# Citizen Literacy: A White Paper
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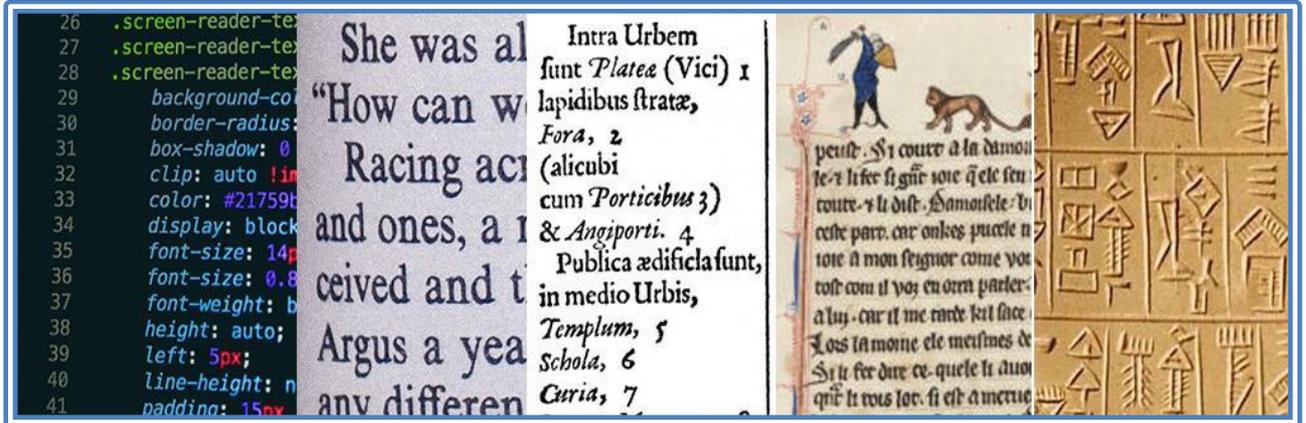


*"Reading and Writing for Everyone"*
https://citizenliteracy.com/

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Feedback: info@citizenliteracy.com

## Contents

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# Introduction

## *Purpose*

The purpose of this white paper is to raise awareness of the scale and nature of the adult literacy challenge in the UK and describe our ideas, activities and approach to contributing towards a solution. We will explore what we mean by the 'adult literacy challenge' below. Here, we describe our activities, how we work, our rationale and values and what we hope to achieve. We firmly believe that no single organisation can solve this difficult problem alone and that an open collaborative partnership approach is the best way of working.

## *Audience*

This white paper is intended for the general public and those working and researching in the field of adult literacy. Our audience is anyone who is interested in the topic of adult literacy, no prior knowledge is assumed. Inevitably, there are some specialist terms used and we aim to explain them as we go. We also make extensive use of web links in the text to provide further information for the reader. We believe by providing an explanation of the issues involved and the potential solutions to a general audience we will make our work more widely useful. The style of writing in this White Paper is not intended as an academic text, although our work and approach is informed by academic research, it is more informal and direct in style. Where we do reference sources, we use a referencing system based (very loosely) on that of the IEEE.

# Citizen Literacy and its Focus

Citizen Literacy has formed a non-profit Community Interest Company (CIC) that operates to create learning resources to support adult literacy learners and those who teach them.

Our work is primarily focussed on improving the literacy (especially reading and writing) of adults who are already speakers of English. However, feedback from colleagues who teach ESOL (English for Speakers of Other Languages) has indicated that many of our tools and resources will be of use to them, especially for ESOL literacy learners. Increasingly our resources are used in other different contexts please see our Case Studies in the Resource section of the web site.

## Understanding the Literacy Challenge in the UK

It often comes as a shock to people when first discovering the scale of adult low literacy in the UK. It is quite easy to go through life unaware of the numbers of our fellow citizens who have low or very low levels of literacy. So, here we present the facts, derived from primary government and research data sources. In the later section entitled 'The Social and Economic Costs of Low Literacy' we explore the implications of low literacy for social and economic well-being at an individual and national level.

