



NALA

National Adult Literacy Agency
Áisíneacht Náisiúnta Litearthachta do Aosaigh

The background of the cover is a vibrant, abstract collage of various geometric shapes including circles, triangles, squares, and lines in a wide range of colors such as blue, red, yellow, green, and purple. Some shapes are solid, while others are outlines or have internal patterns. The overall effect is dynamic and colorful.

A review of adult numeracy policy and practice in Ireland.

The research team who worked on this report are: Author, Tina Byrne, National Adult Literacy Agency. Research support and advice, Inez Bailey and Daren Okafo, National Adult Literacy Agency.

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The National Adult Literacy Agency (NALA) is an independent member-based organisation, working on improving adult literacy in Ireland since 1980.

We are:

- the voice of adults wishing to improve their literacy skills, and
- committed to raising adult literacy levels.



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SECTION 1

Background to the paper



This paper examines existing research and policy initiatives relating to adult numeracy in Ireland and internationally in order to inform the realisation of the objectives, relating to numeracy, in the **Further Education and Training Strategy (FET) (2014-2019)**. The paper is timely in that it is undertaken against a backdrop of an increasing focus on improving basic skills, including numeracy, among adult populations in Ireland and across Europe (EU, 2016). The findings from this paper can contribute to the current debate on the importance of numeracy skills to the social, personal and economic wellbeing of Irish adults.

The paper will:

- Review international publications and survey data on adult numeracy.
- Provide an overview of numeracy policy and practice in Ireland.
- Suggest some next steps needed to address the numeracy issue in Ireland.

The paper consists of five sections:

- Section 1: provides an introduction to the purpose and scope of the paper.
- Section 2: provides an overview of the international and national policy context.
- Section 3: summarises international and national research.
- Section 4: examines adult numeracy provision in Ireland.
- Section 5: provides a thematic discussion on the key messages and outlines some key next steps.

Whilst carrying out this review, a lack of evidence of the implementation of policies or initiatives that focus solely on increasing adult numeracy skills posed a particular challenge. This is not to say that such evidence does not exist – rather if it does exist, it proved difficult to find. In the main, the focus in the literature is on the development of initiatives to increase basic skills, including numeracy.



Introduction

In recent times, Ireland has gone through the most extensive reform of further education and training in the history of the State. This presented a key opportunity for change and improvement in practice and policy implementation in the sector. During this period, a number of major reports were published that focused attention on further education and training.

In 2013, the OECD published the findings of the **Survey of Adult Skills**. The survey was conducted in over 40 countries as part of the **Programme for the International Assessment of Adult Competencies** (PIAAC). It measured the key cognitive and workplace skills that adults need to participate meaningfully in society, and for economies to prosper. The results for Ireland showed that one in four Irish people scored at or below level 1 for numeracy on a five-point scale.

Around the same time, the **Department of Education and Skills** published its **Review of ALCES funded Adult Literacy Provision** in Ireland, the national FET strategy was published, and 16 new Education and Training Boards (ETBs) were established. The ETBs replaced the Vocational and Education Committees which were the statutory providers of adult literacy and numeracy across the country.

The adult literacy review sets out 32 recommendations to improve adult literacy and numeracy provision, and the FET Strategy prioritises the development of adult literacy and numeracy (including a literacy and numeracy strategy), with 12 elements – one of which prioritises promoting adult numeracy and adult numeracy provision. A more in-depth discussion on these are found later in this document.



What is adult numeracy?

To date, there is no universally accepted agreement on a definition of adult numeracy. Within the adult education sector, it is generally accepted that 'numeracy' refers to the ability to be able to perform not just the four basic mathematical operations, but also the skills of measurement, interpretation of statistical information, use of shape and form, and the ability to think critically about mathematical and quantitative information (Gal et al, 2005; de Lange, 2003; Tout & Schmitt, 2002).

The OECD considers that numeracy has different meanings across various countries and languages (OECD, 2009). In the **Programme for the International Assessment of Adult Competencies 2012** (PIAAC)¹ numeracy is defined as:

The ability to access, use, interpret and communicate mathematical information and ideas, in order to engage in and manage the mathematical demands of a range of situations in adult life (OECD, 2012).

The OECD notes that this definition is compatible with previous conceptualisations of numeracy and reflects the emphasis of the PIAAC survey on competencies relevant for the information age.

In NALA's **Guidelines for Good Adult Literacy Work**, numeracy is viewed as an integral part of literacy as all adults face a range of mathematical demands in everyday life. The Guidelines define numeracy as:

A life skill that involves the competent use of everyday mathematical language, knowledge and skills, and the confidence to manage the mathematical demands of real-life situations (NALA, 2012, p.8).

This definition reflects a shared understanding and broad consensus among Irish adult numeracy tutors that numeracy is the application of mathematics in everyday situations, and that numeracy practices need to support learners' confidence to critically use numeracy in real world contexts and situations (NALA, 2013). There is a strategic value to having a shared understanding of what is meant by numeracy, both in terms of practice and policy. The growing focus on the importance of numeracy and having a numerate population has not been met with the same focus on a widely accepted definition or how to best promote the development of numeracy capabilities (Geiger, 2016). Therefore, the need for agreed national definitions of numeracy is vital, as this will inform the design and type of provision available to Irish adults.

¹PIAAC is a household survey conducted by the OECD to assess adult proficiencies needed for successful participation in 21 st century society and the global economy.

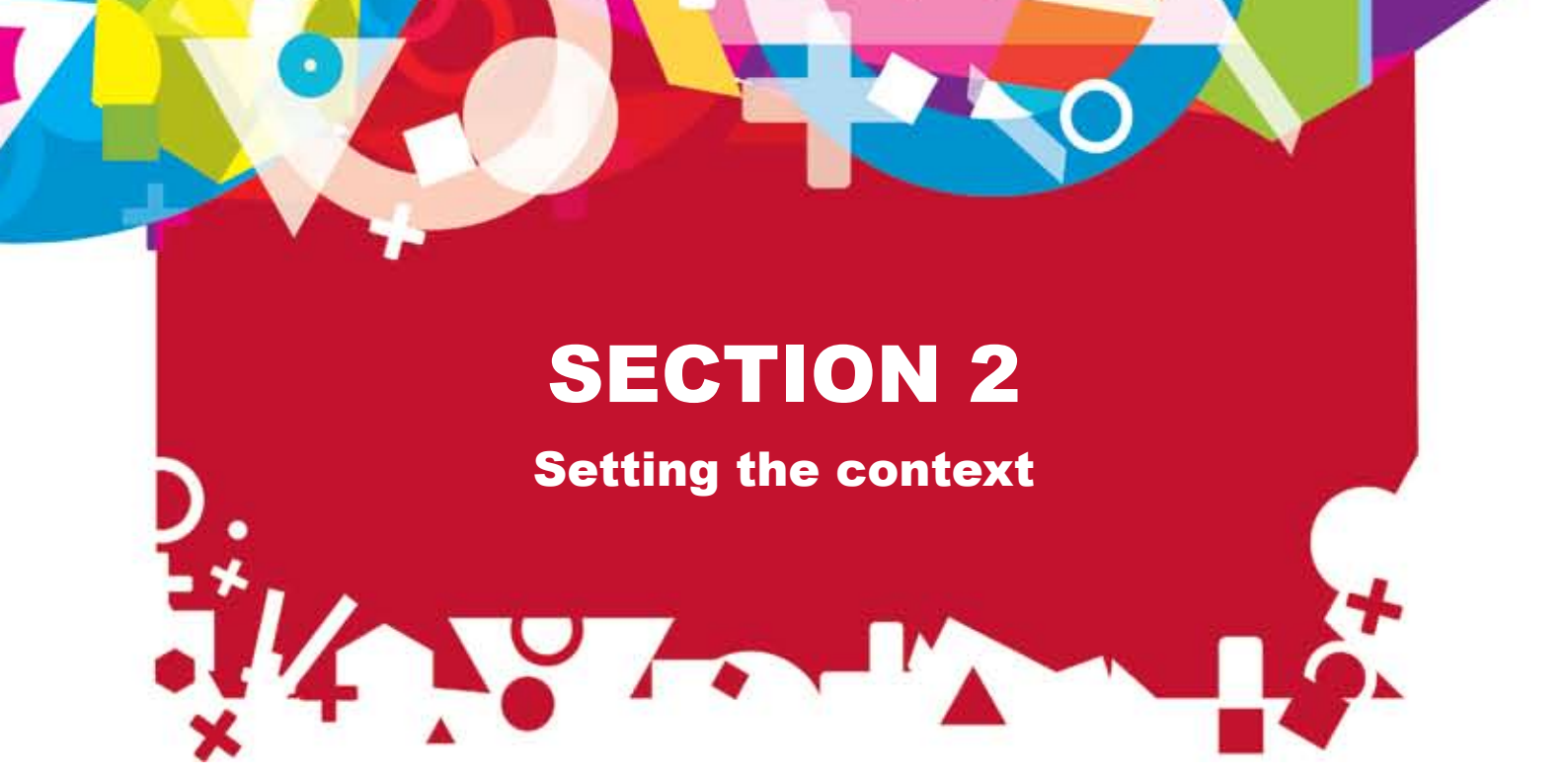




Summary

In Ireland, the debate at policy and strategic level acknowledges the importance of numeracy in the 21st century, where science, technology, engineering and mathematics play an ever-increasing role in our lives. Currently, there is an increasing focus on improving the population's basic skills, which includes numeracy skills for the educationally vulnerable, in order to develop their social, personal and economic wellbeing. Having a literate and numerate population is necessary to promote the prosperity of a country and the social wellbeing of its people as informed, active citizens. Numeracy is a key factor that contributes to individual life chances and its impact is critical for good health, favourable labour market opportunities, participation in family and community life and active citizenship.

