letter Patterns | 7 | 25 | Vowel pattern | _V_lt-lt |
| 3 Blends and Letter Patterns | 7 | 26 | Beginning of word | bl-bl |
| 3 Blends and Letter Patterns | 7 | 27 | Beginning of word | cl-kl |
| 3 Blends and Letter Patterns | 7 | 28 | Beginning of word | pl-pl |
| 3 Blends and Letter Patterns | 7 | 29 | Beginning of word | sl-sl |
| 3 Blends and Letter Patterns | 7 | 30 | Beginning of word | spl-spl |
| 5 Suffixes | 7 | 1 | Add | ed |
| 7 Confusing letters | 7 | 5 | Letter pairs | b/d |
| 7 Confusing letters | 7 | 6 | Letter pairs | l/r |
| 1 Consonants | 8 | 1 | Double letter | tt-t |
| 1 Consonants | 8 | 3 | Double letter | pp-p |
| 1 Consonants | 8 | 5 | Double letter | nn-n |
| 1 Consonants | 8 | 7 | Double letter | ss-s |
| 1 Consonants | 8 | 10 | Double letter | dd-d |
| 1 Consonants | 8 | 13 | Double letter | rr-r |
| 1 Consonants | 8 | 15 | Double letter | mm-m |
| 1 Consonants | 8 | 17 | Double letter | bb-b |
| 1 Consonants | 8 | 19 | Double letter | ll-l |
| 3 Blends and Letter Patterns | 8 | 31 | Vowel pattern | _V_ll-l |
| 3 Blends and Letter Patterns | 8 | 32 | Vowel pattern | _V_ss-s |
| 3 Blends and Letter Patterns | 8 | 126 | End of word | nd-nd |
| 3 Blends and Letter Patterns | 8 | 127 | End of word | nt-nt |
| 3 Blends and Letter Patterns | 8 | 128 | End of word | nch-ntʃ |
| 3 Blends and Letter Patterns | 8 | 129 | End of word | mp-mp |
| 5 Suffixes | 9 | 2 | Add | es |
| 5 Suffixes | 9 | 3 | Add | less |
| 5 Suffixes | 9 | 4 | Add | ness |
| 4 Syllables | 10 | 4 | Syllable split rules | v/cv |
| 1 Consonants | 11 | 20 | Single letter | f-f |
| 1 Consonants | 11 | 21 | Double letter | ff-f |
| 1 Consonants | 11 | 23 | Single letter | g-g |
| 1 Consonants | 11 | 24 | Double letter | gg-g |
| 2 Vowels | 11 | 5 | Short vowel | u-ʌ |

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|---|---|---|---|---|
| 3 Blends and Letter Patterns | 11 | 33 | Vowel pattern | _V_ft-ft |
| 3 Blends and Letter Patterns | 11 | 34 | End of word | elf-elf |
| 3 Blends and Letter Patterns | 11 | 35 | Beginning of word | fl-fl |
| 3 Blends and Letter Patterns | 11 | 36 | Beginning of word | fr-fr |
| 3 Blends and Letter Patterns | 11 | 37 | Vowel pattern | _V_g-g |
| 3 Blends and Letter Patterns | 11 | 38 | Beginning of word | gl-gl |
| 3 Blends and Letter Patterns | 11 | 39 | Beginning of word | gr-gr |
| 3 Blends and Letter Patterns | 11 | 102 | End of word | pt-pt |
| 7 Confusing letters | 11 | 7 | Letter pairs | b/g |
| 7 Confusing letters | 11 | 8 | Letter pairs | d/g |
| 7 Confusing letters | 11 | 9 | Letter pairs | t/f |
| 7 Confusing letters | 11 | 10 | Letter pairs | r/f |
| 6 Prefixes | 12 | 0 | Prefix add | un |
| 6 Prefixes | 12 | 1 | Prefix add | mis |
| 6 Prefixes | 12 | 21 | Prefix add | in |
| 4 Syllables | 13 | 5 | Syllable split rules | v/v |
| 1 Consonants | 14 | 25 | Single letter | k-k |
| 1 Consonants | 14 | 27 | Xgraph | ck-k |
| 1 Consonants | 14 | 28 | Xgraph | ng-ŋ |
| 1 Consonants | 14 | 29 | Xgraph | nk-ŋk |
| 1 Consonants | 14 | 30 | Xgraph | th-θ |
| 1 Consonants | 14 | 46 | Xgraph | th-ð |
| 3 Blends and Letter Patterns | 14 | 40 | Vowel pattern | _V_sk-sk |
| 3 Blends and Letter Patterns | 14 | 41 | Vowel pattern | _V_lk-lk |
| 3 Blends and Letter Patterns | 14 | 42 | Middle of word | sk-sk |
| 3 Blends and Letter Patterns | 14 | 43 | Vowel pattern | _V_ng-ŋ |
| 3 Blends and Letter Patterns | 14 | 44 | Vowel pattern | _V_nk-ŋk |
| 3 Blends and Letter Patterns | 14 | 45 | Beginning of word | thank-θæŋk,than-ðæn |
| 3 Blends and Letter Patterns | 14 | 46 | End of word | ath-ɑːθ |
| 3 Blends and Letter Patterns | 14 | 47 | End of word | oth-ɒθ |
| 3 Blends and Letter Patterns | 14 | 48 | End of word | ength-eŋθ |
| 3 Blends and Letter Patterns | 14 | 49 | Vowel pattern | _V_ck-k |
| 3 Blends and Letter Patterns | 14 | 50 | End of word | ic-ɪk |
| 3 Blends and Letter Patterns | 14 | 107 | Beginning of word | sch-sk |