Our target learners include those with the poorest literacy levels. From government figures for England, the percentage of  the working population with the very weakest literacy (Entry Levels 1 – 3) is 14.9 %. Research by the Scottish government has produced similar figures as has research carried out by the Welsh government and the Northern Ireland Assembly.  In numbers across the UK[1] this breaks down for the UK working age population as about 6.1 million people who are living with the very lowest levels of literacy[2] (Entry Levels 1 – 3). It is these learners that Citizen Literacy is interested in supporting.  Note, for convenience, we use English grading levels. The UK qualification levels in different countries can be compared in this handy 'UK qualifications comparison' by EAL.  There is also a UK government reference site.

However, we need to be careful about using the official 'levels' of literacy, they are relatively crude and can miss important aspects of a person's existing real-world literacy skills - or worse, they can be used to somehow infer a person is 'other' than 'us', or worse, that they are not 'normal'. We need to be careful about labelling people in this way and falling into some of the negative and moralistic stereotypes about adult learners that can occur in debates about literacy and education in our society. In this connection, it is important to be aware of the ways in which social and political power manifests itself in discourse about these topics – especially in the way that the most disadvantaged and powerless can be labelled and blamed for their own lack of power and opportunity.

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[1] Working age population sources:
- English and Welsh working population figures (36.3 million) are at https://www.ethnicity-facts-figures.service.gov.uk/uk-population-by-ethnicity/demographics/working-age-population/latest
- Scottish figures (3.84 million) are from
- https://www.nrscotland.gov.uk/news/2019/scotlands-population-projected-to-increase-but-at-a-slower-rate
- Northern Ireland figures are from https://www.nisra.gov.uk/news/labour-force-survey-annual-report-2018

[2] Page 33 of The 2011 Skills for Life Survey: A Survey of Literacy, Numeracy and ICT Levels in England

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## Connecting Digital Literacy and Textual Literacy

Because existing measures of literacy are so crude, organisations like UNESCO and OECD have recognised the need to develop a wider interpretation that recognises the specific contexts of the use of literacy skills, this is especially relevant in connection to the use of digital literacies. These emerging approaches move on from the currently dominant 'transactional' measures (important as they are), such as the influential Lloyds Bank UK Consumer Digital Index 2020 Report. This is indeed useful as a baseline report for 'the state of the nation' in terms of digital literacy. But from this it would appear that our target learners should be struggling in the most basic 'foundational level skills' area of digital abilities. However, our experience indicates that most of our target learners own and use smartphones and use internet services. Some interact with work computers using a number of different strategies, including getting help. So, we need to know much more about the actual lived social reality of how our low-literacy learners interact with the digital world and we begin to explore these topics in this White Paper. From this perspective, one of our educational influences is the work of the Paulo Friere [1] who stressed the need to make sure we understand where our learners are in reality and start from there. Our strategy in the Citizen Literacy programme is to combine textual and digital literacy development for adult learners. The Appendix to this White Paper begins a wider discussion of these issues in the context of developing applied and action research strategies to address these needs.

## Understanding Our Learners

The OECD report '*International Survey of Adult Skills*' (2013) that compares education and skills in different countries – referring to England and Northern Ireland in particular[3] observes:

- *England is the only country in the developed world where the generation approaching retirement is more literate and numerate than the youngest adults*
- *England was ranked 22nd for literacy and 21st for numeracy out of 24 [developed] countries [for 16-25 years old]*

There are some misconceptions and misplaced negative moralistic attitudes about people with very low levels of literacy (our fellow citizens) and it is worth dispelling them before we go any further. Most are in work, they employ ingenious methods to cope with a world of textual information, they have to be emotionally resilient and they are absolutely not unintelligent. These are people who have not managed to learn to read and write using the standardised educational codes and methods, something which has been all too easy to happen in our national education systems for a long time.

