Route Map through Career Long Professional Learning (CLPL) for Dyslexia and Inclusive Practice

Introduction

This interactive CLPL route map for Dyslexia and Inclusive Practice has been developed in response to Recommendations 1 and 2 of the 2014 Education Scotland Review Making Sense Dyslexia: Education for Children and Young People with Dyslexia in Scotland. As per the recommendations within the 2014 review, this CLPL route map has been developed in partnership with Education Scotland, Dyslexia Scotland, The Addressing Dyslexia Toolkit and stakeholders.

“Education Scotland should work with Dyslexia Scotland and other relevant stakeholders to develop a comprehensive dyslexia professional learning package which can be used by local authorities to increase the capacity of teachers to meet learning needs.”

“1. Teachers, support staff, learners and parents should have access to up-to-date practical advice and guidance on dyslexia.

2. Teachers, support staff and local authority staff should have access to a wide range of high quality career-long professional learning opportunities at school, local and national level related to meeting the needs of children and young people with dyslexia.”

http://www.educationscotland.gov.uk/resources/m/genericresource_tcm4829766.asp

Aims

1. To develop a route map to support deeper learning and understanding of dyslexia and Inclusive practice.
2. To inform practitioners about ways in which they might engage in meaningful CLPL for improving practice in supporting and improving outcomes for children and young people.
3. To encourage teachers to be familiar with, and make appropriate use of, the Addressing Dyslexia Toolkit.
4. To support teachers in achieving Professional Recognition for areas of enhanced accomplishment in their professional practice.

Achieving successful outcomes for Scotland’s children and young people

The “Making Sense” review highlights why there is a need to improve outcomes for children and young people with Dyslexia. This CLPL route map aims to support teachers to achieve the improvements.

Qualifications attained by young people with dyslexia

Young people with dyslexia achieve less well academically than their peers. As a result they are also less likely to attend Higher Education when they leave school. There is therefore a need to improve outcomes for young people with dyslexia.
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Hot Topics

Questions to Encourage Professional Dialogue and Reflection

- How well does inclusive education ensure improved outcomes for children and young people with dyslexia?

- Should the school’s focus and resources be used on the identification or labelling of dyslexia or should schools concentrate on meeting the needs of the child and young person through a collaborative process?

- How effectively do we provide a continuity of support for dyslexia and inclusive practices in classrooms and schools?

- How successfully do we use the most appropriate teaching methods to support dyslexic learners in acquiring the tools for reading and developing higher order comprehension skills? How well do we choose suitable tasks, activities and resources?

- Should teachers be required to participate in training to identify children and young people with additional support needs arising from dyslexia?

- How well do we understand that when meeting learners’ needs the ongoing assessment of learning informs next steps?

- How positive is the identification process for dyslexia for children and young people? Does the process enable them to understand their strengths and difficulties in a supportive approach and provide opportunities for their views to be sought?

- How successfully are children and young people, teachers and parents/carers provided with appropriate information to support their understanding of effective strategies and support?

- How well do we encourage children and young people to work towards taking responsibility for their support needs?

- For those with dyslexia, how well is their health and well-being and in particular mental, social and emotional wellbeing addressed in your classroom or school?

- How do you best meet the learning needs of a young person when parents refuse to acknowledge that they have dyslexia?

- How effectively do you support and secure improved achievement and attainment for children and young people with dyslexia and with literacy difficulties?
Dyslexia Scotland and the Addressing Dyslexia Toolkit

Dyslexia Scotland aims to encourage and enable children, young people and adults with dyslexia to reach their potential in education, employment and life. Based in Stirling with a network of volunteer-led branches across Scotland, it offers high quality services to people with dyslexia and those who support them. Dyslexia Scotland aims to influence and achieve positive change at national and local levels, including supporting projects such as the online 'Addressing Dyslexia' Toolkit, www.dyslexiascotland.org.uk

The Addressing Dyslexia Toolkit is the free national online resource developed for teachers with funding from the Scottish Government and under the management of Dyslexia Scotland to provide information and support to help meet their learners’ needs http://www.addressingdyslexia.org.

Throughout the “Making Sense” review, use of this resource is recommended for all teachers and local authorities. The toolkit was created within the Scottish education, inclusion and equality legislative framework and has also embedded Curriculum for Excellence. The toolkit demonstrates how good practice can be used to deliver a consistent approach to assessment and support for children and young people who experience literacy and/or dyslexic difficulties. There are a range of sections available for parents/carers, children, schools and local authorities together with teachers, allied health professionals and other partner agencies. Additional sections provide links to a wide range of resources –which are free whenever possible to support children and young people who experience literacy difficulties - and also training material for staff to support the identification process and use of the toolkit.
Career-long Professional Learning (CLPL) in Dyslexia and Inclusive Practice

The Scottish teaching profession is committed to career-long professional learning (CLPL). Information about the nature and purposes of CLPL can be found in the 2012 GTCS publication which can be found at http://www.gtcs.org.uk/web/FILES/the-standards/standard-for-career-long-professional-learning-1212.pdf

The Standard for Career-Long Professional Learning describes the advanced professional knowledge and pedagogical expertise that registered teachers will develop and maintain as they continue to progress in teaching and the education profession. The standard provides an opportunity for teachers to progress, enrich, develop and enhance their practice, expertise, knowledge, skills and professional values.

The GTCS document, ‘The Standard for Career-Long Professional Learning: supporting the development of teacher professional learning’ (GTCS 2012) identifies CLPL as:

1. Pedagogy, learning and subject knowledge
2. Curriculum and assessment
3. Enquiry and research
4. Educational contexts and current debates in policy, education and practice
5. Sustaining and developing professional learning
6. Learning for sustainability

This route map will use the GTCS CLPL focus areas to support professional learning for Dyslexia and Inclusive Practice.

Four broad elements of CLPL have been identified by Education Scotland.