While a complete, standalone definition of numeracy is beyond the scope of this document, there is a strategic value in approaching a working definition more fully grounded in the current related strategy documents – for example, the FET strategy, NALA Strategic Plan 2017-2019, DES Operational Guidelines. These strategies seek to guide the implementation, monitoring and assessment of numeracy as a unique concern outside of the broader concept of literacy. Indeed the FET Strategy outlines a requirement for continued funding specifically related to the need to “Prioritise numeracy more strongly and increase the amount of numeracy provision offered as integrated and standalone options.” (SOLAS, 2014, p.100).



SECTION 2

Setting the context

Part 1: The international context

This section examines the literature relating to the increasing recognition of the need to increase basic skills among national populations, not least because of the results of PIAAC. In 2016, the European Commission reported that 70 million Europeans have low basic skills in literacy, numeracy and ICT (EU, 2016). This puts them at risk of social exclusion, poverty and unemployment. Policies alone to increase attainment are not enough.

Part one of this section presents an overview of statistical evidence from OECD surveys and working papers, and EU documents that highlight the importance of increasing basic skills levels among European citizens. The publications do not focus on numeracy as a standalone area for policy development; instead they highlight the importance of increasing basic skills, including numeracy, among national populations. Selected highlights from these publications are outlined below.²

Part two examines recent Irish national skills strategies that have highlighted the need for a highly skilled workforce and an active engaged citizenship. The strategies have placed an emphasis on increasing the proportion of the population holding a level 3 qualification. Part two also provides a brief summary of policy development in the area of adult numeracy, an overview of the PIAAC results for Ireland and a summary of more recent policy developments.

² Copies of these reports are available to download from the OECD website





Programme for the International Assessment of Adult Competencies (PIAAC) 2012

In 2012, the OECD's Survey of Adult Skills, also known as PIAAC, assessed the proficiency of the adult population in literacy and numeracy in 24 countries and regions. Its primary objective was to collect information relating to adult skills in literacy, numeracy and problem-solving in technology-rich environments (PSTRE). These three areas reflect adult skills beyond those captured by measures such as educational attainment, literacy and numeracy. Their inclusion in the PIAAC signalled an important departure from previous measures of reading, writing and arithmetic which have been used to describe the skillset of the international labour market.

PIAAC is a policy-driven initiative intended to provide policy makers and key stakeholders at national and international levels with information that can inform policy-setting and planning of diverse types of social interventions and educational programmes. It was designed to answer many policy-related questions and to shed light on a range of important policy issues, such as:

- The adequacy of the supply of key competencies (cognitive skills).
- Identification of groups with (relatively) low proficiencies.
- The extent to which the skills that individuals possess are used in their work or at home, factors that affect the acquisition and retention (or loss) of skills.
- Changes in skills over the lifespan (Gal and Tout, 2014).

The PIAAC results were analysed to understand a range of social, economic and health outcomes in the populations of individual countries. The findings related to numeracy show that, in almost all participating countries, a sizeable proportion of adults (22.7%) had poor numeracy skills.

After the PIAAC findings were published, the OECD published a number of reports and education working papers that analysed different aspects of the PIAAC data. The findings of these papers are summarised below and present key points from the data about adults with low proficiency levels.

1. Characteristics of adults with low numeracy proficiency levels

The data shows that:

- Proficiency in numeracy peaks at around age 30.
- Proficiency is associated with educational attainment.
- Men score higher in numeracy than women.
- Low proficiency in numeracy can impact on acquiring basic IT skills.

- 
- Parental education exerts a significant influence on adults' proficiency in both literacy and numeracy.
 - Adults with higher proficiency have greater chances of being employed, earning higher wages and enjoying good health.
 - Adults who scored at lower proficiency levels were more likely to report poor health, are less likely to have trust in others, feel they have little impact on the political process and volunteer less or not at all (Grotluschen et al, 2016).

3. Adult literacy and numeracy initiatives

The PIAAC data showed that:

- A considerable number of adults in OECD countries possess low numeracy skills, a fact that raises questions regarding the effectiveness of existing education systems and educational initiatives targeting low-skilled adults.
- The multiple benefits of strong basic skills to the individual are well established, the literature shows that these are normally developed in early life and initial schooling.
- Often low-skilled individuals either do not see the need to improve their numeracy and literacy skills or lack the motivation to engage in basic skills learning. They often have low expectations of the benefits, perceive various barriers to participation or drop out because of inadequate programme design.
- The potential for mid-life remedial interventions to be effective remains uncertain (Grotluschen et al, 2016).

A New Skills Agenda for Europe 2016

A New Skills Agenda for Europe (2016) highlights the fact that Europe faces a basic skills challenge. People need a minimum level of literacy, digital and numeracy skills in order to participate fully in society and access good jobs. The Agenda suggests that policies that focus only on increased attainment are not sufficient, and that the relevance and quality of what people learn must now take centre stage. The Skills Agenda is centred around three key work strands:

- Improving the quality and relevance of skills formation.
- Making skills and qualifications more visible and comparable.
- Improving skills intelligence and information for better career choices (EC, 2016, p.2).

The Skills Agenda proposes that with the right skills, people are equipped for good-quality employment and, equally as important, can fulfil their potential as confident active citizens. The role of social partners, including education providers, employers and learners themselves, will also play a central role in the successful delivery and implementation of the Skills Agenda. In order to develop key competencies and skills and to build resilience, the Agenda proposes that formal education and training should equip everyone with the skills that allow for meaningful social inclusion, personal fulfilment and development, active citizenship and employment (EC, 2016, p.5).





Upskilling Pathways

Upskilling Pathways (UP) is the main legislative proposal of the New Skills Agenda for Europe. It aims to help adults acquire a minimum level of literacy, numeracy and digital skills. Adults with low levels of basic skills would have access to UP in three key steps:

1. Skills assessment

This may take the form of a skills audit that will enable the adults to identify their existing skills and any needs for upskilling. The assessment will result in a statement of the adult's skills which can be the basis for a plan for the next step in offering education and training support.

2. Learning offer

The adult will receive a tailored offer of education and training based on the result of the skills assessment. The offer would first concentrate on building up the learner's literacy, numeracy and digital skills. This should provide them with a solid foundation for further progression, and a qualification if required. The qualification offered should be relevant to labour market needs so that the upskilling offer matches the skills gap at local and national levels.

3. Validation and recognition

The adult will have the opportunity to have the skills they have acquired validated and recognised. Validation will allow learners' progress to be recorded at different stages on the pathway so that they can collect credits towards a qualification in the national qualification framework.

Many member states already offer elements of UP, and delivery of the initiative will be based upon:

- Effective outreach.
- Guidance.
- Support measures.

Successful implementation of UP will require the active involvement of a wide range of stakeholders, including social partners, education and training providers, employers, libraries and local and regional authorities. These will all play a key part in the successful delivery of the UP initiative, and in ensuring outreach, guidance and support throughout the overall process.



Education and Training 2020: Improving Policy and Provision for Adult Learning in Europe

One of the key messages from **Education and Training 2020: Improving Policy and Provision for Adult Learning in Europe** is that adult learning can improve lives and economies. Adults who continue to learn enjoy better health, are more active citizens, are more employable and earn more. The report recommends that:

Member states should act on the findings of PIAAC and other key studies in order to reduce the number of adults with poor basic skills and increase the number with high skills levels (EC, 2015, p:49).

Adults with low basic skills are more likely to be unemployed or in low paid employment, have poor health, low levels of civic engagement, and are less likely to improve their skills through adult education and training (OECD, 2015).

Summary

The European Skills Agenda points out that tackling the skills challenges will require significant policy efforts and systemic reforms in education and training. Upskilling Pathways outlines a way to **help adults acquire a minimum level of literacy, numeracy and digital skills**, and/or to acquire a **broader set of skills** by progressing towards an upper secondary qualification or equivalent (level 3 or 4 in the **European Qualifications Framework (EQF)** depending on national circumstances. The results from PIAAC and other OECD publications make a strong case that countries are likely to benefit from policy and practice changes that increase the skills level of their populations. Education and Training 2020 goes so far as to recommend that the PIAAC data should be acted upon to reduce the number of adults with basic skills needs.



Part 2: Numeracy in an Irish context

International Adult Literacy Survey (1997)

The publication of the **International Adult Literacy Survey: Results for Ireland** (IALS) 1997 provided the first profile of literacy skills of Irish adults aged 16 – 64 years. Whilst not identifying numeracy as a separate domain, the study sought to identify five levels of literacy that included quantitative literacy. The focus on quantitative literacy was on the knowledge and skills needed to apply arithmetic operations. As well as the processing of printed information, the difficulty of such tasks was influenced by:

- The particular arithmetic operations required to complete the task.
- The number of operations needed to perform the task.
- The extent to which the numbers are embedded in printed materials.
- The extent to which inferences must be made in order to identify the particular kind of arithmetic operation to be performed (OECD, 1997, p36).