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|---|---|---|---|---|
| 3 Blends and Letter Patterns | 14 | 110 | Vowel pattern | al_C_ |
| 3 Blends and Letter Patterns | 14 | 114 | Vowel pattern | ol_C_-əʊ |
| 3 Blends and Letter Patterns | 14 | 125 | Beginning of word | thr-θr |
| 1 Consonants | 15 | 31 | Single letter | v-v |
| 1 Consonants | 16 | 32 | Single letter | w-w |
| 1 Consonants | 16 | 33 | Xgraph | sh-ʃ |
| 2 Vowels | 16 | 70 | Short vowel | a-ɒ |
| 3 Blends and Letter Patterns | 16 | 5 | Beginning of word | sm-sm |
| 3 Blends and Letter Patterns | 16 | 51 | Silent letter | ve-v |
| 3 Blends and Letter Patterns | 16 | 52 | Beginning of word | sw-sw |
| 3 Blends and Letter Patterns | 16 | 53 | Beginning of word | tw-tw |
| 3 Blends and Letter Patterns | 16 | 54 | Beginning of word | dw-dw |
| 3 Blends and Letter Patterns | 16 | 55 | Beginning of word | wa-wɒ |
| 3 Blends and Letter Patterns | 16 | 57 | Beginning of word | swa-swɒ |
| 3 Blends and Letter Patterns | 16 | 58 | Vowel pattern | _V_sh-ʃ |
| 3 Blends and Letter Patterns | 16 | 59 | Beginning of word | shr-ʃr |
| 5 Suffixes | 17 | 5 | Add | en |
| 5 Suffixes | 17 | 6 | Add | ing |
| 5 Suffixes | 17 | 7 | Add | ful |
| 5 Suffixes | 17 | 8 | Add | ish |
| 1 Consonants | 18 | 36 | Single letter | y-j |
| 1 Consonants | 18 | 37 | Single letter | j-dʒ |
| 1 Consonants | 18 | 40 | Xgraph | qu-k |
| 1 Consonants | 18 | 41 | Single letter | z-z |
| 1 Consonants | 18 | 42 | Double letter | zz-z |
| 1 Consonants | 18 | 47 | Single letter | x-gz |
| 1 Consonants | 18 | 48 | Single letter | x-ks |
| 3 Blends and Letter Patterns | 18 | 60 | Vowel pattern | _V_x-ks |
| 3 Blends and Letter Patterns | 18 | 61 | End of word | zz-z |
| 4 Syllables | 18 | 7 | Syllable split rules | qu:vc/cv,qu:v/cv,qu:v/v |
| 7 Confusing letters | 18 | 11 | Letter pairs | b/q |
| 7 Confusing letters | 18 | 12 | Letter pairs | d/q |
| 7 Confusing letters | 18 | 13 | Letter pairs | q/g |
| 7 Confusing letters | 18 | 14 | Letter pairs | k/x |
| 4 Syllables | 19 | 6 | Syllable split rules | vc/v |
| 4 Syllables | 19 | 9 | Polysyl | 2 syllables |
| 5 Suffixes | 20 | 10 | Double | ing |
| 5 Suffixes | 20 | 11 | Double | ed |