The Addressing Dyslexia Toolkit has developed an interactive resource for teachers which will provide identified areas of support for teachers CLPL, GTCS Professional Recognition and Update.

http://www.addressingdyslexia.org

In relation to the GTCS standards and dyslexia and inclusive practice, CLPL translates to the curricular area context in the following possible ways, raising some interesting questions:

- Pedagogy, learning and subject knowledge
- Curriculum and assessment
- Enquiry and research
- Educational contexts and current debates in policy, education and practice
- Sustaining and developing professional learning
- Learning for sustainability
**Dyslexia and Inclusive Practice**

**Scottish Government Definition of Dyslexia, 2009**

The following working definition of dyslexia has been developed and agreed by the Scottish Government, Dyslexia Scotland and the Cross Party Group on Dyslexia in the Scottish Parliament. The aim of this particular definition is to provide a description of the range of indicators and characteristics of dyslexia as helpful guidance for educational practitioners, learners, parents/carers and others.

Dyslexia can be described as a continuum of difficulties in learning to read, write and/or spell, which persist despite the provision of appropriate learning opportunities. These difficulties often do not reflect an individual's cognitive abilities and may not be typical of performance in other areas. The impact of dyslexia as a barrier to learning varies in degree according to the learning and teaching environment, as there are often associated difficulties such as:

- auditory and/or visual processing of language-based information
- phonological awareness, oral language skills and reading fluency
- short-term and working memory
- sequencing and directionality
- number skills
- organisational ability

Motor skills and co-ordination may also be affected.

Dyslexia exists in all cultures and socio-economic backgrounds. It is a hereditary, life-long, neurodevelopmental condition. Unidentified, dyslexia is likely to result in low self-esteem, high stress, atypical behaviour and low achievement. Learners with dyslexia will benefit from early identification, appropriate intervention and targeted effective teaching, enabling them to become successful learners, confident individuals, effective contributors and responsible citizens.

http://www.gov.scot/Topics/Education/Schools/welfare/ASL/dyslexia
Inclusive Practice

“Curriculum for Excellence is an inclusive curriculum from 3 to 18 wherever learning is taking place”.

Inclusion is about putting the learner at the centre of the curriculum and ensuring that barriers are removed to enable them to:

- Participate and learn to the best of their ability.
- Gain as much as possible from the opportunities which Curriculum for Excellence can provide
- Move into a positive and sustained destination.

“The diversity of learners challenges policy makers, teachers and others to provide education that is able to flexibly respond to that diversity. We need to respond in such a way that barriers to participation, learning and achievement are removed, inclusion and equality are promoted and a high quality education for all is developed and sustained”.

A range of legislation is in place to support and promote inclusion in Scottish education establishments

The Children and Young People (Scotland) Act 2014 states that:
“Taking an holistic view of the wellbeing of children and young people is at the heart of Getting it Right of Every Child (GIRFEC), which has its origins in the United Nations Convention on the Rights of the Child (UNCRC). The Act requires the promotion, support and safeguarding of wellbeing as a common approach across all services engaging with children and families”

Support for all learners begins within the classroom and is provided by the classroom teacher who holds the main responsibility for nurturing, educating and meeting the needs of all pupils in their class, working in partnership with support staff to plan, deliver and review curriculum programmes.

Support for children and young people with dyslexia and also those who experience literacy difficulties is achieved through universal support within the staged levels of intervention.

An introduction to Inclusion - Professional Development Resource

This activity is designed to help practitioners reflect on the implications of inclusive education for their classroom practice. Teachers will be able to draw on features of excellence relating to inclusion, illustrations of practice from all sectors and the perspectives of a range of leading national and international educationalists.

Framework for Inclusion - Resources and information on Inclusion
Staged Levels of Intervention

Staged intervention is used as a means of identification, assessment, planning, recording and review to meet the learning needs of children and young people.

It provides a solution-focused approach to meeting needs at the earliest opportunity and with the least intrusive level of intervention. The process involves the child, parents/carers, school staff and, at some levels, other professionals, working in partnership to get it right for every child.

Staged intervention is designed to be flexible and allows for movement between stages depending on progress.

In Curriculum for Excellence all children and young people are entitled to support to meet their learning needs and this universal aspect should be reflected in designing learning experiences.

Stage 1 – Support within the school/nursery. Teachers and early years practitioners will be responsible for the identification of needs and planning to meet those needs but may take advice from within the school or visiting specialists. (Single agency Plan)

Stage 2 – In addition to stage 2, direct support from services outwith school but within education services for assessment and establishment of additional support. E.g. Educational Psychology and community link workers. (Single agency Plan)

Stage 3 – Specialist support from agencies out with education, for example social work or health in addition to stages 1 and 2. (Multi Agency Plan). A Lead professional coordinates the support. Consideration of a Co-ordinated Support Plan (CSP).

For further information:

http://www.educationscotland.gov.uk/inclusionandequalities/supportingchildrenandyoungpeople/whatissupport/targetedsupport/stagedintervention.asp
Dyslexia is intricately linked to literacy and should not be viewed in isolation. All areas of literacy can have an impact on how children and young people access the wider curriculum. It is recognised that good teaching and learning approaches which support children and young people with dyslexia also supports all children and young people to acquire fluency and competency in literacy.

“Our ability to use language is central to our thinking, our learning and our personal development. Literacy and language unlock access to the wider curriculum and lay the foundations for communication, lifelong learning and work, contributing strongly to the development of all four capacities of Curriculum for Excellence”.
3-18 Literacy and English Review.
http://www.educationscotland.gov.uk/resources/0to9/genericresource_tcm4856585.asp

What is literacy?
In defining literacy for the 21st century we must consider the changing forms of language which our children and young people will experience and use. Accordingly, our definition takes account of factors such as the speed with which information is shared and the ways in which it is shared. The breadth of our definition is intended to ‘future proof’ it. Within Curriculum for Excellence, therefore, literacy is defined as:

“the set of skills which allows an individual to engage fully in society and in learning, through the different forms of language, and the range of texts, which society values and finds useful”.
Literacy across learning Principles and Practice – Education Scotland


“Literacy, alongside numeracy and health and wellbeing, sits at the heart of Curriculum for Excellence, as a key element of the knowledge, skills and attributes which equip children and young people for learning, life and work”.
3-18 Literacy and English Review.
http://www.educationscotland.gov.uk/resources/0to9/genericresource_tcm4856585.asp

“Improving the literacy skills of all our children and young people is a national priority with the aim of raising attainment, reducing inequity, improving life chances and employment prospects”.
3-18 Literacy and English Review.
http://www.educationscotland.gov.uk/resources/0to9/genericresource_tcm4856585.asp

Further information on literacy and research can be found in the Enquiry and Research section.
Scottish Government Literacy Action Plan 2010
The Scottish Government’s Literacy Action Plan, published on 27 October 2010, sets out the vision to raise standards of literacy for all, from the early years through to adulthood. There is a particular focus on breaking the link between deprivation and poor literacy skills and addressing the issue of early identification of literacy difficulties.