The IALS findings show that 25% of the population performed at the lowest end of literacy and numeracy skills and had scored at level 1. Scoring at level 1 of the IALS indicated the person had profound literacy and numeracy difficulties. It requires performing a single relatively simple operation, usually addition. The results show that a greater number of older adults (56 – 65 years) scored at this level.

Level 2 tasks involved calculating percentages, and the results show that in contrast to level 1, a higher number of younger people were found to be at this stage of quantitative literacy.

The IALS data also show that people with the most profound literacy and numeracy difficulties were the least likely to be involved in education or training.

Learning for Life

The publication of the IALS (1997) led to Government recognition of the importance of improving adult literacy levels in Ireland. The Green Paper on Adult Education (1998) outlined the need for the development of the adult literacy service as a whole. The White Paper **Learning for Life** (DES, 2000) set out a holistic approach to the development of a national programme for adult education, and established the National Adult Literacy Programme.

The White Paper on Adult Education featured the important role of literacy and numeracy in lifelong learning policy and practice. The overall aim was to increase the number of adult learners in the adult literacy service, prioritise those with the lowest literacy levels and implement a quality framework to monitor the effectiveness of the service. To help achieve this aim, the White Paper documented the need for a National Adult Literacy Programme, accompanied by strategies that would explore and address barriers to accessing education, and prioritise those with the lowest literacy levels. While there was no published National Adult Literacy Programme implementation plan, several areas of the programme were rolled out, and targets for the participation were achieved.

PIAAC – numeracy results for Ireland

A total of 6,000 adults aged 16 and older participated in PIAAC in Ireland. These participants had varying levels of proficiency in literacy, numeracy and PSTRE. The percentage of the sample at each proficiency level is summarised in the table below. The pink shaded area indicates the sub-sample of adults who scored at or below level 1 and at level 2.

Table 1: Percentage of adults in Ireland at each level for literacy, numeracy and problem solving in technology rich environments

	Below Level 1	At Level 1	At Level 2	At Level 3	At Level 4	At Level 5
Literacy	4.3	13.2	37.7	36.2	8.1	#
Numeracy	7.1	18.2	38.2	29.0	7.0	0.6
PSTRE	18.7	43.8	32.9	4.7		

Source: OECD (PIAAC), 2012. Note: # indicates less than 1% (rounds to zero).

The Irish results from PIAAC show that one in four adults (25%) have numeracy skills at or below level 1. This score ranks Ireland 19th out of 24 participating countries. The overall level of numeracy skill is lower than literacy, and, in general, there are more people at lower levels of numeracy than literacy across demographic variables such as age, gender and educational attainment. These results suggest that 754,000 Irish people struggle with everyday maths, and may be unable to do a simple maths calculation such as subtraction.

Summary of demographic findings:

- **Age group:** Adults aged 25 – 34 years had the highest score for numeracy, while adults aged 55 – 65 had the lowest score. These results mirror a trend that shows a decline in numeracy proficiency for older age groups across all participating countries.
- **Gender:** The results for Ireland also show that there is a statistically significant difference (12 points) in the scores for males and females, with men scoring higher than women. This gender difference is consistent with the trend in all participating countries.
- **Highest level of education achieved:** The data shows that there is a strong relationship between educational achievement and numeracy proficiency, and higher scores are associated with higher levels of education. The data shows that almost two thirds (62.1%) of those whose highest level of education is at primary level or less scored at or below level 1, compared to 21.8% of those whose highest level of education is upper secondary (Leaving Certificate).

- **Parents' level of educational attainment:** This variable is strongly related to numeracy proficiency. The proficiency of adults aged 16 – 24 with at least one parent attaining third-level education is significantly higher (17 points) compared to adults aged 16 – 24 whose parents' education is below upper secondary level.
- **Economic status:** Adults in Ireland in full-time employment have the highest score for numeracy in comparison to those in part-time employment (24-point difference), and those who were unemployed (30-point difference).
- **Health status:** More than half of those reporting being in poor health (53.8%) are at or below level 1, compared to 18.5% of those in excellent health.
- **Immigration status:** Over 29% of those who are 'foreign-born' and who are not native English speakers score at or below level 1, compared to 25.8% of those who are native-born English speakers.
- **Occupation:** Average numeracy scores are higher for those in certain occupational categories. Professionals and legislators, senior officials and managers have the highest scores, while plant and machinery operators and assembly workers and those in elementary occupations have the lowest. At the top end of the numeracy proficiency scale, professionals were the most prominent group, with 18.6% of them scoring at level 4 or 5 compared to 3.7% of those in elementary occupations.
- **Industrial sector:** Those working in information and communication, financial, insurance and real estate activities, professional, scientific and technical activities and education have the highest numeracy proficiency scores across the industrial sectors. More than three quarters (76.5%) of those working in the information and communication sector score at level 3 or higher on the numeracy scale. Adults working in accommodation and food services activities (26.5%) and human health and social work activities (25.6%) have the highest percentages at or below level 1 on the numeracy proficiency scale.
- **Hourly income deciles:** The relationship between hourly salary deciles and numeracy follow the trend for the literacy domain with a 50-point numeracy mean score difference between adults earning in the highest hourly income decile and those in the lowest income decile. Looking across the levels of the numeracy scale, there is a general trend for larger proportions of those in the higher income deciles to have higher levels of numeracy proficiency. For example, 22.0% of those who earn in the highest hourly decile score at level 4 or 5 for numeracy compared to just 5.6% of those in the lowest hourly decile.



Further analysis of the PIAAC data

In 2013, NALA carried out an in-depth analysis of the PIAAC data. **A snapshot of low proficiency in the Irish labour market** (NALA, 2013) describes the results of PIAAC in relation to specific aspects of the labour market. This report specifically focuses on low literacy, numeracy and PSTRE within this context and in terms of skills-based occupation classifications and employment-based occupational status.

A summary of the main findings showed that:

- Women had significantly higher odds of: low numeracy in all occupations (except elementary occupations); low PSTRE in skilled and semi-skilled (white collar) occupations; and low literacy in elementary occupations.
- Older respondents had significantly higher odds of: low numeracy in all skilled and semi-skilled occupations; low PSTRE in semi-skilled (white collar) and semi-skilled (blue-collar) occupations; and low literacy in all skilled and semi-skilled occupations.
- Respondents with a higher level of educational attainment had significantly lower odds of low literacy, numeracy and PSTRE within all occupational classifications.
- Within skilled occupations, public sector employees had significantly higher odds of low PSTRE proficiency compared with those in the non-profit sector.
- Within semi-skilled, (white and blue collar) occupations, private sector employees had significantly higher odds of low numeracy proficiency compared to those in the non-profit sector.
- Within semi-skilled, white collar occupations, service workers, shop or market salespersons had significantly higher odds of low literacy, numeracy and PSTRE compared with clerks.

The results highlighted that low proficiency in these key skills is predicted by age and gender, particularly within skilled and semi-skilled occupations. While the measures of literacy, numeracy and PSTRE used in the PIAAC survey are intended to reflect adult skills beyond those captured by previous measures of educational attainment, this report also illustrates the consistent role of formal education in the literacy, numeracy and PSTRE skills base of the adult population in Ireland (Gibney, 2014).

In 2015, NALA undertook another analysis of the PIAAC data – this time focusing on the themes of everyday skill, skills in the workplace and social wellbeing.³ When it came to numeracy, the main findings showed the following:

- Over half (60%) of the sample with numeracy at level 1 or lower, and (58%) of the sample with level 2 numeracy were women.

³This work was part of a wider European Agenda for Adult Learning Project, funded under the European Lifelong Learning Programme and the Department of Education and Skills.

- The average age of the respondents with level 1 or lower numeracy was 43 years. Almost half (49%) of the sample with level 1 or lower numeracy had lower secondary education or less.
- Nearly half (48%) of the sample with level 2 numeracy had upper secondary education or less.
- Almost one third (31%) of the sample with level 1 or lower numeracy had had no paid work in the last five years.
- The data showed that (41%) of respondents with level 1 or lower numeracy have upper secondary education or less, and (22%) have post-secondary (non-third level) education.

Adult numeracy within ETB adult literacy service (ALS Review)

In 2014, the Department of Education and Skills (DES) published its review of adult literacy provision in Ireland. The review acknowledges that numeracy has traditionally been the 'poor relation' of basic skills provision. It also states that 'fear' is the biggest barrier to adults participating in numeracy provision. The review reports that in 2011 only 5% of tuition was devoted to standalone numeracy provision, and recommended that there be a higher focus on numeracy, both as a standalone option and as an integrated part of broader basic skills provision. Numeracy should also be strongly promoted as a core option for learners, and learners should be offered an opportunity to gain accreditation at NFQ levels 1 – 3. In order to adopt these recommendations, ETBs should ensure that staff has access to in-service training for numeracy teaching, including non-accredited and accredited provision.

The review highlights the lack of hours dedicated to standalone adult numeracy programmes. It states, amongst other things, that numeracy should be strongly promoted as a core option for learners, and should be an integral part of the range of learning options offered throughout the Education and Training Boards (ETBs). The review set out 32 recommendations to improve adult literacy and numeracy provision. Recommendation 12 states that:

ETBs should strongly promote numeracy as an option for adult literacy participants and seek to increase participation in both standalone and integrated numeracy options (Kett, 2014, p.88).