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|---|---|---|---|---|
| 5 Suffixes | 20 | 12 | Double | en |
| 5 Suffixes | 20 | 13 | Double | ish |
| 1 Consonants | 21 | 44 | Xgraph | ch-tʃ |
| 2 Vowels | 21 | 6 | Long vowel | ar-ɑ: |
| 2 Vowels | 21 | 7 | Long vowel | ee-i: |
| 2 Vowels | 21 | 8 | Long vowel | or-ɔ: |
| 2 Vowels | 21 | 9 | Short vowel | y-i |
| 2 Vowels | 21 | 10 | Diphthong | y-aɪ |
| 2 Vowels | 21 | 65 | Diphthong | eer-ɪə |
| 3 Blends and Letter Patterns | 21 | 62 | Vowel pattern | _V_ff-f |
| 3 Blends and Letter Patterns | 21 | 63 | Vowel pattern | _V_nch-ntʃ |
| 3 Blends and Letter Patterns | 21 | 66 | End of word | arch-tʃ |
| 5 Suffixes | 22 | 14 | Add | y |
| 5 Suffixes | 22 | 15 | Double | y |
| 5 Suffixes | 22 | 16 | Add | ly |
| 5 Suffixes | 22 | 17 | Change | ity |
| 5 Suffixes | 22 | 18 | Change | ility |
| 5 Suffixes | 22 | 19 | Add | ty |
| 2 Vowels | 23 | 12 | Diphthong | i_C_e-aɪ |
| 2 Vowels | 23 | 13 | Diphthong | a_C_e-eɪ |
| 2 Vowels | 23 | 14 | Diphthong | ay-eɪ |
| 2 Vowels | 23 | 58 | Diphthong | ine-aɪn |
| 2 Vowels | 23 | 62 | Diphthong | are-eə |
| 5 Suffixes | 24 | 20 | Drop | ing |
| 5 Suffixes | 24 | 21 | Drop | ed |
| 5 Suffixes | 24 | 22 | Drop | y |
| 5 Suffixes | 24 | 23 | Drop | en |
| 2 Vowels | 25 | 15 | Long vowel | er-ə |
| 3 Blends and Letter Patterns | 25 | 18 | End of word | ed-t |
| 3 Blends and Letter Patterns | 25 | 19 | End of word | ed-d |
| 3 Blends and Letter Patterns | 25 | 68 | Vowel pattern | _V_nce-ns |
| 3 Blends and Letter Patterns | 25 | 69 | Beginning of word | wh-w |
| 5 Suffixes | 25 | 27 | Add | ed-d |
| 5 Suffixes | 25 | 28 | Drop | ed-d |
| 5 Suffixes | 25 | 29 | Double | ed-d |
| 5 Suffixes | 25 | 30 | Add | ed-t |
| 5 Suffixes | 25 | 31 | Drop | ed-t |
| 5 Suffixes | 25 | 32 | Double | ed-t |
| 5 Suffixes | 26 | 24 | Add | er |
| 5 Suffixes | 26 | 25 | Drop | er |
| 5 Suffixes | 26 | 26 | Double | er |
| 5 Suffixes | 26 | 33 | Add | est |
| 5 Suffixes | 26 | 34 | Drop | est |
| 5 Suffixes | 26 | 35 | Double | est |
| 2 Vowels | 27 | 16 | Long vowel | oo-u: |