The review highlights that the 2010 Literacy Action Plan can support the development of literacy skills and encourages “all local authorities to introduce personalised literacy assessments and diagnosis at P1 and at other appropriate stages, and encourage all local authorities to put in place early identification of support needs”.

Scottish Perspective on Dyslexia
In Scotland, research on dyslexia has produced a body of literature which investigates the nature, causes and approaches that can effectively ease the barriers to learning experienced by children and young people with dyslexia. For example, neuroscience research through brain imaging has identified diversity in the brain for adolescents and for those with dyslexia. There is no shortage of understanding of both the cognitive and the biological aspects of dyslexia (Elliot, Davidson & Lewin, 2007). Most sources of evidence lead to the conclusion that dyslexia is rooted in difficulties associated with language, particularly phonological processing. On-going research, building on existing knowledge, is helping to refine further our understanding of dyslexia and the intervention strategies required to help support dyslexic learners. This ongoing research should ensure more positive outcomes for children and young people with dyslexia in the future (Sawyer, 2006). Making Sense Review 2014

Dyslexia is a Specific Learning Difficulty and a recognised disability under the Equality Act (formerly the Disability Discrimination Act). Dyslexia is life-long, affects both children and adults and can be hereditary. It is estimated that one person in ten is dyslexic in Scotland (approx. 550,000), with 1 in 4 of those 10 (2.5%) classed as severely dyslexic.

Over time a range of terms and definitions have been developed and may still be used in some countries to describe dyslexia:

- Developmental dyslexia
- Congenital word blindness
- Reading disability
- Reading disorder
- Specific learning difficulty
- Phonological dyslexia
- Learning difference
- Learning difficulty

The 2009 Scottish Government working definition of dyslexia was agreed and this provides an overview of the wide range of characteristics which may be experienced by individuals who are dyslexic. It is helpful to understand and view Dyslexia as a learning difference not a learning difficulty. There is no typical dyslexic profile, but there are characteristics which are commonly associated with dyslexia. It is important to
remember that the child or young person must be placed at the centre of the planning for identification, support and intervention and to ensure that their strengths and views will also be key focus areas.

Common strengths which can be experienced by individuals with dyslexia

- Can be very creative and enjoy practical tasks
- Can have strong visual thinking skills e.g. seeing and thinking in 3D, visualising a structure from plans
- Can have good verbal skills and good social interaction
- Can be good at problem solving, thinking outside the box, seeing the whole picture.

Common areas of difficulty which individuals with dyslexia can experience which can impact on their learning

- Phonological Awareness
- Short-term memory
- Working memory
- Naming and labeling
- Processing speed
- Organisation
- Automaticity
The impact of Dyslexia can manifest in a variety of ways:

Dyslexia impacts on parents, families and carers who become distressed that their dependents cannot get the support they need. In both children and adults, when dyslexia is unidentified or unsupported the negative impact can be high – children often lose motivation and become frustrated through the stress of trying to learn, not understanding what dyslexia is and knowing that they are ‘different’ to others because they find difficulty in doing what to others are simple tasks. This can lead to acute behavioural problems both at school and at home including bullying and anti-social behavior, as well as low self-esteem and severe frustration for children not reaching their potential.

The impact on adults whose dyslexia is not identified and supported can be under achievement in further education and employment. The negative effects of dyslexia on self-esteem and confidence can lead to high stress levels, damage to personal relationships, day to day difficulties, depression and mental health problems. There is an established link between offenders and dyslexia. It is estimated that over 60% of prisoners have literacy difficulties, mainly dyslexia.

People with dyslexia will benefit from early identification, appropriate intervention and targeted, effective support at the right time.
Curriculum and Assessment

What is an inclusive and accessible curriculum?

Curriculum for Excellence
Supporting children and young people within the curriculum

The original report of the Curriculum Review Group, A curriculum for Excellence (Scottish Executive, 2004) indicated that all children and young people should be successful learners, confident individuals, responsible citizens and effective contributors to society and at work. By providing accessible structure, support and direction to young people’s learning, the curriculum should enable them to develop these four capacities. The curriculum should complement the important contributions of families and communities.

The design principles which schools, teachers and other educators should use to develop and implement the curriculum are:

- Challenge and enjoyment
- Breadth
- Progression
- Depth
- Personalisation and choice
- Coherence
- Relevance

Within Curriculum for Excellence, personal learning planning is at the heart of supporting learning. The conversations about learning, reviewing progress and planning next steps are central to this process. Planned opportunities for achievement which focus on the learning and progress made through activities across the full range of contexts and settings in which the curriculum is experienced also contribute to the universal aspect of support. It is the responsibility of all practitioners and partners to deliver this universal entitlement within their own teaching environments.

“In addition, all children and young people should have frequent and regular opportunities to discuss their learning and development with an adult who knows them well and with whom they have a mutually trusting relationship. This key member of staff has the holistic overview of the child or young person’s learning and personal development”.
Appendix 2 ‘Making Sense Review’
http://www.educationscotland.gov.uk/resources/m/genericresource_tcm4829766.asp

Every child and young person is entitled to support to enable them to gain as much as possible from the opportunities which Curriculum for Excellence can provide. When it is felt that a child or young person may require some additional support this is the initial responsibility of the classroom teacher.
Responsibility for all – Curriculum for Excellence

All staff have a responsibility to develop, reinforce and extend learning in the following areas:

- **Health & Wellbeing** - Some aspects of the health and wellbeing framework are the responsibility of all adults, working together to support the learning and development of children and young people.

- **Literacy** - All practitioners are in a position to make important contributions to developing and reinforcing young people’s literacy skills.