Following on from the Review, the Government enshrined an Adult Literacy and Numeracy Strategy in the Further Education and Training Act.



Further Education and Training Strategy 2014-2019

The Further Education and Training (FET) Strategy, accompanied by implementation plans, aims to develop a high quality integrated system of further education and training in Ireland. It aims to deliver a higher quality learning experience leading to better outcomes for all those who engage in further education and training. The two broad objectives of the FET Strategy are that it will meet the needs of citizens and promote economic development (SOLAS, 2014).

Section 6 on Active Inclusion in the Strategy describes the concept as enabling every citizen, particularly those most disadvantaged, to fully participate in society and the economy. With regard to social inclusion, the FET Strategy highlights the importance of developing, promoting and encouraging adults to engage in numeracy tuition. The benefits of participation to the individual can include an increase in self-confidence and in employability, and an:

increased participation and completion and attainment of major awards at levels 1, 2 and 3 with regard to priority target groups in alignment with the existing National Skills Strategy (SOLAS, 2014, p.100).

The FET Strategy also includes a Literacy and Numeracy Strategy with 12 elements. Element seven sets out to:

Prioritise numeracy more strongly and increase the amount of numeracy provision offered as integrated and standalone options (SOLAS, 2014, p.100).

Successfully implementing this numeracy element will go some way to increasing the number of people at NFQ level 3 and in meeting the target of 7% set out in the Skills Strategy.



Ireland's National Skills Strategy 2025

The **National Skills Strategy 2025** sets out how it will support the development of a well-educated, well skilled and adaptable labour force. Lifelong learning will be promoted and supported alongside skills in the workplace. The intent of the Strategy is to ensure that Irish people use and develop their skills through civic participation and sustainable employment. The National Skills Strategy 2025 recognises the importance of all levels of education and training as integral elements of a framework for lifelong learning and skills development. This starts at early childhood provision, through school years and in learning beyond school (DES, 2016). However, there is still a challenge in increasing the number of people with NFQ level 3. This figure stands at 15.4% – nearly double the 2020 target of 7%. The Strategy proposes that lifelong learning and skills development is a shared responsibility between the State, employers, citizens and FET providers.

Project Maths and Strategy for Literacy and Numeracy

The implementation of Project Maths in the post primary sector, and the publication of the **Strategy for Literacy and Numeracy Learning for Life (2011-2020)** (DES, 2011) helped put numeracy on the national agenda. This in turn is likely to impact numeracy in adult education. An interim review of the Strategy addresses developments since 2011. Under pillar 1 **enabling parents and communities to support children's literacy and numeracy development**, the Review suggests that much has been achieved in this area and suggests that, in the future, supports for parents should include:

Placing more emphasis on parents' role in the development of numeracy skills, across the full range from simple sums to problem solving, encouraging the correct understanding and use of mathematical terms (DES, 2017 p.25).

The Review acknowledges that a significant number of adults need to improve their numeracy skills, and cites the findings from PIAAC as evidence of this. It also references how the FET Strategy incorporates a specific literacy and numeracy strategy for the adult sector. It outlines how implementing the FET Strategy through initiatives like, for example, the **Take the First Step** awareness campaign, has helped to encourage parents to access support to enhance their own literacy and numeracy skills.

Summary

National strategies and reports have, to some extent, separated numeracy from literacy. This development is an important contribution to the debate on increasing basic skills among the Irish population. Both the FET strategy and the review of the adult literacy service have singled out numeracy as a domain for particular development. Likewise, the National Skills Strategy 2025 and the Review of Literacy and Numeracy Learning for Life 2011 - 2020 have placed numeracy firmly at the forefront of the national agenda.



SECTION 3

Overview of numeracy literature

In a review of adult numeracy in 2003, Coben suggested that much of the research on numeracy is schools-based and focused on the operations of numeracy and the teaching of individual elements. Whilst this situation has improved, it is widely acknowledged in the literature that, in general, adult numeracy is under researched. This is particularly true when it comes to research on how to tackle what is referred to in the literature as the 'skills deficit' among adults. The umbrella terms of 'basic skills' and 'literacies' encompasses literacy and numeracy and can blur the boundaries in terms of policy and practice between the two. As a result, numeracy in theory and in practice can be overshadowed by literacy, and, as a result, it receives less attention and funding. However, with the growing focus and emphasis on international and national strategies for improving adult numeracy skills, this is a situation that is likely to change in the very near future.

Adult numeracy

Adult numeracy and adult numeracy skills are assuming a critical importance in national and international debates in education, economic and social policies. Numeracy is increasingly acknowledged as an integral part of adult learning provision and of teaching mathematics in schools (Geiger et al, 2016). According to research, adults' mathematical knowledge develops both 'in and out of school' (OECD, 2009, p.30). Research suggests that there is a need for 'mathematical understandings', but that many people in society can operate at a functional numeracy level with very little knowledge of mathematics as a concept. A deeper understanding of mathematics is needed for critical numeracy while a functional numeracy level requires only basic manipulation of numbers (OECD, 2009; Perso, 2006).

Kantner (2009) strongly argues that adult mathematics – including numeracy – has been marginalised within education. The mathematics needs of adult learners can be disregarded by all dimensions of adult education because adult education subsumes adult mathematics learning under the umbrella of literacy. Furthermore, adult education policies, research, and professional organisations prioritise reading and writing issues above those of numeracy. Kantner further argues that:

Adult education needs to 'lead the charge' against innumeracy and include all participants – students, teachers, employers and government officials – in the process of adult mathematics education (Kantner 2009, p.5).



Numeracy and mathematics

Central to the debate on numeracy is its link to and relationship with mathematics. The vast range of definitions relating to numeracy has led to confusion about this relationship, specifically with regard to how the two concepts connect with one another (Perso, 2006). There are some aspects of mathematics that are not necessary for numeracy, and there are aspects of numerate behaviour ‘that have little to do with mathematics’ (Perso, 2006, p.37). Numeracy can be interpreted as equipping learners with basic arithmetic skills; therefore numeracy can be regarded as a subset of mathematics – simply knowing the four basic rules of addition, subtraction, multiplication and division (Coben, 2003).

Numeracy is having a critical understanding of being able to complete a computation alongside the ability to decide what computation to use and in what situation. Numeracy is more than the application of school mathematics – it also incorporates the use of common sense and critical application of maths skills (NALA, 2013). Numeracy extends beyond mastering basic mathematical skills to include capabilities such as applying, interpreting and communicating mathematical information and ideas within a variety of contexts. It also involves ‘bring[ing] to resolution’ real world problems (Geiger et al, 2016).

Numeracy and literacy

In the field of adult education, literacy development has traditionally taken prominence over numeracy which, from the outset, has struggled to maintain its own identity. Although literacy and numeracy have some traditional links, numeracy is a construct with a life of its own that often has a central and distinct role in adults’ lives (OECD, 2009). In its earliest conceptualisation, numeracy provision was delivered through literacy provision and this has influenced its development as a concept (Maguire, 2003, p.33).

The evolution of numeracy viewed through the Crowther definition as ‘the mirror image of literacy’ was discussed by O’Donoghue (2002), who identified the following steps in the development of the concept of numeracy:

- Mirror image of literacy.
- Literacy (Primarily Literacy concern with some grassroots numeracy interest).
- Literacy (Concern for basic maths).
- Functional Numeracy (separate from Literacy).
- Literacy (Numeracy recognised).
- Types of Literacy (mathematical literacy, scientific literacy).
- Numeracy detached with its own identity and of equal importance to literacy.

(O’Donoghue, 2012, p.48).

There is a need to consider literacy when discussing numeracy as the two can affect, and in many cases are related to, each other and, therefore, are not always mutually exclusive (Baker & Street, 1994). In some cases, this may involve how the curriculum is organised and delivered.



For example, Geiger et al (2016) suggest taking advantage of integrating numeracy into subjects other than mathematics. However, the authors acknowledge that subject integration can be complex and, at the least, challenging to implement.

Impact of poor numeracy in adulthood

In a review of the impacts and antecedents of poor numeracy in adulthood in England, Carpentieri et al (2009) found that:

- While women and men have similar literacy levels, women were more likely than men to have poor numeracy.
- Younger and older adults tended to have poorer skills.

Adults with poor numeracy were more likely than those with good numeracy to have parents with no qualifications, twice as likely to be early school leavers and twice as likely to have had parents who were unemployed or receive income support. They also found that numeracy skills have a strong impact on employment and earnings and those with poor numeracy skills were less likely to receive workplace training.

Adults with poor literacy were also more likely to report a long-term illness and are about twice as likely to suffer symptoms of depression. Adults with poor numeracy skills were also twice as likely to lack internet access, twice as likely to not have a computer at home, and twice as likely not to use a computer even when there is one in the home. These findings, while somewhat dated, reflect the findings from more recent international research and surveys.