The UK is not the only country to suffer from serious problems of adult literacy. In Europe, many countries face similar challenges. We see learning to read and write as an important social justice issue that affects all of us. These observations from the EU High Level Group Of Experts On Literacy Report nicely summarise the importance of supporting literacy for individual and societal well-being:

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[3] Page 31 of OECD Skills Outlook 2013 First Results from the Survey of Adult Skills also page 72

*Reading and writing are much more than a technique or a skill. Literacy is about people's ability to function in society as private individuals, active citizens, employees or parents. Children need skills to learn, adolescents need them to get a job and shape their futures positively. Citizens won't be able to pay their taxes online or vote if they're not literate. Employees need to be able to read safety instructions. And how can patients use their medication properly if they cannot read the instructions or lack the confidence to ask others? Literacy is about people's self-esteem, their interaction with others, their health and employability. **Ultimately, literacy is about whether a society is fit for the future.**

## The Citizen Literacy Programme

This is being created in response to the lack of structured adult literacy programmes available using phonics methods for those with the greatest literacy needs. The programme is based on a community education initiative that started in Glasgow but has grown to include some of the leading adult literacy practitioners in the UK and a group of skilled educational and software designers and developers.

**It is an Adult Literacy programme** to support Tutors to develop the reading and writing skills of adults who can already speak and understand English and features integrated digital and printed learning resources. It can also be used by **ESOL** tutors to develop reading and writing skills in their students. The programme starts with complete beginner readers and over the course of 90 lessons takes learners to a good level of functional reading and writing skills. The aim is to support tutors to help adults make rapid progress in their literacy skills and gain confidence as they go. The programme consists of 90 lessons split into 3 Parts, each part having 30 lessons with every fifth lesson being a formative assessment. In Part 1 of the programme the 44 phonemes of the English language are introduced with different ways of spelling them in words. By the end of Part 1, lesson 2, learners are starting to read and write simple sentences. This is made possible by the highly effective use of free and open digital resources for the learners and economically priced printed and digital materials for tutors and their learners to use in 'class'.

**A programme that is designed to be adopted, adapted, and delivered by others – not ourselves.** it supports Tutors and their students to work through a face-to-face literacy course in a wide variety of settings. The rationale for our approach is simple. The scale of the adult literacy challenge in society is so big no single organisation can realistically tackle it alone. As a small organisation, we collaborate with the international community of literacy educators to create our resources. The Citizen Literacy programme, alongside the work of many other organisations and individuals, is our contribution to making things better.

**An integrated set of digital and paper learning resources to support tutors and their students** to work through a face-to-face literacy course in a wide variety of settings. These include our Free Learner App, Tutor Handbooks, Learner Workbooks, and the online Tutor Hub service.

**The Tutor handbooks** are suitable for both experienced and new literacy tutors and provides a useful and friendly introduction to the programme, lesson plans and tutor notes

that are linked to the learner workbooks and the free learner web app. They provide a structured yet flexible educational design that can be delivered as it is or adapted to learners' needs and community settings (which we encourage). Each lesson is broken down into exercises that are clearly linked to a section in a learner workbook to make it easy for tutors and learners to find the related learning resources, with the relevant Learner App activities identified – to enable learners to practice in between classes.

For tutors who are new to adult literacy teaching and the use of structured phonics methods the handbook and the app provides a useful training and professional development resource. Tutors who subscribe to the Citizen Literacy Tutor Hub get access to web versions of all the tutor handbooks, training resources, plus a growing range of powerful digital tools to use with their learners.

**Learner Workbooks,** each one covers a set of 5 lessons with exercise resources that are linked to the lesson plans in the tutor handbooks. The workbooks provide a space for Learners to write, collaborate, record, reflect on their work, and for Tutors to examine. The workbooks are priced to make them an economic proposition for learning providers. Importantly, the workbooks offer an attractive well produced resource for Learners to work with – this is an important factor for maintaining and building the self-esteem and confidence of learners.