- **Numeracy** - Numeracy across learning provides essential analytic, problem solving and decision making skills across the curriculum. The numeracy across learning experiences and outcomes are a subset of those found in the mathematics curriculum area.


Raising Attainment and Dyslexia

The Scottish Government’s vision is that Scotland should be the best place to go to school. “We want each child to enjoy an education that encourages them to be the most successful they can be and provides them with a full passport to future opportunity. To achieve this, we need to raise attainment consistently and for all our children and young people, and progressively reduce inequity in educational outcomes”.

http://www.gov.scot/Topics/Education/Schools/Raisingeducationalattainment

http://www.educationscotland.gov.uk/about/areasofwork/raisingattainment/index.asp

http://www.scottish.parliament.uk/parliamentarybusiness/CurrentCommittees/90247.aspx
The Inclusive Curriculum

Curriculum Accessibility

The curriculum includes all of the experiences which are planned for children and young people through their education. It is not specific to subject areas but applies to activities that take place across the school.

A curriculum which is accessible to all learners enables schools and education authorities to meet:

- Legal responsibilities and statutory duties
- The needs of their learners, including those without Additional Support Needs, but who can also learn effectively from appropriately planned and developed resources
- The standards for Curriculum for Excellence
- Management responsibilities - Cost effective use of time through appropriate planning – Use of IT, production of accessible digital resources which enable swift adaptation for different learners

Accessibility Strategy

This legislation supports all learners with disability including ‘hidden’ disabilities:

- Dyslexia
- Autism
- Speech and language impairment
- Term ‘significant’ – more than minor or trivial

The Equality Act includes a duty to make reasonable adjustments, of three types:

- Change the practice (for example, providing a pupil with dyslexia with a note of any homework required rather than requiring him to copy it down);
- Change the built environment (for example, providing access to a building) where it is reasonable to do so; and see Equality Act 520(4)
- Provide auxiliary aids and services (for example, providing special computer software) Also, if the first or third relates to information to provide it in an accessible format.
Differentiation

The impact of dyslexia as a barrier to learning varies in degree according to the learning and teaching environment.

Differentiation is defined by the Training and Development agency for Schools as “the process by which differences between learners are accommodated so that all students in a group have the best possible chance of learning”. Differentiation has become a key skill and requirement for all teachers to ensure the needs of all their learners are met.

Expert opinion varies regarding the agreement on the definitive methods and approaches to support differentiation within learning and teaching. For example Kormos and Smith (2012) highlight that effective differentiation can be achieved by considering four dimensions: materials, task, expectation and support. (Teaching Languages to Students with Specific Learning Difficulties: 2012) and others focus on task, support and outcome.

There are several categories to consider when planning effective and meaningful differentiation.
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<th>Areas of focus for differentiation</th>
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| Task                | • Designing learning and teaching tasks for different abilities  
                        • Ensuring appropriate challenge is included  
                        • Designing learning and teaching which become progressively harder and more complex for the learner to engage with and complete. |
| Grouping            | • Co-operative learning approaches and activities which encourage the participation of all learners in the learning activity  
                        • Small mixed group abilities  
                        • Peer support and learning |
| Resources/Support   | • Consideration of developing and supporting the learner’s independent skills  
                        • Resource accessibility - consideration of resource design e.g. choice of formats diagrammatic, visuals, digital, audio and film  
                        • Range of formats to record pupils cognitive ability and evidence of learning  
                        • Readability levels within textbooks and resources  
                        • Provision of printed notes/resources or electronic files  
                        • Provision of key words/glossaries  
                        • Staff, family and peer support |
| Pace                | • Consideration of flexibility of teaching pace and time allowed for tasks and individual pupil requirements, supporting both able learners and those who require more time. |
| Outcome             | • All students undertake the same task but a variety of results are expected and are acceptable. |
| Dialogue and support| • Teacher facilitates problem solving using appropriate levels of language to engage with learners  
                        • Use of targeted questions to produce a range of responses  
                        • Verbal support and encouragement |
| Assessment          | • 'Building the Curriculum 5' (2011) provides guidance for all teaching staff on the main areas of the assessment strategy for Curriculum for Excellence.  
                        • Assessment is for Learning -  
                        • Ensuring appropriate support for all learners  
                        • Summative assessment techniques  
                        • Assessing learner’s knowledge and understanding through the learning experience. |
Guidance to Support Education Practitioners

This booklet is a guide for schools on 'how to' produce accessible resources. It provides a brief overview of the issues involved with accessibility, duties and legislation and the context within which they are set. The curriculum includes all of the experiences which are planned for children and young people throughout their education.

http://www.callscotland.org.uk/Resources/Books/Accessible-Text/

Strategies to Support Accessibility

- Text recognition
- Accessible curriculum resources
- Books for All - http://www.books4all.org.uk/Home/
- Scottish voice - http://www.thescottishvoice.org.uk/Home/

SQA Assessment Arrangements
http://www.sqa.org.uk/sqa/14977.html
What are Dyslexia and Inclusive Friendly Approaches

Neil Mackay developed the ‘Dyslexia Friendly Schools’ concept in 1998. Key aims of Dyslexia Friendly schools were to enhance the impact of learning and teaching on the child in the classroom and to ensure that teaching was multi-sensory and benefited all children, not just those with dyslexia. The approach has developed over the years and is inclusive and holistic, reflecting current research on effective positive learning for children with literacy difficulties.

Dyslexia and Inclusive practice = Learning friendly approaches - All learners - with and without Additional Support Needs - are effectively and successfully supported using learning and teaching strategies which focus on appropriate dyslexia friendly approaches embedded within good teaching practice.

Recommendation 4 of the “Making Sense” Review highlights the need for “Improving the quality of educational outcomes for children and young people with Dyslexia” The Dyslexia “Making Sense” Working Group are working with authorities to support them with developing Inclusive school approaches. Consultations have been ongoing. For further information please refer to

http://www.gov.scot/Topics/Education/Schools/welfare/ASL/dyslexia/WorkingGroupMembership
Using the Dyslexia Learning Trail to evaluate good practice

The learning trail may be used as part of the school’s self-evaluation and focus on judgements about attainment and achievement, the effectiveness of the school’s procedures for tracking and monitoring progress, the quality of support for young people with dyslexia and the effectiveness of partnership working with key agencies and parents.