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|---|---|---|---|---|
| 2 Vowels | 27 | 17 | Short vowel | oo-ʊ |
| 1 Consonants | 28 | 39 | Xgraph | dg-dʒ |
| 2 Vowels | 28 | 18 | Diphthong | o_C_e-əʊ |
| 2 Vowels | 28 | 19 | Long vowel | u_C_e-juː |
| 2 Vowels | 28 | 20 | Long vowel | ea-iː |
| 2 Vowels | 28 | 21 | Short vowel | ea-e |
| 2 Vowels | 28 | 30 | Diphthong | o-əʊ |
| 2 Vowels | 28 | 57 | Long vowel | eur-ə |
| 2 Vowels | 28 | 64 | Diphthong | ear-ɪə |
| 2 Vowels | 28 | 66 | Diphthong | ere-ɪə |
| 2 Vowels | 28 | 67 | Diphthong | ure-ʊə |
| 2 Vowels | 28 | 68 | Diphthong | oor-ʊə |
| 2 Vowels | 28 | 69 | Diphthong | our-ʊə |
| 3 Blends and Letter Patterns | 28 | 56 | Change | tion-ʃən |
| 3 Blends and Letter Patterns | 28 | 70 | Vowel pattern | _V_ge-dʒ |
| 3 Blends and Letter Patterns | 28 | 71 | Vowel pattern | _V_rge-dʒ |
| 3 Blends and Letter Patterns | 28 | 72 | Vowel pattern | _V_nge-ndʒ |
| 3 Blends and Letter Patterns | 28 | 73 | Vowel pattern | _V_dge-dʒ |
| 4 Syllables | 28 | 8 | Syllable split rules | ture:vc/cv,ture:v/cv,ture:vc/v |
| 5 Suffixes | 28 | 48 | Change | ation-eɪʃən |
| 5 Suffixes | 28 | 49 | Change | otion-əʊʃən |
| 5 Suffixes | 28 | 50 | Change | ition-ɪʃən |
| 5 Suffixes | 28 | 51 | Change | ution-uːʃən |
| 5 Suffixes | 28 | 52 | Change | action-ækʃən |
| 5 Suffixes | 28 | 53 | Change | ection-ekʃən |
| 5 Suffixes | 28 | 54 | Change | iction-ɪkʃən |
| 5 Suffixes | 28 | 55 | Change | uction-ʌkʃən |
| 5 Suffixes | 28 | 56 | Change | ention-enʃən |
| 6 Prefixes | 28 | 2 | Prefix add | under |
| 6 Prefixes | 28 | 3 | Prefix add | over |
| 6 Prefixes | 28 | 4 | Prefix add | pro-prə |
| 6 Prefixes | 28 | 5 | Prefix add | pre-prɪ |
| 3 Blends and Letter Patterns | 29 | 117 | Middle of word | ro-ra,rə |
| 5 Suffixes | 29 | 36 | Add | al |
| 5 Suffixes | 29 | 37 | Drop | al |
| 5 Suffixes | 29 | 88 | Add | able |
| 5 Suffixes | 29 | 89 | Drop | able |
| 5 Suffixes | 29 | 90 | Change | able |
| 3 Blends and Letter Patterns | 30 | 74 | End of word | ble-bəl |
| 3 Blends and Letter Patterns | 30 | 75 | End of word | fle-fəl |
| 3 Blends and Letter Patterns | 30 | 76 | End of word | ple-pəl |
| 3 Blends and Letter Patterns | 30 | 77 | End of word | tle-təl |

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|---|---|---|---|---|
| 3 Blends and Letter Patterns | 30 | 78 | End of word | dle-dəl |
| 3 Blends and Letter Patterns | 30 | 79 | End of word | kle-kəl |
| 3 Blends and Letter Patterns | 30 | 80 | End of word | cle-kəl |
| 3 Blends and Letter Patterns | 30 | 81 | End of word | gle-gəl |
| 3 Blends and Letter Patterns | 30 | 82 | End of word | zle-zəl |
| 3 Blends and Letter Patterns | 30 | 83 | End of word | stle-səl |
| 1 Consonants | 31 | 38 | Single letter | g-dʒ |
| 2 Vowels | 31 | 22 | Diphthong | ou-aʊ |
| 2 Vowels | 31 | 23 | Long vowel | igh-aɪ |
| 2 Vowels | 31 | 24 | Short vowel | o-ʌ |
| 2 Vowels | 31 | 25 | Short vowel | ice-ɪs |
| 2 Vowels | 31 | 26 | Diphthong | ai-eɪ |
| 2 Vowels | 31 | 27 | Diphthong | ow-əʊ |
| 2 Vowels | 31 | 28 | Diphthong | ow-aʊ |
| 2 Vowels | 31 | 61 | Diphthong | air-eə |
| 3 Blends and Letter Patterns | 31 | 86 | Silent letter | age-ɪdʒ |
| 5 Suffixes | 32 | 38 | Change | es |
| 5 Suffixes | 32 | 39 | Change | ed |
| 5 Suffixes | 32 | 40 | Change | ly |
| 5 Suffixes | 32 | 41 | Change | ness |
| 5 Suffixes | 32 | 42 | Change | ful |
| 5 Suffixes | 32 | 43 | Change | less |
| 5 Suffixes | 32 | 44 | Change | er |
| 5 Suffixes | 32 | 45 | Change | est |
| 1 Consonants | 33 | 45 | Xgraph | tch-tʃ |
| 2 Vowels | 33 | 11 | Diphthong | ie-aɪ |
| 2 Vowels | 33 | 29 | Diphthong | oa-əʊ |
| 2 Vowels | 33 | 31 | Long vowel | e_C_e-iː |
| 2 Vowels | 33 | 32 | Long vowel | ir-ɜː |
| 2 Vowels | 33 | 33 | Long vowel | ur-ɜː |
| 2 Vowels | 33 | 34 | Diphthong | oi-ɔɪ |
| 2 Vowels | 33 | 35 | Diphthong | oy-ɔɪ |
| 2 Vowels | 33 | 36 | Long vowel | ie-iː |
| 3 Blends and Letter Patterns | 33 | 64 | Vowel pattern | _V_se-z |
| 3 Blends and Letter Patterns | 33 | 65 | Vowel pattern | _V_ze-z |
| 3 Blends and Letter Patterns | 33 | 67 | Vowel pattern | _V_ce-ɪs |
| 3 Blends and Letter Patterns | 33 | 87 | Silent letter | ege-ɪdʒ |
| 3 Blends and Letter Patterns | 33 | 88 | Vowel pattern | _V_tch-tʃ |
| 3 Blends and Letter Patterns | 33 | 108 | Middle of word | xc-ksk |
| 3 Blends and Letter Patterns | 33 | 116 | Silent letter | _C_re-tə |