**The revolutionary Citizen Literacy Learner web app**; this is free to use, does not require user registration, has no adverts, no in-app purchases and takes no personal data. Featuring a voice driven interface suitable for low literacy learners with two virtual teachers that provide instruction and personalised feedback. Importantly, the design avoids looking like a children's learning resource – a strongly demotivating factor for older learners. There is multimedia interactivity and gameplay, together with voice and handwriting recognition, and instant personalised feedback. Enabling some of the first online independent learning opportunities for low literacy learners. From a standing start, by the end of lesson 2, learners are beginning to read and write simple sentences.

**Tutor Hub**, for subscribed users.
- Tutor Handbooks (Web version) for the entire programme
  - Lesson Plan Bookmark and Edit Tools - sequencing
  - Learner App Bookmark and Edit Tools - sequencing
- Tutor Training Resources
  - Phonics Periodic Table
  - Word Blender / Decoder
  - Videos
- Connected Learners
  - Connects Tutors to their learners via the free learner app
  - Tutors can send voice / text messages to learners
  - Tutors can send custom activities to learners
- Custom Vocabulary Builder
  - Tutors can create specialist vocabularies for learner's interests and for their vocational needs such as the care, retail, construction, and hospitality sectors etc. to support entry into work and progression for those in work

5

- Phonics Dictionary & Pronunciation Coach (useful for ESOL tutors**)**
  - A searchable phonics dictionary containing thousands of words. Each word is displayed as an interactive resource on screen that shows the relationship between the phonemes that make up the sounds of the word and the graphemes that represent the spelling of those sounds in the word. Each phoneme / grapheme pair also features the relevant IPA symbol. Each phoneme in the word can be heard by tapping on the associated grapheme. The whole word can also be heard by tapping on its 'play' button.
  - Returns words broken down into their sounds
  - Letter / Sound correspondence identified
  - IPA symbols attached to letters
  - Each component sound and mouth shape in a word pronounced by an actor on video
  - Each complete word pronounced by an actor on video
- Free Tutor Resources – for use in class
  - Editable Word Docs
  - PDFs for printing
- A growing list of new lessons, tools, and features – please see our development roadmap below.

**Development Roadmap: Advanced Tutor Hub Services**
Ideas for future development, depending on feedback from the literacy community:
- An analytics dashboard to monitor and record learner activity in their apps and keep records (useful for evidence of learning activity)
- The ability for tutors to author custom content and deliver it to their learners
- Tutor can control the learner's app, so they are all on the same page and lock it till they are all done – especially good for remote working and app assessment results
- Record assessments results in the app and export to a spreadsheet for record keeping
- Use AI and learning analytics linked to the course learning design to:
  - provide automatic personalised suggestions to learners based on their progress and behaviour in the learner app
  - flag up in the tutor dashboard learners who may be progressing more rapidly or slowly and benefit from different activity options
- A customisable set of word / literacy games to engage learners
- Customising voice recognition for individual learner's accents and voices (prototype completed)

## Adult Literacy Teaching Methods and Phonics for Adults: Recent Research and Developments

Phonics methods have been used with success for many years to teach reading and writing to children. It is only recently that the method has been endorsed for extension to adult literacy learners. In 2018, the English Department for Education (DfE) funded research commissioned by the Education and Training Foundation (ETF) into how phonics methods are being used to improve reading and writing skills in the post-16 sector (FE colleges, ACLs, training providers, etc.). Following on from the research, the ETF, together with subject

6

experts from University College London and Claire Collins Consultancy Ltd, developed a toolkit for phonics teaching in the post-16 sector. The toolkit is specifically designed for the adult sector; exploring approaches to phonics teaching, the essential concepts, how to assess learners' needs and resources designed for post-16 learners – it provides a much-needed foundation for further developments. Our Citizen Literacy Teachers' Handbook references this work and provides a useful bridge for teachers new to adult literacy teaching.