How is dyslexia identified?

The Scottish education and equality legislative framework ensures that support provided for children and young people who require it, is “needs” based and not provided on the pre requisite of a label of identification of dyslexia being made for the child or young person.

It is the responsibility of all who work with children to respond appropriately to their needs. Recognising early signs of difficulties and adapting learning and teaching approaches are a regular part of the daily routine for teachers of all children in an education environment. Parents, carers and children over 12 years old have the legal right to request an assessment and this should be started within 6 weeks of the request.

Dyslexia and Assessment

Many learners describe important social and emotional benefits from having their learning differences recognised. The identification process should be based on robust evidence from a wide range of resources.

However, an identification of dyslexia does not necessarily mean that a learner’s needs have been identified and addressed. Appropriate assessment, using the principles of Assessment is for Learning information (AifL), “ensures pupils, parents, teachers and other professionals have the feedback they need about pupils’ learning and development needs” (AifL - Assessment is for Learning information sheet).


The identification process for dyslexia should be an holistic/collaborative process and include the following:

- Observations – home and in school/nursery
- Consultation with the pupil, staff and family
- Examples of free writing
- Reading comprehension levels*
- Chronological reading and spelling – (if appropriate)
- Assessment of phonological awareness and processing skills
- Sensory perceptions (coloured glasses if appropriate)
- Use of appropriate assessments.

One single “test” for dyslexia is not appropriate.

To ensure that the child’s or young person’s strengths and needs are fully understood the identification of dyslexia is a holistic and collaborative process and one which should not be determined by a single “dyslexia test”. The chart below highlights the process which is recommended. Further, more detailed information within the Staged levels of Intervention can be accessed on the Addressing Dyslexia Toolkit in the section called - Assessing & Supporting Dyslexia: Staged intervention


For further information on the identification process for literacy difficulties and dyslexia please refer to http://www.addressingdyslexia.org/pages/index.php?category=32&sub=0&point=1
Pathway Overview for the Identification and Support of Literacy Difficulties and Dyslexia

Initial concern expressed and highlighted to school from:
Parent/carer, child/young person, professionals - e.g. class teacher, support for learning/classroom assistant, community link worker, social worker, outside/partner agency.

Class teacher begins process –
- Teacher accesses the Addressing Dyslexia Toolkit for advice and support strategies for the appropriate level/stage.
- Completes the “What to look for” checklist
- Implement use of appropriate strategies/approaches and monitoring (Establishing Needs/Concern Form 1)

Continuing Concerns expressed
Monitoring of appropriate learning strategies and opportunities for the pupil by class teacher indicate that concerns/difficulties still persist

- Direct pupil support input/consultation, if required further input from educational psychology, Completion of “Gathering Information/Concern Form 2”
- Learner’s questionnaire completed - support with this may be required, it may also be completed at home by the child/young person with their family
- All information is gathered from the holistic/collaborative identification process

Childs Planning/Support Meeting Held
Identification of Dyslexia agreed (Scottish definition)
Dyslexia is indicated when the evidence gathered from all those involved is highly confirmatory.

The “label” of dyslexia does not automatically provide specific resources for the child/young person. The label is not legally required to ensure that the needs of the child/young person are met, however if dyslexia is identified use of the term can be helpful for a number of reasons.

Use of appropriate strategies/approaches and monitoring of teaching and learning will be continued and can be revisited if required at a later date. Assessment information will support class teachers with future planning child/young person’s learning

Post school transition planning should provide information to the young person and family regarding assessments required and support available for further/higher education.
Who identifies Dyslexia?

Who observes signs of difficulties and/or assesses?
A range of professionals may be involved in the identification process and working together collaboratively will support the identification and the needs of the child/young person. The role and views of the parents, carers, child or young person is very important. Parents, carers or someone else involved with the family (e.g. social worker, health visitor) may have brought concerns to the teacher's notice in the first instance.

Role of class teacher and school
Pupil support begins within the classroom and initially the class teacher or early years practitioner takes responsibility for recognising the possible signs of literacy difficulties and dyslexia and then using the Addressing Dyslexia Toolkit to begin the process and start to identify and support the specific nature of the difficulties the child is having.

If the concerns continue despite the intervention and support provided, pupil support teachers/support for learning teachers or school management would begin to link in with a range of colleagues and the family as appropriate.


Information about assessment resources can be found on the Addressing Dyslexia Toolkit
http://www.addressingdyslexia.org/pages/index.php?category=14&sub=3&point=7#DT2
Enquiry and Research

How do we know dyslexia exists?

Advances in medical science have enabled the identification of Dyslexia to be understood in greater detail. Neuroscience research through brain imaging has identified diversity in the brain for adolescents and for those with dyslexia. Due to the body of research undertaken over the past few decades by a range of academic and medical researchers there is an acceptance that when identified appropriately dyslexia is a recognised learning difference and is the result of a neurological difference and is not a reflection on a learner’s level of intelligence or cognitive ability. The impact of dyslexia as a barrier to learning varies in degree according to the learning and teaching environment.

Dyslexia can be defined as neuro-developmental in nature, with a biological origin and behavioural signs which extend far beyond problems with written language. *Uta Frith. Chapter 3: Dyslexia and Literacy: Theory and Practice. Edited by Gavin Reid and Janice Wearmouth. 2002. John Wiley & Sons, Ltd*

In 1999 the *American Journal of Neuroradiology*, provided evidence that dyslexia is neurological in nature. The interdisciplinary team of University of Washington researchers also showed that dyslexic children use nearly five times the brain area as normal children while performing a simple language task.

Although the images above were taken in 1999 they highlight very clearly the differences between areas of the brain which are activated while performing simple language tasks in yellow. Red indicates areas activated in two or more children. Pic: Todd Richards, University of Washington

"The dyslexics were using 4.6 times as much area of the brain to do the same language task as the controls," said Todd Richards, co-leader of the study. "This means their brains were working a lot harder and using more energy than the normal children". "People often don’t see how hard it is for dyslexic children to do a task that others do so effortlessly," added Virginia Berninger, a professor of educational psychology. [http://www.abc.net.au/science/articles/1999/10/05/57074.htm](http://www.abc.net.au/science/articles/1999/10/05/57074.htm)
Morton & Frith, 1993; 1995 developed a neutral framework for the causal modelling of developmental disorders and applied this modelling to dyslexia. The research highlights that Dyslexia can be split into 3 main research areas, all of which inter-link and influence one another.