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|---|---|---|---|---|
| 3 Blends and Letter Patterns | 33 | 130 | Silent letter | cise-saɪz |
| 5 Suffixes | 34 | 46 | Add | ing,last:double,first:add |
| 5 Suffixes | 34 | 47 | Add | ed,last:double,first:add |
| 1 Consonants | 35 | 22 | Xgraph | ph-f |
| 1 Consonants | 35 | 34 | Single letter | s-ʃ |
| 1 Consonants | 35 | 35 | Double letter | ss-ʃ |
| 2 Vowels | 35 | 37 | Long vowel | au-ɔː |
| 2 Vowels | 35 | 38 | Long vowel | aw-ɔː |
| 2 Vowels | 35 | 40 | Long vowel | ew-juː |
| 2 Vowels | 35 | 41 | Long vowel | ue-uː |
| 2 Vowels | 35 | 42 | Long vowel | ear-ɜː |
| 2 Vowels | 35 | 63 | Diphthong | ear-eə |
| 3 Blends and Letter Patterns | 35 | 84 | Beginning of word | c-s |
| 3 Blends and Letter Patterns | 35 | 89 | Middle of word | ph-f |
| 3 Blends and Letter Patterns | 35 | 90 | Middle of word | pph-f |
| 3 Blends and Letter Patterns | 35 | 91 | Beginning of word | ch-k |
| 3 Blends and Letter Patterns | 35 | 118 | Beginning of word | wor-wɜː |
| 3 Blends and Letter Patterns | 35 | 119 | Silent letter | sci-saɪ |
| 3 Blends and Letter Patterns | 35 | 120 | Silent letter | scle-səl |
| 3 Blends and Letter Patterns | 35 | 121 | Silent letter | sure-ʒə |
| 3 Blends and Letter Patterns | 35 | 122 | Middle of word | ti-ʃ |
| 3 Blends and Letter Patterns | 35 | 123 | Middle of word | ci-ʃ |
| 3 Blends and Letter Patterns | 35 | 124 | Silent letter | zure-ʒə |
| 5 Suffixes | 35 | 9 | Add | ist |
| 5 Suffixes | 35 | 57 | Change | asion-eɪʒən |
| 5 Suffixes | 35 | 58 | Change | usion-uːʒən |
| 5 Suffixes | 35 | 59 | Change | ision-ɪʒən |
| 5 Suffixes | 35 | 60 | Change | osion-əʊʒən |
| 5 Suffixes | 35 | 61 | Change | mission-mɪʃən |
| 5 Suffixes | 35 | 62 | Change | ession-eʃən |
| 5 Suffixes | 35 | 63 | Change | ussion-ʌʃən |
| 5 Suffixes | 35 | 64 | Change | version-vɜːʃən |
| 5 Suffixes | 35 | 65 | Change | ulsion-ʌlʃən |
| 5 Suffixes | 35 | 72 | Change | tial-ʃəl |
| 5 Suffixes | 35 | 73 | Change | sion-ʒən |
| 5 Suffixes | 35 | 74 | Change | sure-ʒə |
| 5 Suffixes | 35 | 75 | Change | cial-ʃəl |
| 5 Suffixes | 35 | 76 | Change | tial-ʃəl |
| 5 Suffixes | 35 | 77 | Change | ology-ɒlədʒi |
| 5 Suffixes | 35 | 78 | Change | tory-stṛi |
| 5 Suffixes | 35 | 91 | Add | ment |