Numeracy counts: NIACE Committee of Inquiry on Adult Numeracy Learning (2011)

In 2011, NIACE published a report from a Committee of Inquiry on Adult Numeracy Learning. The independent inquiry reviewed progress in adult numeracy learning and made recommendations on policy, practice and culture. The report made seven recommendations on how to improve adult numeracy in England. These were as follows:

1. Change the way we think about numeracy.
2. Use a new measure of how well adults use numeracy.
3. Have more, different and better provision.
4. Have more numeracy teachers and a new group of people to support adult learning.
5. Prioritise adults with the poorest numeracy skills.
6. Organise an 'all-age' forum for key organisations to work together to improve adult numeracy learning.
7. Conduct more in-depth research to ensure we know what works best for adult numeracy learners.

The recommendations advocated a reshaping of priorities for adult numeracy learning and to produce a better, targeted and more equitable system than was available at the time of writing. To date, there are no published evaluations on the progress of these recommendations.





NALA numeracy research

There is a lack of adult numeracy research in Ireland. In order to address this knowledge gap, NALA has embarked on a programme of research in this area. The improvement of quality and quantity of adult numeracy teaching and learning is of keen interest to NALA and the primary reason for conducting the research. A summary of the main publications is provided below.

Meeting the numeracy challenge

In an effort to put a focus on numeracy as distinct from literacy, NALA published the Numeracy Strategy **Meeting the Numeracy Challenge** in 2004. The Strategy identified the following key elements in relation to numeracy:

- A need to develop tutor training.
- Greater independent focus on numeracy.
- Development of specific training programmes.
- Delivery of accredited programmes.
- Requirement to facilitate tutor CPD (NALA, 2004).

The report also highlighted the level of in-service training for tutors facilitated by the National Adult Literacy Agency. In-service training along with numeracy workshops, and training for working with Numeracy and Farming were provided. However, the report also noted that the demand for tutor training was “variable” and the NALA events were often undersubscribed. Tutors, especially those working part-time, had difficulty attending in-service because of lack of supports – for example, entitlement to subsistence and pay from their organisation. The report made a number of recommendations. These included:

- The implementation of numeracy training as an integral part of all adult literacy tutors professional development.
- The need for accredited numeracy professional development.
- Provision for tutors to attend such training.



Training needs of numeracy tutors

In 2013, NALA published **Doing the maths: the training needs of numeracy tutors in Ireland, 2013 and beyond**. In its broadest terms, the research set out to identify training needs among tutors providing numeracy tuition to adult learners. The main findings from the survey are as follows:

- The majority of tutors were female and over 45 years of age, more than half were on part time contracts, and the majority delivered numeracy at NFQ level 3.
- 90% of tutors had received third level education, and 8% of these had a degree where the main subject was mathematics.
- Over 60% reported that they did not have enough training in teaching numeracy to adults, and 15% reported that they had no training at all.
- Tutors indicated that having accreditation available is very important to learners, but believe that QQI components reduce the flexibility they have in meeting individual learner needs.

The main recommendation coming from the report was that NALA convene an expert group to examine in detail the findings from the report.

A framework for developing the CPD needs of adult numeracy tutors

In 2014, NALA convened a Numeracy Working Group to devise a framework for the continuous development of adult numeracy practitioners. The members of the Group were recognised academic and practitioner experts, and representatives of management of the ETBI, ALOA and SOLAS. The Framework sets out 10 components considered vital for ensuring that professional development shapes tutors who are competent and confident and can give learners the support they need. The 10 core components are outlined below.

1. Underpinning broad definition of numeracy that is internationally recognised.
2. Develop an excellent understanding of elementary mathematics.
3. Recognise the different dimensions of a numeracy tutor as they engage in professional development.
4. Develop tutors' 'mathematical eyes'.
5. Develop digital literacy.
6. Build on adult learning principles.
7. Develop the understanding of programme design, development and assessment.
8. Challenge their own beliefs, attitude and values.
9. Incorporate a process for reflection and goal setting.
10. Deliver programmes in the way numeracy tutors should approach their own teaching.



NALA numeracy case study research

Over the lifetime of the **NALA Strategic Plan 2014-2016**, the agency carried out research capturing adult numeracy teaching and learning methodologies. The result of the research is a series of case studies and reports that detail the day-to-day practice of numeracy and financial numeracy tuition provided through the ETBs' adult literacy services. The financial numeracy report provides examples of practices that support development of money skills, knowledge and understanding.

In the research, practitioners defined numeracy as using mathematics in real or everyday life. They situate mathematics in a context that the adult learner is familiar with, and stress the importance of making numeracy relevant to real-world situations that learners can relate to. Numeracy, therefore, is regarded as 'common sense with numbers' and the practical end of a theoretical subject.

Some of the other topics covered included:

- Teaching strategies for specific topics.
- Approaches to teaching.
- Planning and preparation of sessions.
- Working with groups and one to one.
- Evaluation and recording (NALA, 2013 – 2016).

The reports are a resource for tutors working in the area of adult numeracy and financial numeracy. They provide useful ideas and tips on teaching algebra, fractions, percentages and money matters for tutors to help develop adult learners' numeracy skills. Each report includes a table of practice and a list of resources that can be used to inform teaching approaches and design lesson plans.

Survey of numeracy practitioners 2017: what practitioners say

NALA offers training and education to numeracy practitioners through its annual national numeracy conference. Over the years, the conference has covered themes from relating maths to real life situations, using informal methods in everyday maths and communicating everyday maths concepts and ideas to students.⁴ Overall, feedback from the conferences show that, year on year, tutors report that they have learned something new at the event, and that they will make changes to their work practices as a result of what they learned.

⁴ For more information on NALA numeracy conferences see Appendix 1



In 2017, 75 tutors attended the numeracy conference. At the event, tutors were asked to complete a questionnaire regarding adult numeracy. In total, 52 (70%) of the tutors completed the survey.

Some of the main findings from the survey are presented below:

- The majority of tutors were female and taught numeracy in an adult literacy centre. Tutors also taught numeracy in training centres, Youthreach, primary and secondary schools, community education centres, PLC colleges and ITs.
- The majority taught mathematics at QQI levels 2 – 4.
- The age range of learners taught by tutors is from under 18 – 40+ years.

When asked to name the top three resources needed to support and improve their practice, the tutors gave the following answers:

- Assessable age appropriate online resources.
- Age appropriate numeracy workbooks.
- More time with adults in class.

When asked how best to promote the uptake of numeracy among adult learners they gave the following responses:

- Through outreach, posters, access through local clubs, Intreo centres and DSP.
- Word of mouth, current learners talking at open days and other events.
- Advertising through Facebook and other social media, local radio and information evenings.
- Demonstrate the benefits of taking part, show how non-judgemental the environment is, take the fear out of the situation, and show how maths applies to everyday life and how taking part can improve independence.
- Target adults and parents through schools, fitness centres, and show how taking part can be fun.

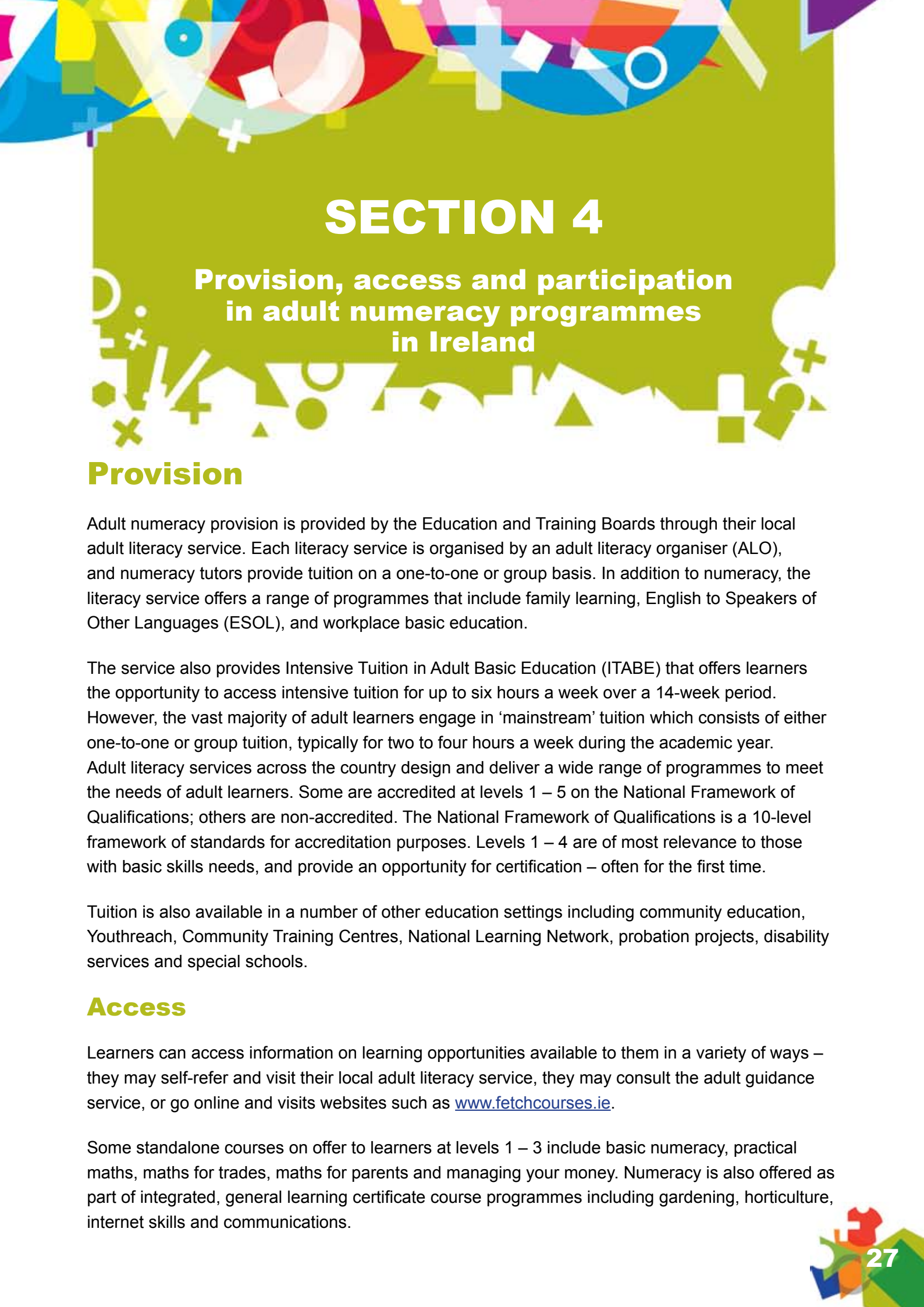
When asked: 'In an ideal world, what service would be available to the learner?', the responses included:

- 'one that is accessible to all, intensive with repetition available until the learner is confident enough to move on'.
- 'small intensive classes, day and evening classes tailored to the individual and their learning goals at a pace that suits them'.
- 'for under-motivated, disillusioned cohorts who might perceive maths as difficult and too much effort, the service would have small groups. There would need to be constant reaffirming the value of numeracy to the learner by relevant, realistic workplace visits that learners could connect with'.
- 'one [service] tailored to fit the learner, everyday life stuff, not stressful and trying to meet the criteria to suit the learning outcomes of the QQI levels'.

- 
- ‘a drop-in financial service to help learners with form filling and money and budgeting help’.
 - ‘increased provision, more time dedicated to it, more specialised workbooks for learners at levels 1,2 and 3, more support for tutors on where to get advice on best resources and where to find them’.
 - ‘flexible, hands-on, related to their real lives, more hours, more days a week and lots of real-life activities outside of the classroom.’

Summary

NALA strives to put a focus on numeracy as distinct from literacy. This is reflected in its research work and in the hosting of annual numeracy conferences. NALA aims to improve the outcomes for adults with literacy and numeracy difficulties by building awareness of the importance of literacy and numeracy for a more inclusive Ireland. They do this by leading innovation in the teaching and learning of adult basic skills and by seeking further investment. They aim to raise adult literacy and numeracy levels in Ireland. In order to achieve this, NALA will continue to carry out research which gathers the views of learners and practitioners, and will share these with educators, policy makers and Government in order to improve teaching and learning in adult numeracy tuition.



SECTION 4

Provision, access and participation in adult numeracy programmes in Ireland

Provision

Adult numeracy provision is provided by the Education and Training Boards through their local adult literacy service. Each literacy service is organised by an adult literacy organiser (ALO), and numeracy tutors provide tuition on a one-to-one or group basis. In addition to numeracy, the literacy service offers a range of programmes that include family learning, English to Speakers of Other Languages (ESOL), and workplace basic education.

The service also provides Intensive Tuition in Adult Basic Education (ITABE) that offers learners the opportunity to access intensive tuition for up to six hours a week over a 14-week period. However, the vast majority of adult learners engage in 'mainstream' tuition which consists of either one-to-one or group tuition, typically for two to four hours a week during the academic year. Adult literacy services across the country design and deliver a wide range of programmes to meet the needs of adult learners. Some are accredited at levels 1 – 5 on the National Framework of Qualifications; others are non-accredited. The National Framework of Qualifications is a 10-level framework of standards for accreditation purposes. Levels 1 – 4 are of most relevance to those with basic skills needs, and provide an opportunity for certification – often for the first time.

Tuition is also available in a number of other education settings including community education, Youthreach, Community Training Centres, National Learning Network, probation projects, disability services and special schools.

Access

Learners can access information on learning opportunities available to them in a variety of ways – they may self-refer and visit their local adult literacy service, they may consult the adult guidance service, or go online and visit websites such as www.fetchcourses.ie.

Some standalone courses on offer to learners at levels 1 – 3 include basic numeracy, practical maths, maths for trades, maths for parents and managing your money. Numeracy is also offered as part of integrated, general learning certificate course programmes including gardening, horticulture, internet skills and communications.

Learning does not always need to be classroom based. For example, NALA's distance learning service offers adults the opportunity to work over the phone with experienced literacy and numeracy tutors. The online learning website www.writeon.ie offers learning and accreditation at levels 2 and 3 on the NFQ.

Most of the programmes offer accredited and non-accredited numeracy tuition to adult learners as a standalone option or as part of an integrated numeracy programme. Non-accredited and level 1 programmes include basic adult numeracy, one-to-one non-accredited maths and first-step numeracy. Programmes on offer at level 2 include quantity and numbers, quantitative problem solving, pattern and relationship, and data handling. Level 3 programmes include application of numbers, functional maths, and mathematics.

Participation

In 2016, over 64,000 Irish adults availed of the services and learning opportunities on offer through the adult literacy services. This includes adults engaged in adult literacy tuition, ESOL and ITABE. See Table 1 below for breakdown.

Programme	Beneficiaries	NFQ L1	NFQ L2	NFQ L3	NFQ L4	NFQ L5	Unaccredited
Adult literacy	40,186	1,630	8,012	11,672	1,121	0	17,751
ESOL	15,584	3,122	2,407	2,256	558	94	7,147
ITABE	3,327	175	1,509	958	0	0	685
Skills for work	2,958	51	399	1,070	11	0	1,427
Voluntary literacy tuition	2,160	66	104	0	0	0	1,990
Total	64,215	5,044	12,421	15,956	1,690	94	29,000

The data above, from Funding Allocations Requests Reporting (FARR), shows that, overall, more than half (33,000) of those attending adult literacy programmes were following programmes leading to accreditation at NFQ levels 1 – 4. There is no data to show how many adults took part in adult numeracy as part of standalone or integrated programmes.

However, data available from the QQI website shows that they issued the following awards in 2016:

- 1,708 level 2 awards with a mathematics component.
- 1,733 level 3 awards with a mathematics component.



Of these the following came through www.writeon.ie

- 1,544 level 2 awards with a mathematics component.
- 113 level 3 awards with a mathematics component.

Measuring and assessing outcomes in learning

Recently, there has been a move towards measuring and assessing the outcome of the learning happening in FET, particularly the programmes that lead to qualifications. The Funding Allocations Requests Reporting (FARR) provides information on all learners in FET programmes and supports the planning and funding allocation process. Alongside this, the Programme for Learner Support System (PLSS) – once up and running – is expected to enable a better sharing of data within FET, across the education sector and between Government departments.

Summary

Adult literacy and numeracy tuition is available throughout Ireland in a variety of settings. The data from the FARR database shows that the majority of adults engaging in adult literacy and numeracy programmes do so by accessing their local adult literacy services. The introduction of www.fetchcourse.ie provides an additional and welcome resource that learners and practitioners can access when seeking information on what services are available to them. Adults can choose between accredited and non-accredited programmes. The data from FARR would suggest that a significant number of adults are choosing to engage in non-accredited options.





SECTION 5

What next?

What we know

The international context

- **We know that** internationally, there is a growing recognition of the importance of increasing numeracy skills and of having a numerate population.
- **We know that** the **EU Skills Agenda** suggests that raising numeracy skills is important for the development of a well-educated, well skilled and active citizenship.
- **We know that** adults with low numeracy skills are likely to have low educational attainment, be unemployed, and to be women and older people.
- **We know that** the primary aim of **Upskilling Pathways** is to specifically target adults with low basic skills in order to help them progress towards level 3 and 4 on EQF, and to urge member states to identify these priority groups.

The Irish context

- **We know that** in 2000, the **White Paper** on Adult Education (2000) put forward detailed proposals in relation to adult learning. The paper drew attention to the need for strategies to target those most at risk in order to counteract the social inequalities associated with educational disadvantage.
- **We know that** these objectives continue to be reflected in current Government policy, in particular strategies focused on improving basic skills.
- **We know that** the **FET Strategy** has a **Literacy and Numeracy Strategy** that explicitly prioritises promoting adult numeracy and adult numeracy provision.
- **We know that** the **National Skills Strategy** contains a strong commitment to promoting and supporting lifelong learning with a view to enabling all citizens – in particular, disadvantaged groups – to fully participate in society.
- **We know that** both strategies emphasise the need to ensure that Irish people continue to use and develop their skills and engage in lifelong learning.
- **We know that** the **National Skills Strategy** highlights the fact that increasing the number of people with NFQ level 3 will prove to be a major challenge.



Adults with numeracy needs

- **We know that** according to the IALS, Ireland historically has a problem when it comes to adult numeracy skills.
- **We know that** the PIAAC data shows that one in four adults (25%) have numeracy skills at or below level 1, and that the overall level of numeracy skill is lower than literacy.
- **We know that** the PIAAC data also shows that women and older people are more at risk of lower numeracy than men; that people with lower educational attainment are more likely to have numeracy difficulties; and that people with level 1 numeracy or lower are more likely to be unemployed.
- **We know that** according to the FARR data, in 2016 there were over 64,000 adults taking part in mainstream adult literacy tuition.
- **We know that** the review of the adult literacy service by Kett (2013) showed that, in 2011, 5% of all adult tuition was devoted to standalone numeracy provision.