- **Neurological** - Brain structure and genetic factors
- **Cognitive** - How people learn
- **Behavioural** - How people behave and their reactions to this learning difference

These are influenced by **Environmental factors** both at home and school.

![Diagram of environmental factors influencing home and nursery/school with three main research areas: Neurological, Cognitive, and Behavioural.](image-url)
Literacy and Dyslexia

Early literacy approaches required for learning can be applied to any learners with literacy difficulties. Using resources such as the Addressing Dyslexia Toolkit with links to enquiry and research e.g. Education Scotland, will enable classroom practitioners to identify the language development needs of all young people.

Building blocks of language development

Phonological awareness and Phonics can often be misunderstood and mistakenly thought to be different terms for the same skill. However they are two distinct skills, one building on the other. They, along with a range of skills form the foundation of language and literacy development.

**Phonological Awareness** - Phonological awareness is widely recognised as the strongest predictor of literacy success. It is the ability to manipulate speech sounds.

**Phonics** - Teaching reading by training beginners to associate letters with their sound(s) and how they are blended to form words.

**Phoneme** - Awareness that a phoneme is the smallest units of spoken sound. This can be either a single letter or combination of letters.

**Listening** to a spoken word and breaking it down into component sounds is fundamental for effective language learning.

Learners need to segment and identify:

- Single words in a sentence
- Syllables within words
- The initial sound and other phonemes within words

Learners then need to be able to blend the sounds together in order to make words. Many learners come to school with well-developed phonological awareness and they are able to deduce the links between sound patterns they hear and the written patterns they see. However, some learners do not easily make the phonological links and will need a wide variety of phonological activities such as stories, rhymes, listening activities and/or games to help them develop phonological awareness. This can be true of learners...
of any age. Children significantly increase their language comprehension and expression when listening to stories read aloud, either at home or at school.

Language Development
Scottish Government Literacy Action Plan

A literacy rich environment promotes, supports and enriches listening, talking, reading and writing. It models high standards and sets high expectations for literacy.

What happens to children in their earliest years is key to outcomes, including the improvement of educational attainment in childhood, adolescence and in adult life. There is a strong relationship between early life experiences and how children learn. The importance of positive influences in the early years will improve a child’s life chances. These early learning experiences are vital in forming the building blocks from which more formal literacy learning can be developed.

In the very early years the home learning environment for children from birth to 3 years old has a significant impact on cognitive and language development. Parents, irrespective of socio-economic group or where they live, can make a real difference to their children’s outcomes by talking to them, playing with them and ensuring they engage in different experiences.


‘Literacy development starts from birth. Early years settings and schools develop children and young people’s basic and advanced literacy skills and in adulthood the ongoing development of literacy skills helps to advance personal achievements, employment prospects and participation in society.’
Scottish Government Literacy Action Plan 2010, p 3
http://www.educationscotland.gov.uk/earlyyearssetState/a/genericcontent_tcm4658430.asp

Children significantly increase their language comprehension and expression when listening to stories read aloud, either at home or at school.


By the age of 5 years, children should be able to use sentences with a developing grammar, take part in conversations, talk about past events and ask questions.

For a fuller discussion, see Speech and language development - what to expect 3 - 5 years
http://www.maternal-and-early-years.org.uk/topic/3-5-years/speech-language-and-communication-development#mean

Home support:

National Practice Guidance on Early Learning and Childcare. – ‘Building the Ambition’

Building the Ambition Support Materials
http://www.educationscotland.gov.uk/learningandteaching/earlylearningandchildcare/buildingtheambition/support.asp

POLAAR Early literacy environment assessment
Talking Skills
Planning, organising and saying what we want to say involves many different skills. Talking skills develop from infancy and can be encouraged with activities incorporating sounds, songs, repetition and stories. A planned approach to developing listening and talking skills in the early years will lay the foundations for reading and writing as well as developing social and communication skills.


Listening Skills
Listening skills develop from infancy and can be encouraged with activities incorporating sounds, songs, repetition and stories. A planned approach to developing listening and talking skills in the early years will lay the foundations for reading and writing as well as developing social and communication skills.


Phonological awareness skills are important in order to develop good reading skills. Having good phonological awareness skills means that a child is able to manipulate sounds and words, or “play” with sounds and words. For example, a teacher or speech-language pathologist might ask a child to break the word “cat” into individual sounds: “c-a-t” if learners are finding it difficult to identify and isolate sounds they HEAR in a word. Continuous tracking of their progress though the stages is vital to ensure solid foundations to build the skills of reading and writing.

Free resources available on the Addressing Dyslexia Toolkit

- Phonological Awareness
- Alphabet Awareness
- Manipulation of letters, sounds and words

Reading Skills
If learners are encouraged and supported to read a wide range of texts for enjoyment, they will become more confident in making independent choices in their reading material. Developing as a reader is linked to positive attitudes and experiences as well as skills.

CfE recognises the fundamental importance of reading for enjoyment within the reading experiences and outcomes.
If the sound cannot be matched to a letter, the successful introduction of phonics is compromised. Struggling readers of all ages may benefit from revisiting early skills and breaking them down. A range of support approaches and strategies are available for teachers to help children develop their reading skills.


Writing Skills

Writing skills – mark making begins in a child’s early years and should be supported and encouraged. If learners are to become successful and confident writers then writing has to be viewed as an essential part of the learning environment and across curriculum areas. Learners should have regular opportunities to write to develop and demonstrate knowledge and understanding and to make sense of their learning.

They should experience an environment which is rich in language and which sets high expectations for literacy and the use of language. It is important writing tasks are engaging and relevant with an explicit focus on the skills and knowledge being developed.

Writing skills are dependent on reading skills and should be taught alongside each other.

Children significantly increase their language comprehension and expression when listening to stories read aloud, either at home or at school.


Scottish Government and early reading skills

In August 2015, Read, Write, Count, a new Government-led campaign was launched which is aimed at the development of literacy skills in children in Primaries 1 to 3. Parents and families have a key role to play in helping their children to read, write and count well.