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|---|---|---|---|---|
| 6 Prefixes | 36 | 6 | Prefix add | ad |
| 6 Prefixes | 36 | 7 | Assimilate | abb |
| 6 Prefixes | 36 | 8 | Assimiliate | acc |
| 6 Prefixes | 36 | 9 | Assimilate | aff |
| 6 Prefixes | 36 | 10 | Assimilate | agg |
| 6 Prefixes | 36 | 11 | Assimilate | all |
| 6 Prefixes | 36 | 12 | Assimilate | ann |
| 6 Prefixes | 36 | 13 | Assimilate | app |
| 6 Prefixes | 36 | 14 | Assimilate | arr |
| 6 Prefixes | 36 | 15 | Assimilate | ass |
| 6 Prefixes | 36 | 16 | Assimilate | att |
| 6 Prefixes | 36 | 17 | Prefix add | con |
| 6 Prefixes | 36 | 18 | Assimilate | coll |
| 6 Prefixes | 36 | 19 | Assimilate | corr |
| 6 Prefixes | 36 | 20 | Assimilate | comm |
| 6 Prefixes | 36 | 22 | Assimilate | ill |
| 6 Prefixes | 36 | 23 | Assimilate | imm |
| 6 Prefixes | 36 | 24 | Assimilate | irr |
| 6 Prefixes | 36 | 25 | Assimilate | im |
| 6 Prefixes | 36 | 26 | Assimilate | ir |
| 6 Prefixes | 36 | 27 | Assimilate | sub |
| 6 Prefixes | 36 | 28 | Assimilate | succ |
| 6 Prefixes | 36 | 29 | Assimilate | suff |
| 6 Prefixes | 36 | 30 | Assimilate | sugg |
| 6 Prefixes | 36 | 31 | Assimilate | supp |
| 6 Prefixes | 36 | 32 | Assimilate | summ |
| 6 Prefixes | 36 | 33 | Assimilate | surr |
| 6 Prefixes | 36 | 34 | Assimilate | dis |
| 6 Prefixes | 36 | 35 | Assimilate | diff |
| 6 Prefixes | 36 | 36 | Assimilate | ob |
| 6 Prefixes | 36 | 37 | Assimilate | off |
| 6 Prefixes | 36 | 38 | Assimilate | opp |
| 6 Prefixes | 36 | 39 | Assimilate | occ |
| 6 Prefixes | 36 | 40 | Prefix add | ex |
| 6 Prefixes | 36 | 41 | Assimilate | eff |
| 2 Vowels | 37 | 59 | Short vowel | ine-ʒɪn |
| 2 Vowels | 37 | 60 | Long vowel | ine-iːn |
| 5 Suffixes | 37 | 66 | Add | ous |
| 5 Suffixes | 37 | 67 | Drop | ous |
| 5 Suffixes | 37 | 68 | Change | ous |
| 5 Suffixes | 37 | 69 | Change | tious |
| 5 Suffixes | 37 | 70 | Change | cious |
| 5 Suffixes | 37 | 71 | Change | ious |
| 5 Suffixes | 37 | 79 | Change | cian-ʃən |
| 5 Suffixes | 37 | 80 | Change | dual-dʒʊə |
| 5 Suffixes | 37 | 81 | Change | tual-tʃʊəl |
| 5 Suffixes | 37 | 82 | Change | sual-ʒuəl |
| 5 Suffixes | 37 | 85 | Change | uous |
| 2 Vowels | 38 | 39 | Long vowel | ore-ɔː |
| 2 Vowels | 38 | 43 | Short vowel | y-ɪ |
| 2 Vowels | 38 | 44 | Diphthong | y_C_e-aɪ |

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|---|---|---|---|---|
| 2 Vowels | 38 | 45 | Diphthong | ou-aʊ |
| 2 Vowels | 38 | 46 | Long vowel | ei-iː |
| 2 Vowels | 38 | 47 | Diphthong | ei-eɪ |
| 2 Vowels | 38 | 48 | Diphthong | eigh-eɪ |
| 2 Vowels | 38 | 49 | Long vowel | our-ə |
| 2 Vowels | 38 | 50 | Long vowel | ar-ə |
| 2 Vowels | 38 | 51 | Long vowel | ui-uː |
| 2 Vowels | 38 | 52 | Short vowel | ui-ɪ |
| 2 Vowels | 38 | 53 | Long vowel | ey-iː |
| 2 Vowels | 38 | 54 | Diphthong | ey-eɪ |
| 2 Vowels | 38 | 55 | Diphthong | oe-əʊ |
| 2 Vowels | 38 | 56 | Long vowel | eu-juː |
| 5 Suffixes | 38 | 83 | Change | ayor-eə |
| 5 Suffixes | 38 | 84 | Change | ayer-eɪə |
| 5 Suffixes | 38 | 86 | Add | or |
| 5 Suffixes | 38 | 87 | Drop | or |
| 3 Blends and Letter Patterns | 39 | 85 | Beginning of word | sc-s |
| 3 Blends and Letter Patterns | 39 | 92 | INVALID | ch-ʃ |
| 3 Blends and Letter Patterns | 39 | 93 | Silent letter | kn-n |
| 3 Blends and Letter Patterns | 39 | 94 | Silent letter | gn-n |
| 3 Blends and Letter Patterns | 39 | 95 | Silent letter | gh-g |
| 3 Blends and Letter Patterns | 39 | 96 | Silent letter | ps-s |
| 3 Blends and Letter Patterns | 39 | 97 | Silent letter | rh-r |
| 3 Blends and Letter Patterns | 39 | 98 | Silent letter | mb-m |
| 3 Blends and Letter Patterns | 39 | 99 | Silent letter | bt-t |
| 3 Blends and Letter Patterns | 39 | 100 | Silent letter | mn-m |
| 3 Blends and Letter Patterns | 39 | 101 | Silent letter | wr-r |
| 3 Blends and Letter Patterns | 39 | 103 | Silent letter | st-s |
| 3 Blends and Letter Patterns | 39 | 104 | Beginning of word | gu-g |
| 3 Blends and Letter Patterns | 39 | 105 | Silent letter | gue-g |
| 3 Blends and Letter Patterns | 39 | 106 | Silent letter | que-k |
| 3 Blends and Letter Patterns | 39 | 109 | INVALID | xc-ks |
| 3 Blends and Letter Patterns | 39 | 111 | Middle of word | oh-əʊ |
| 3 Blends and Letter Patterns | 39 | 112 | Middle of word | cqu-kwa |
| 3 Blends and Letter Patterns | 39 | 113 | Silent letter | ngue-ŋ |
| 3 Blends and Letter | 39 | 115 | Beginning of | quarC-kwɒ |