Research into adult literacy teaching methods undertaken by the National Research and Development Centre for Adult Literacy and Numeracy (NRDC) in 2008 found that there had been little previous research into adult literacy teaching methods, citing an:

> *"almost complete lack of evidence relating specific teaching strategies to adult literacy learners' progress"*

The research compared different methods and despite a traditional reluctance to use phonics for adults in the UK, it found that phonics methods delivered a number of significant 'very encouraging results':

> *• The learners (mainly Entry 1–3) made significant progress in reading comprehension and spelling.*
> *• This progress was achieved in a very short time (on average only between five and six sessions were attended between the two assessments of reading and spelling).*
> *• The learners' confidence in a range of language and literacy tasks also improved.*
> *• Most teachers expressed enthusiasm for phonics, with eight of the nine saying they would definitely continue to use the strategy with their learners.*
> *• Phonics was popular with most of the learners.*

The research found that a major challenge for teachers who were keen to adopt a phonics method was the almost complete absence of learning resources using phonics aimed at adults, or training and support materials for teachers to deliver phonics-based literacy. This confirms our own experience and remains an obstacle to future uptake – which is why we have created the Citizen Literacy Programme. The research also concluded that different approaches to teaching reading and writing to adults could and should be applied, with the teacher being able to change and adapt their approaches as needed, rather than slavishly following a pre-set programme. This makes sense to us as well; we see phonics as an important part of an overall strategy and approach that literacy teachers can use. Due to current policy and economics constraints, such phonics literacy teacher skills are not always clearly articulated in current practice, not many teachers are trained in teaching word-level decoding and encoding (reading and spelling) and this is a matter we need to address.

## Policy, Philosophy & Influences

The ideas and values underpinning Citizen Literacy are drawn from a number of different sources. The Scottish Government has an adult literacy strategy which is internationally well known for its aspirational learner-centred, 'social practice' approach, that underpins Community Learning and Development (CLD) activities in Scotland. This emphasises the importance of a learner-centred approach and developing a personally relevant curriculum. The focus is on how the learner will use the skills, knowledge and understanding of reading and writing in their everyday lives, with their families, at work, gaining qualifications to progress towards a job, or a better job, and in their communities. For those who work in the CLD sector the CLD Standards Council provides a professional framework of qualifications and registration and contributes to policy discussions in Scotland and the rest of the UK.

The development of the Citizen Literacy Programme has been strongly influenced by the work of the 20th century Brazilian educational thinker Paolo Freire [1] who, along with many other critics of traditional education, rejected the 'transmission model' of learning and insisted that learning has to be made relevant to the lives of learners and empower them to develop themselves. It is from this perspective that we have decided to adopt a structured educational design using phonics methods with modern technologies that our learners can relate to. Our aim is to develop the learner's ability to analyse and understand the structure of their own spoken language and relate it to its textual form. This provides a basis for their continuing educational development. We describe our approach as a nuts and bolts method to developing literacy abilities – for both learners and their teachers.

Another major influence on our work has been that of the Czech educational thinker John Comenius [2], who advocated teaching based on gradual development from simple to more comprehensive concepts, lifelong learning with a focus on logical thinking over dull memorization, equal opportunities for children from poor backgrounds, education for women, and universal and practical instruction. He is considered by many to be the founder of modern education and educational technology - having invented the first printed illustrated textbook and pioneered the move away from the use of the elitist Latin to using native languages in educational texts.

In our use of technology to support adult literacy development we draw on a wide range of influences:
- We have found the work of Enid Mumford [3]and her colleagues at the Tavistock Institute useful in stressing the importance of understanding cultures when introducing technology into any setting, they are credited with coining the term 'Socio Technical Design'. This is a useful corrective to the technical determinism that permeates much of current discourse in relation to technology in education.
- Diana Laurillard, especially her recent work that proposes seeing "Teaching as Design Science" [4], in relation to using technology for learning and the importance of learning / instructional design.
- Étienne Wenger [5] for the importance of the social and apprenticeship models in learning and the use of boundary objects in collaborations.
- The Participatory Design [6] movement, this is a further development of the concept of sociotechnical design, seeking to understand the complex interactions between people and technology. Participatory Design is exemplified in the work of Ezio

Manzini, Pelle Ehn, and others; the main principle here is that those affected by a design should have a genuine say in shaping it – moving on from not just involving users (as in agile methods) to having users determine what is being designed and why.