What we need to know

- **We need to know** the characteristics of Irish adults with low proficiency skills in numeracy – **who** are they, **what** are their particular needs and **where** do they reside.
- **We need to know** how many ETBs offer numeracy as part of an integrated programme or as a standalone option within the adult literacy service.
- **We need to know** if there has been an increase in standalone numeracy provision since the review of adult literacy services in 2011.
- **We need to know** the current participation rates on accredited and non-accredited numeracy programmes.
- **We need to know** the overall QQI certification achieved in adult numeracy programmes at levels 1 – 3.

What we need to do

- **We need to** map existing numeracy activities to demonstrate any increase in provision since the review of the adult literacy services at national and regional levels.
- **We need to** identify current QQI levels on offer in integrated and standalone options in adult numeracy.
- **We need to** establish what more needs to happen to support the development of numeracy through promotional activity, the curriculum, CPD assessment, accreditation and quality control.
- **We need to** determine what we mean by numeracy. There is a strategic value in approaching a working definition grounded in the current national strategies, including the FET strategy.
- **We need to** increase co-operation and communication between numeracy experts across the adult education and training system to ensure the successful design, delivery and implementation of appropriate adult numeracy programmes.



Next steps

- **Convene** an ETBI-led advisory group to drive further developments in adult numeracy practice and provision.
- **Carry out** a consultation process and audit with providers, practitioners, learners, employers and other stakeholders to gain an in-depth insight about what they think should be in place in terms of future developments.
- **Carry out** an in-depth analysis of the PIAAC data and other national data sets, including FARR and PLSS, to identify and cross reference demographic and geographic trends in order to better plan, design and fund programmes and initiatives that meet adult numeracy needs.
- **Capture** the views of adults with numeracy needs and share these with educators, policy makers and Government.
- **Collate and present** evidence that presents a strong case for the additional funding and resources needed to tackle the numeracy deficit among Irish adults.
- **Design** an adult numeracy publicity campaign promoting the importance of numeracy skills and encouraging adults to avail of learning opportunities with the aim of raising awareness about the importance, availability and benefits of engaging in adult learning opportunities.

Final word

The Government strategy highlights the need to increase the basic skills level of the Irish people. Understanding the extent and nature of the problem is vital in order for this to happen. Policy makers need to focus on implementing existing strategies and adequately fund and support provision for adults seeking to improve their numeracy skills. The PIAAC data and information from other national data sets, including FARR, PLSS and CSO, presents policy makers with valuable information on adults with low numeracy skills. Analyses of this data will afford them an opportunity to prioritise such adults through active strategies designed to connect with these adults and their learning needs.

The EU Skills Agenda suggests that policies that focus only on increased attainment are not sufficient, and the quality of what people learn must now take centre stage. Upskilling Pathways has three key steps in this regard. Firstly, a skills assessment, secondly, a learning offer and thirdly, the opportunity to have existing skills validated and recognised. This would suggest that numeracy tuition needs to be individualised, intensive, relevant, accessible, flexible and visible, and delivered through high-quality programmes.

The evidence shows that participation in adult literacy and numeracy provision can benefit the individual on a personal, professional and social basis. It also demonstrates how having higher levels of literacy and numeracy has a positive impact on the health and wellbeing of individuals and of the broader society. However, this requires a commitment to the long-term funding and full implementation of policies targeting the 'numeracy deficit' in Ireland. It is hoped that this paper can contribute towards informing the specific strategies needed to address this ongoing issue.



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Appendix 1

Numeracy conferences and themes 2014 – 2017

2017

Seventy-five tutors attended the NALA numeracy conference in May 2017. The title of the conference was 'Relating maths to real life situations'. Niall O'Connor, a secondary school maths teacher based in Dublin spoke about how he uses the 'flipped' classroom. He outlined how successful 'flipped' learning fosters more productive relationships between students and teachers and keeps the process simple. In flipped learning, lessons are taught and shown through videos made and designed by the teacher. Students are encouraged and shown how to develop problem solving skills and track themselves with this type of learning. They are also encouraged to 'magpie and pick' from each other (if necessary) in finding ways of solving a problem. There are no grades. Niall stressed the lesson is not about grades but about content progression for the student. Through flipped activities, students can learn, practise a skill and show someone else.

There were also presentations on promoting learning in maths using digital technologies and working with parents to support their children's primary school maths.

Our survey showed that:

- 1100% tutors who responded to our survey said that they learned something new at the event.
- 93% also reported that they will make changes to their work as a result of what they learned at the conference.

2016

Seventy-three tutors attended the NALA numeracy conference in June 2016. The title of the conference was 'Using informal methods in everyday maths'. Patrick Johnson, maths lecturer from the University of Limerick spoke about using technology in the numeracy classroom. Patrick encouraged tutors to have an active and engaged classroom with good pedagogical practice. He said tutors should only use technology if it allows students to learn more effectively and efficiently. There were also presentations on a visual approach to numbers and using informal methods to solve calculations. Our survey showed that:

- 98% tutors who responded to our survey said that they learned something new at the event.
- 70% also reported that the conference has inspired them to change how they teach numeracy.

2015

Sixty-four tutors attended the NALA numeracy conference in June 2015. The title of the conference was 'Communicating everyday mathematical concepts and ideas to students'. The morning session focussed on introducing maths to the reluctant learner, and on ideas for helping students to see, read and use mathematical information. There was a choice of seven different workshops about teaching numeracy and uncovering invisible maths in the afternoon. Our survey showed that:

- all the tutors who responded to our survey said that they learned something new at the event.
- 100% also reported that the conference has inspired them to change how they teach numeracy.

2014

Eighty-two tutors attended the NALA numeracy conference in June. The title of the conference was 'What really counts in numeracy practice'. The morning session focussed on recent numeracy research and the use of problem solving and collaboration as a teaching method. In the afternoon, there was a choice of nine different workshops about teaching numeracy. Our survey showed that:

- all the tutors who responded to our survey said that they learned something new at the event.
- 82% reported that the conference has inspired them to change how they taught numeracy.

Table 1: Impact of NALA Numeracy conferences 2014 to 2017

	2014	2014	2015	2015	2016	2016	2017	2017
	Learned some thing new	Inspired changes to work	Learned some thing new	Inspired changes to work	Learned some thing new	Inspired changes to work	Learned some thing new	Will inspire changes to work*
Numeracy conference	100%	82%	100%	100%	100%	70%	100%	93%*

* **Note:** Participants reported here that they will use what they learned at the conferences. We have not yet carried out the follow-up surveys to check if they have actually made changes to the way they work as a result of attending these events.



Appendix 2

NALA websites

www.nala.ie

www.nala.ie/tutors

www.nala.ie/resources

www.writeon.ie

www.simplyput.ie

www.makingcents.ie

www.healthliteracy.ie

www.helpmykidlearn.ie

www.literacytools.ie

NALA resources, research and workbooks

Making it go further: a financial numeracy action learning project 2016.

This report is part of a series of case studies and action learning projects that describe a range of numeracy programmes across Ireland. It documents numeracy practices as described by tutors, and is a useful resource to all numeracy practitioners.

A Wealth of Practice: case studies of financial numeracy practice in Ireland.

This report is part of a series of case studies that research and describe a range of adult literacy and numeracy programmes across Ireland. The research, which was carried out by the National Adult Literacy Agency (NALA), presents six case studies that describe in detail the work of learning centres and tutors to improve adult learners' financial skills, knowledge and understanding. The emphasis is on numeracy because of its essential role in using and understanding money.

Brushing Up: a maths workbook using numbers and shapes in everyday life at levels 1 and 2.

Brushing Up 2: Working towards maths at level 2.

What really counts: case studies of adult numeracy practice in Ireland, 2013.

This report illustrates numeracy practice with a focus on the delivery of learning and teaching on a day-to-day basis. It is intended to be a resource for tutors working in the area of adult numeracy in Ireland, providing ideas and inspiration about teaching, learning activities and resources. The research will inform the continuous professional development workshops and seminars that NALA offers to adult numeracy practitioners.



What really counts next: action learning project with numeracy tutors, 2014.

This report documents the outcomes of an action learning project with numeracy tutors. It describes how it provided an opportunity for tutors to develop new knowledge and skills to improve how they teach numeracy, and produces teaching and learning ideas and resources for numeracy practitioners.

Adult literacy and numeracy in action: six case studies of practice work in Ireland, 2013.

The six case studies presented in this report highlight literacy and numeracy practice as it happens on the ground. Each case study illustrates how the individual programmes are providing a range of courses to meet the varying and specific needs of the learners attending. The case studies included in this report illustrate that there is no definitive way of ensuring 'best practice' on the ground. However, they do demonstrate aspects of the principles of good adult literacy work including learner-centred learning, literacy as a social practice and a humanistic approach to adult learning.

A Framework for Meeting the Professional Development Needs of Tutors of Adult Numeracy in the Irish Further Education and Training Sector 2015.

Based on the findings of a survey of numeracy tutors carried out in 2014, this document presents a framework for meeting the CPD needs of numeracy tutors in Ireland. It proposes a model of CPD that has ten core components that can contribute to positive change in adult numeracy education in Ireland.

Doing the maths: the training needs of numeracy tutors in Ireland, 2013 and beyond.