| Patterns | | | word | |
|---|---|---|---|---|
| 4 Syllables | 40 | 10 | Polysyl | 3 syllables |
| 4 Syllables | 40 | 11 | Polysyl | 4 syllables |
| 4 Syllables | 40 | 12 | Polysyl | 5 or more syllables |

## 6.6. Appendix 6. Design Based Research Evaluation Materials

### *6.6.1. Consent Forms for DBR Evaluation*

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Teacher Consent Form
Note – all teachers have previously signed a consent form which details the goals of the iLearnRW project during their participation in the design phase of the research and are therefore fully aware of what the purpose of the research is.

Thank you for agreeing to participate in our software pilot. As part of this research pilot we would like to ask you some questions about (i) your current teaching practices and use of technology, (ii) your knowledge of the children that will be piloting the software and (iii) your feedback and ideas after using the software. In addition to this we would like to periodically observe some teaching sessions in which you use the software to see how it is used in practice.

We would ideally like to **audio record** these discussions and observations to ensure we capture all of the information to help us establish the success of the software and identify how it can be further improved. However, if you are not happy for us to do so we can alternatively take written notes.

Because we are collecting this information for research purposes, we need to inform you about how the data will be used and ask you for your consent.

- The audio recordings which we collect will be transcribed and stored in an online repository which will only be accessible by authorised personnel involved in the iLearnRW project.
- All data collected from the verbal discussions and teaching sessions will be treated as confidential and the original recordings will be erased once transcribed.
- The information will be retained by the Institute of Education and will only be used for the purpose of research, and statistical and audit purposes (in collaboration with the other iLearnRW partners, namely Dyslexia Action, the National Technical University of Athens, University of Malta, Technological Institution of Epirus, Lucian Blaga University of Sibiu, and Dolphin Computer Access).
- By supplying this information you are consenting to the Institute storing your information for the purposes stated above. The information will be processed and stored in accordance with the provisions of the Data Protection Act 1998. All data will be kept for 5 years after publication of the final results, after which time it will be destroyed. No identifiable personal data will be published.

The results of this research will be written up for conference papers and peer-reviewed journal articles, and further information will also be made available on our website: http://www.ilearnrw.eu.

By signing this form (overleaf) you are confirming that you have read and understand this information. Participation in this project is voluntary and you are free to withdraw at any time without giving a reason. If you withdraw then your data will be removed and erased.

Please complete the consent form overleaf.

Tick below if you happy to be audio recorded as part of this research project.

During Verbal Discussions: ☐ During Teaching Sessions: ☐

Please complete the details below if you are happy to participate within this research project.