● The work of Norm Friesen [7] is especially relevant, in his historical study of the recurring and persistent modes of media forms and technology to support literacy development over long periods of human history.

## The Social and Economic Costs of Poor Adult Literacy

We see literacy as a question of social justice that needs support, not just as an economic issue which has unfortunately shaped much of much of UK education policy in the last 30 years. Viewing skills and education through a purely transactional economic lens misses the big picture and makes understanding the causes of low literacy in the UK more difficult. Our own experience of working in adult literacy provision in the UK is that it is increasingly underfunded and fragmented with little coherent strategy. These problems are confirmed in a UK House of Commons Report on Adult Literacy that concluded:

> *The ability to gain literacy and numeracy skills should be considered a fundamental right of all adults. Improved skill levels contribute to the social and economic well-being of individuals and the country as a whole. It is essential that the Government develops clear strategies and guarantees funding for effective initiatives that improve adult literacy and numeracy levels.*

Through our own experience via industry, trade union and community education links, as well as government and academic research, we understand the severe negative effects that poor literacy can have on productivity, individual and inter-generational life chances, self-esteem, personal development, social participation and social cohesion. Given the UK policy focus on economic growth, it is strange contradiction that that funding to develop such basic skills that can enable a modern economy to function and develop is being cut. It is well known that the UK has a productivity problem in international comparisons. The OECD report '*International Survey of Adult Skills'* (2013), that compares education and skills in different countries, identifies the link between the UK basic skills deficit and poor economic performance – referring to England and Northern Ireland in particular:

> *England is the only country in the developed world where the generation approaching retirement is more literate and numerate than the youngest adults*
>
> *England was ranked 22nd for literacy and 21st for numeracy out of 24 [developed] countries [for 16-25 years old]*

Analysis by the Financial Times arrives at the same conclusion for the links between skills and poor UK economic performance. It goes on to observe that things have got markedly worse since the economic crisis that started in 2008. The policy context in the UK since

2008 has been marked by an acceptance (if not an embrace) of an economy that is defined by low skills, low productivity, growing inequality and in-work poverty. In a scathing critique of the chaotic policy of FE College reform and privatisation in England and its ideological roots, the NCFE educational awarding body warns of the effects on skills and the economy and learners' lives. This context and policy environment do not bode well for those working at improving literacy skills in the UK. This is why we are convinced that to improve matters a collaborative approach is needed, and Citizen Literacy is our contribution to that.

## Technology

We have developed a web app that runs well on smartphones to support learners between their face-to-face classes. Most of our target learners possess a smartphone so this is a realistic option. Although this approach may seem counterintuitive to many educated, literate, and digitally active educators. This approach is based on our existing learners' input and feedback, which provides evidence that adults with poor literacy skills already use smartphones and access the digital world in a range of ingenious ways. This digital dimension provides another useful means of enhancing learning opportunities for these adults and opens up many new CPD and teaching opportunities for their teachers as well. We are well aware of the unrealistic commercial hype that surrounds digital technology in education and the many poor and expensive implementations that occur. So, we will be concentrating on the appropriate use of technology – not tech for its own sake.

The Citizen Literacy course design lends itself very well to being supported by a smartphone App that is structured for the learner to gain phonological awareness by listening, reading, writing and speaking, using the App's many useful tools such as voice and handwriting recognition. The need for appropriate digital tools to assist adult learning is growing and adult literacy students and their teachers should have access to those possibilities too.

The same software will be adapted to be able to operate as a normal website to provide an in-class teaching aid to be used by teachers with data projectors and smartboards, etc. In this way, learners will already be familiar with the interface when they use the App version on their smartphones. In parallel, we are planning to use technology to deliver and support teacher training in creative ways.