As part of the campaign, all P1-3 children will receive a gift of books and literacy and numeracy learning materials through their school. Outreach will be provided in some communities to support parents, families and communities to make the most of these resources. Resources will be available for children in both English and Gaelic medium education.

The campaign, which will be delivered in partnership with Education Scotland and Scottish Book Trust, builds on existing Scottish Government efforts to tackle educational inequalities and raise attainment in early years and beyond.
Learning English as an Additional Language and Dyslexia.

Speakers of any language can have dyslexic difficulties but these may be different in the ways they manifest themselves. It will be more obvious in some languages than others depending on the spelling rules and writing structures.

For children who speak languages other than English at home, the assessment process will require very careful consideration. Consideration will require to be given to the child’s first language as well as English, and this may require assistance from a professional who shares the same language as the child. It must be remembered that the phonology of the child’s first language is likely to be different from English, and scripts too may be different. As an example, Polish children who have wholly developed literacy skills will have experience of decoding in alphabetic script but in the case of children exposed to logographic scripts, the relationship between sounds and symbols will be markedly different. Even although children may not have learned to read in their first language they will have been exposed to environmental print. The issue for teachers is to consider whether the child’s difficulties with language extend beyond them having English as another language.


Avoid using standardised assessments, particularly with those new to English as the English and cultural content may give false information. It is more useful to build a profile of the learner’s strengths, including what they can do in their first language as well as information about their educational background. To support EAL learners with possible dyslexia focus on support for the first language involving parents. Many of the strategies that support dyslexic learners will work well with EAL learners but in addition it is important to focus on building vocabulary in a meaningful context, taking account of cultural factors.

Tony Cline

Research (Ganschow and Sparks, 2000) confirms that strengths and weaknesses in the linguistic codes of phonology/orthography (sounds/letter patterns), syntax and semantics are transferred between languages. So learning a second language challenges dyslexic students because it requires those skills that are frequently compromised in dyslexia - sequencing ability, phonological knowledge and both short and long-term memory (Wolf, 2008). The processing differences associated with SpLD/dyslexia can also cause listening difficulties (Crombie & McColl, 2001) making a second language as complex, inconsistent and challenging as English, more difficult for dyslexic children to acquire (Ziegler et al, 2003).

DysTEFL (Dyslexia for Teachers of English as a foreign Language)

Languages without Limits
Teachers of foreign languages will find a range of useful information to help with language learning and inclusion in the foreign language classroom
Interactive literacy resources

Reading and Writing Circles

The interactive resources have been developed to provide a detailed view and understanding of how a child or young person’s literacy skills have developed. They can be used in primary and secondary sectors and may also be beneficial for children and young people for whom English is not their first language, as well as for adults. The circles provide:

- Descriptions of the key areas involved in the acquisition of reading skills
- A tool to identify areas of difficulty
- Approaches and strategies for each key area
- A practical resource sheet/evaluation tool to record discussion, highlight strengths, difficulties and to plan the next steps appropriately.

Reading approaches

If learners are encouraged and supported to read a wide range of texts for enjoyment, they will become more confident in making independent choices in their reading material. Developing as a reader is linked to positive attitudes and experiences as well as skills. CfE recognises the fundamental importance of reading for enjoyment within the reading experiences and outcomes.

Over the years there has been professional debate and dialogue over the most effective and appropriate methods for teachers to use when developing reading skills in children.

Top down theory
The top down approach to reading emphasises that reading is a meaning driven process, where the reader uses meaning predictions to read. When meaning is lost the student focuses more intently on the visual information to process the print.

Bottom up theory
The bottom up approach to reading emphasises that reading is taught through students first learning the alphabetic principle (grapho-phonics – the rules of sound and symbol relationships). Meaning takes place after accurate decoding of print.
Turbill, (2002) suggests constant discussion of these theories drives teachers to search for better ways in creating a balanced pedagogy of reading for all children. 

Children who experience difficulties with the acquisition of literacy skills will require a range of approaches to support their reading skills. For example a child who has auditory processing difficulty or has glue ear will find it very hard to hear the phonological sounds and transfer them to the graphic images of text. If this is the only approach used in their class they may experience additional barriers to their literacy development.

Appropriate learning and teaching approaches

There is a variety of strategies and approaches which can support learners to read a wide range of texts including literature circles and paired reading.

Literature Reviews and Further Research

2008 Dyslexia Review Literature Review


2015 CLPL Route Map for Dyslexia and Inclusion Literature review
Analytical Services Team, April 2015

1. From a review of the information available on dyslexia, there is already a wealth of Scottish literature which provides information about definitions, associated difficulties, underlying causes and advice on assessment and intervention. These include:

- **Addressing Dyslexia Toolkit (2012):** This was originally launched as the Assessing Dyslexia Toolkit for Teachers in June 2010, and outlines the **definition of dyslexia** that has been developed by the Scottish Government, Dyslexia Scotland and the Cross Party Group on Dyslexia.

- **Supporting Pupils with Dyslexia at Primary School (2011):** A series of 8 booklets that were provided to every primary school in Scotland and contain information and advice about dyslexia from the early stages to transition to secondary school, and also contain information for support for learning departments, school management teams, as well as about good practice when working with parents. These booklets can be downloaded from the [Dyslexia Scotland website](#)

- **Supporting Pupils with Dyslexia in the Secondary Curriculum (2013):** A series of 20 booklets that were provided to every secondary school in Scotland and aim to provide subject teachers and support staff
with advice and strategies to support learners with dyslexia. The booklets can be downloaded from the Dyslexia Scotland website.

- **Dyslexia at Transition (2007)** – The Dyslexia at Transition Project Team consisted of staff from Edinburgh, Strathclyde and Aberdeen Universities and education authorities. The team worked with school staff, parents and pupils to produce a DVD and support pack ‘Dyslexia at Transition’. The DVD, commissioned by the (then) Scottish Executive. The resource was launched in 2007 and provides examples of best practice to help schools to support the move of pupils with dyslexia from primary to secondary school.