This report documents the findings from a survey of numeracy tutors working with adults in the further education and training sector. The research set out to identify the training needs of tutors providing numeracy tuition to adults in a number of settings. Its focus was to identify the continuing professional development needs of these tutors.

The Guidelines for Good Adult Literacy Work. NALA, 2012.

The Guidelines for Good Adult Literacy Work is the main document for those working in the adult literacy and numeracy fields, and should be used as a reference for teaching and learning. It provides a clear expression of what adult literacy work is about and where it came from. It also aims to establish the right to develop literacy skills as a fundamental human right for adults who wish to improve their literacy and numeracy.



Curriculum development: An evolving model for adult literacy and numeracy education. NALA, 2009.

This evolving model of curriculum development shows how the principles, values and practices described in NALA's publication *Guidelines for Good Adult Literacy Work* (2012) apply to curriculum development in adult literacy work. This is seen as an evolving model to recognise that the principles, values and practices are likely to change and develop as we all learn more about how curriculum development works in practice in Ireland.

Getting Started in Adult Literacy and Numeracy: A Tutor Training Resource Pack. NALA, 2007.

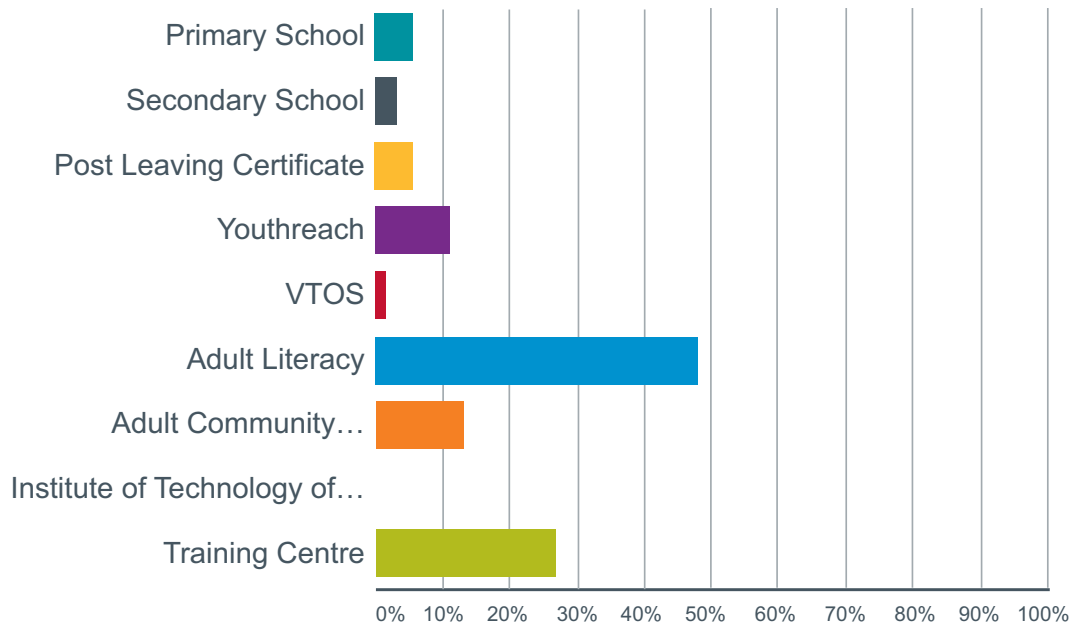
This pack is for trainers who are facilitating the initial tutor training course or other in-service tutor training events. The pack is designed so that trainers can dip in and out of it to suit the needs of their tutors. The material can be used in a variety of ways and for a variety of tutors. The pack has been divided into sections, which correspond roughly to the key topics which usually form part of an initial tutor training course for adult literacy tutors. Some of the sections include much more material than can be covered in the average two-hour period. It is hoped that trainers can pick and choose sections or parts of sections to be used during the course. Some of the material and sample sessions may also need to be adapted to meet the needs of individual schemes and groups of new tutors.

Curriculum Development in Intensive Tuition in Adult Basic Education. A report on a research project in Ireland 2006 - 2007. NALA, 2009.

The report contains examples of everyday numeracy situations, multiple intelligences, community development links with literacy and numeracy, numeracy case studies, numeracy exercises and case studies.

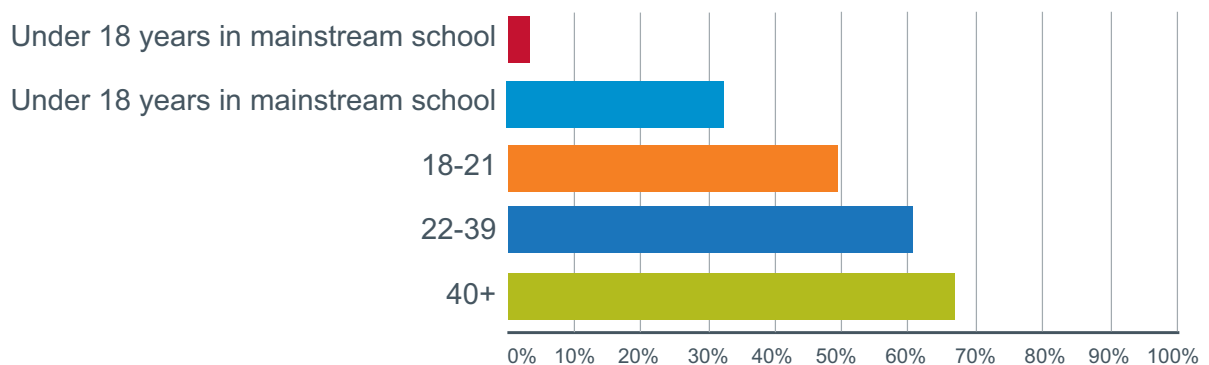
Q1 In which of the following types of centre's do you teach numeracy?
Tick all appropriate boxes

Answered: 52 Skipped: 0



Q2 What are the different age ranges of the learners you teach currently?
Tick all appropriate boxes

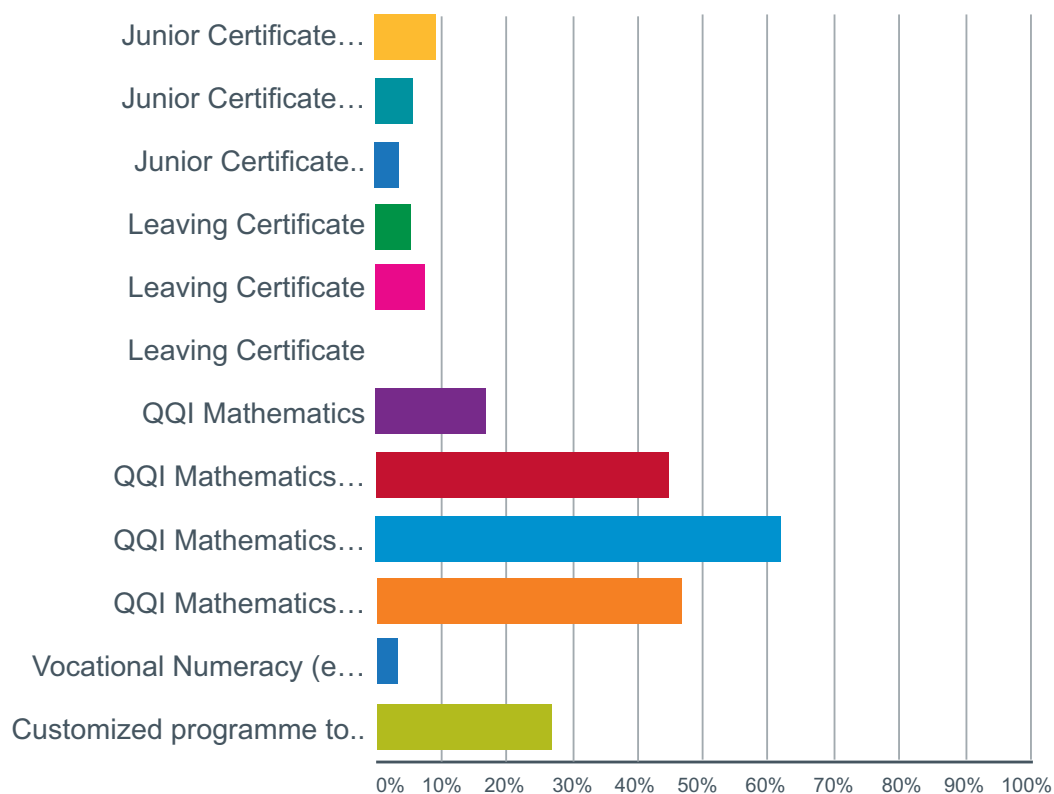
Answered: 52 Skipped: 0



Q3 What level(s) of mathematics do you currently teach?

Tick all appropriate boxes

Answered: 52 Skipped: 0





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National Adult Literacy Agency
Áisíneacht Náisiúnta Litearthachta do Aosaigh

National Adult Literacy Agency

Sandford Lodge
Sandford Close
Ranelagh
Dublin 6

Telephone: (01) 412 7900

Fax: (01) 497 6038

Email: info@nala.ie

Freephone support line:

1800 20 20 65

NALA website:

www.nala.ie

Literacy learning websites:

www.writeon.ie

www.helpmykidlearn.ie