This innovative way of supporting Adult Literacy is in response to student and teacher need and also to a call to action in 2012 from the EU's 'High-Level Group of Experts on Literacy' when the, then, Commissioner for Education, Culture, Multilingualism, Youth and Sport, Androulla Vassiliou, stated,

> "I *asked the group to look at common success factors in literacy programmes and policy initiatives and to take into account the realities that people – young and old – face today and the needs that come with modern technologies*"

At ELINET's 2018 International Symposium in Germany one of the Keynote speakers, Janet Richardson, focussed on the need to ask new questions about Literacy, Digital Literacy and

Citizenship. This has encouraged us to begin to explore the possibilities of using technology in appropriate ways to develop both textual literacy and digital literacy in parallel.

## *Digital Inclusion and Digital Literacy*

The topics of digital inclusion and literacy are rightly hot topics in a rapidly changing technology landscape, as are questions of equity and democratic accountability in relation to the providers of the technology we use. In this connection, **we see improving the textual literacy of learners as the key foundational skill for access to information in a digital world and the basis for inclusion and participation in digital citizenship**.

Most of our learners own and use a smartphone. Yet, we know that the use of smartphones for adult literacy is not exploited at the moment. As part of this process, we need to research and explore how digital tools and infrastructures are currently being used by these users to gain a better understanding of how digital devices (smartphones, etc.) and services are accessed by people with low literacy or special literacy needs and how they might be leveraged to support literacy development.

We also need better evidence about how textual representations of online information and online interactions are taken up by this target group (e.g. sign-up and log-in procedures). How multimedia, voice recognition and haptic approaches to online information perhaps mediates lack of reading and writing competences, and how this differs from access to printed information. With this developing knowledge base, we can explore how technology may be leveraged to support the developmental journey of adults via textual literacy into digital literacy and active digital citizenship.

## Appendix 1 Digital Literacy and Textual Literacy

How beginner literacy adults interact with the digital world in the UK seems to be a relatively unexplored field. To understand what is going on in this socio-technical space, we think a good approach for us is to situate our work not as a 'pure' academic research topic, but, instead, as an action and applied research exercise in the context of improving both textual and digital literacy at the same time. We are starting to incorporate this approach into the design of the Apps we are building. This also nicely fits the participatory design methods that we are using to develop the Apps.





**Adult Literacy Learners in Class with their Smartphones**

The pictures above show adult literacy learners in class with their smartphones and the images also illustrate the great diversity of the learners. As our society becomes increasingly digital, we need to reconsider our ideas about what constitutes digital literacies and see textual literacy as a foundational skill for developing digital literacies.

**Digital Literacy**



**Textual Literacy**

## *Action Research & Applied Research*
Here are some handy descriptions of these two research methods – they also nicely summarise the working methods of Citizen Literacy

### *Action Research*
- "There is no single type of action research, but broadly it can be defined as an approach in which the action researcher and members of a social setting collaborate in the diagnosis of a problem and in the development of a solution based on the diagnosis. It can take a variety of forms, from the action researcher being hired by a client to work on the diagnosis to and solution of a problem, to working with a group of individuals who are identified as needing to develop a capacity for independent action." (Bryman, 2012: 397)
  - In action research a researcher collaborates with people in a social context to systemically gather data on a specific problem and develop a solution based on the data gathered. It could be in a business, educational or other context, seeking to find solutions to an identified problem, or working with individuals who can benefit from new skills and/or capacities (Bryman, 2012: 397).

### *Applied Research*
- "Applied research is, by definition, research that is conducted for practical reasons and thus often has an immediate application. The results are usually actionable and recommend changes to increase effectiveness and efficiency in selected areas. Applied research rarely seeks to advance theoretical frameworks. Theory is generally used instrumentally to help identify and define concepts and variables so that researchers can operationalize them for analysis.
  Applied research is usually used in contrast to basic research (sometimes called pure research) that does not yield immediate application upon completion." (Phua, 2004: 19–20)
  - 'Applied' research contrasts with 'basic' research in that the results are intended to immediately be put to use in improving processes or tools. Theory may inform applied research, but it does not seek to advance theoretical frameworks (Phua, 2004: 19–20).

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