Name: _____

Signature: _____

Date: _____

### *6.6.2. Child Consent Form*

Note - all information will also be read aloud

Research project title

ILearnRW: A computer program to help reading and writing

Description of the project

- We have designed a new app that helps children improve their reading and writing skills
- This new app includes a program to help you read text more easily and also lots of different games that you can play
- We would like you to test the app out for us over the next couple of months so you can tell us if you like it and whether it helps you to learn

Taking part in our project

- You have been chosen to take part by your teacher because they think that you might enjoy using the app and it could be helpful for your reading and writing
- Before you start to use the app I will be asking you some questions about your current literacy lessons and what you think about technology. I will also be asking you some literacy questions to find out what you know already so we can make sure the app is set to the right level for you.
- We are lending your school some tablets so you can use the app on a tablet. Your teacher will decide when she/he thinks it would be best for you to use it.
- I will be coming into school to sit in on some of the your literacy support sessions to see how you are getting on with the app.
- At the end of term I will come back and ask you some questions to find out what you thought of the app and if it helped you to learn anything new.
- During some of these sessions I will be audio-recording to make sure I can remember everything that happened, but I will always check that this is ok before I do this.
- Taking part in the app testing is your choice and if you decide you no longer want to take part then please tell your teacher (or me) and you will no longer have to use the app.

Information from app testing process

- We will be sharing your ideas and suggestions with other members of our project team so we can make the app better in future, but we will not share any personal information that you tell us with anyone unless you ask us to.

**CONSENT FORM**

Please read the statements and tick the boxes if you agree with them

| | | |
|---|---|---|
|  | I have read and understood the information sheet | |
|  | I have had time to think about the information | |
|  | I understand that I am volunteering to be involved and can ask to not be part of the app testing project at any point | |
|  | I understand that some of the information I give may be shared with others who work on the research project | |
|  | I agree to take part in the app testing project | |
|  | I am happy to be audio recorded during this project (which I understand I will be informed about beforehand) | |

_____

(Please Print Your Full Name)

_____

(Date)

*6.6.3. Parent Consent Form*

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London WC1H 0AL
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Dear

My name is Laura Benton and I am a researcher at the Institute of Education. I am currently working on a research project called iLearnRW (http://www.ilearnrw.eu), which has developed a new tablet-based app to help children improve their reading and writing skills. We are shortly going to be piloting our software in a small number of schools across London and we would like to offer your child the opportunity to take part in this pilot as they are currently receiving additional support for reading and/or writing.

We will be working closely with your child's teachers to integrate the software into their current literacy program and we hope that it will be a valuable addition to the support they currently receive. The pilot will last from October to December and during that time a researcher from the project will be in regular contact with your child's teachers as well as visiting the school periodically to observe your child using the software. This will help us to ensure the software is working correctly and also that it is meeting your child's particular support needs. We would like to speak to your child briefly (10-15 minutes) before and after the pilot, to introduce them to the software and find out what they thought of the software at the end.

We would ideally like to audio record the short discussions with your child as well as during the literacy support session observations when your child is using the software, to ensure we capture all of their feedback and any successes or issues they have whilst using the software. If you are happy for us to do so please indicate on the form below, however if you have any concerns about this we can alternatively take written notes. Please feel free to contact me to discuss any concerns (my contact details are at the end of this letter). Because we are collecting this information for research purposes, we need to inform you about how the data will be used and ask you for your consent. We will also be asking your child at the start of the pilot to ensure they are happy to take part.

The information which we collect will be entered into an online repository and will only be accessible to authorised personnel involved in the iLearnRW project. All data collected from the verbal discussions and observations will be treated as confidential, stored anonymously and once transcribed the original recordings will be erased. The information will be retained by the Institute of Education and will only be used for the purpose of research, and statistical and audit purposes (in collaboration with the other iLearnRW partners, namely Dyslexia Action, the National Technical University of Athens, University of Malta, Technological Institution of Epirus, Lucian Blaga University of Sibiu, and Dolphin Computer Access). You are consenting to the Institute storing your child's information for the purposes stated above. The information will be processed and stored in accordance with the provisions of the Data Protection Act 1998. All data will be kept for 5 years after publication of results, after which time it will be destroyed. No identifiable personal data will be published.

The results of this research will be written up for conference papers and peer-reviewed journal articles, and further information will also be made available on our website: http://www.ilearnrw.eu.

By signing this form you are confirming that you have read and understand this letter. Participation in this project is voluntary and you are free to withdraw your child at any time without giving a reason. If you withdraw your child then their data will be removed and erased.

Thank you very much!

Best wishes,

Dr. Laura Benton
iLearnRW Software Pilot Consent Form

Please complete the form below and return to your child's class teacher as soon as possible.

I understand the above information and consent to my child taking part in the iLearnRW software pilot (please tick) ☐

I am happy for my child to be audio recorded as part of this research project (please tick) ☐

Parent Name: _____

Child's Name: _____

Parent Signature: _____

Date: _____

If you have any further questions about this project or concerns regarding your child's participation then please feel free to contact me:

Dr. Laura Benton
Research Fellow, Institute of Education
Email: l.benton@ioe.ac.uk

# 7. Bibliography

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