2. Research summaries

**Assessment of dyslexia and intervention**


This research looked at spelling and word decoding problems in dyslexia, and what treatments may be effective in addressing them. Twenty-four primary age children (9-14 years old) were assigned to a one-hour reading-writers workshop at a university. Most of the participants were boys, which is consistent with research showing that males with dyslexia are more likely than girls with dyslexia to have writing problems and that gender differences are more likely in writing than reading skills (Berninger, Nielsen, Abbott, Wijsman & Raskind, 2008). The intervention was found to significantly improve reading and writing. The authors concluded that using orthographic strategies with working memory in mind could help students with dyslexia with spelling and reading. Some limitations to this research are the small sample size and the highly technical language used to describe the intervention and methodology.


A literature review commissioned by the Welsh Government which explores research into dyslexia. The review provides definitions of dyslexia, overlapping disorders, assessment of dyslexia and provides examples of best practice interventions.


This paper discussed the role of mobile technology in supporting people with dyslexia in areas such as reading, composing text, note-taking, organisation, metacognition and study skills. No actual empirical research is reported, though programmes, apps and software applications to support each area are described. This paper also cites the Scottish assessment process for dyslexia (in 2011) as an example of good practice. - http://www.addressingdyslexia.org/pages/index.php?category=11


Reviews current proposals concerning the definition of dyslexia and contrasts it with reading comprehension impairment. Discusses methods for early identification and considers evidence that teacher assessments and ratings may be valid screening tools. Suggests that interventions should be theoretically motivated and evidence based. Notes that the early identification of children at risk of dyslexia, followed by the implementation of intervention, is a realistic aim for practitioners and policy-makers.
Bell, McPhillips and Doveston, M. 2011. How do teachers in Ireland and England conceptualise dyslexia? *Journal of Research in Reading*, 34 (2), p.171-192: A comparative study which used data from questionnaire surveys in England and Ireland to ascertain how teachers and teaching assistants described dyslexia and how this might influence their teaching. A total of 72 postal questionnaires were returned and the data was investigated using a thematic analysis. The findings highlighted a distinct Anglo-Irish contrast in conceptualisations of dyslexia, but also some common themes, e.g. the use of a discrepancy model of dyslexia. The researchers cautioned that using such a model may risk missing other important variables, such as the learning environment at the teacher, classroom, whole school and the community level. The paper also suggested that teachers need a clearer understanding of the relationship between the pupil’s individual profile, the task and the environment. Another interesting finding was that many dyslexic pupils were reported to be receiving some form of individual or small group tuition. Some research has shown that individual tuition is not always an essential component (Brooks, 2007; Rose, 2009; Torgesen, 2002) and that a blend of small group instruction and one to one teaching can be equally effective.


This research focuses on Dyslexia and English as an additional language.

**Impact on learning**


A paper which reports on a four-year research project examining the experiences of children with dyslexia in mainstream schools and reading schools/classes. The focus of this paper is on the socio-emotional effects of dyslexia on a group of children attending a reading school/class for a specific duration before returning to mainstream. The findings suggest that while the primary focus of attending such a placement is to attain greater levels of literacy, other gains such as increased positive socio-emotional manifestations and confidence are also evident. Therefore, the emotional elements of learning must work in tandem with the academic elements in helping children with dyslexia access the curriculum in full. The roles of attribution, motivational and expectancy theories are explored and how a comprehensive understanding of these theories can help teachers explain and respond to the exhibited behaviours of children with reading difficulties.


A report by an England-based charity which discusses research carried out with young people with dyslexia. It discusses what dyslexia is, the achievement gap between those with learning difficulties such as dyslexia and their peers, the economic and social costs, and highlights issues in relation to teacher training. The research indicated that many teachers felt they were not receiving the necessary training and support to teach young people with dyslexia.

A report which presents research commissioned by the Higher Education Academy carried out by academics in two universities in England. The research explored the transition to higher education for students with identified disabilities such as dyslexia. Looks back at the students’ school experiences, particularly factors which impacted on their self-esteem and academic achievement.


Better understanding of the diverse reading abilities of people with dyslexia is necessary for the design of more effective learning situations, which are vital both to students with dyslexia and to their teachers. Seven individuals with dyslexia currently or formerly in higher education were interviewed about their reading experiences to learn how they themselves understand and describe their reading. The interviews are treated as individual profiles. Although the respondents were adult experienced readers, aware of their impairments, none could identify any strategy for overcoming dyslexia other than investing much time in homework and study. Each profile is unique, yet they share some characteristics, including strong parental support and a refusal to accept the label of "stupid". Teachers need to recognise the diverse effects of dyslexia in order to improve the chances of dyslexic students - especially those who cannot rely upon strong parental support - of continuing to higher education.


A report which presents the findings of a small-scale study which explored the factors that affect the self-esteem of learners with dyslexia. The study involved interviews with nine secondary school pupils who had been diagnosed with dyslexia in two mainstream schools in the north of England. It found that comparisons with other students and the attitudes of teachers, peers and family members can have a significant impact on the self-esteem of students with dyslexia. However, the research indicated that an early diagnosis of dyslexia can have a major impact in terms of creating a positive self-image. After students were diagnosed their confidence increased and they were able to distinguish between their specific difficulties and the idea of intelligence.


Research considering how different educational settings may impact adulthood as empirical literature suggests that children, adolescents and adults with dyslexia are at increased risk of low self-esteem. The researchers systematically reviewed the literature about how specialist and mainstream school settings impact on the social-emotional well-being of adults with dyslexia. Two themes emerged; feelings of ostracism and stigma; and a host of different emotions including feelings of disappointment, frustration, embarrassment, shame, depression and low-self-esteem. The current research surveyed 224 adults with dyslexia online to identify the experiences that facilitated or hindered them. About half had attended a specialist school and half a mainstream school. Their analysis suggested that adults who attended specialist schools were significantly less likely to be clinically diagnosed with anxiety or depression. They offered some reasons as to why this may be the case, for example, a focus on the development of coping strategies in specialist settings; and the presence of peers with similar difficulties as a source of emotional support in specialist settings. The authors state that the school context may serve as either a protective or risk factor in association with dyslexia and self-esteem. However, there are some limitations to this study. Firstly, the sample was self-selected so there may be inherent sampling bias, as the researchers were unable to determine if the sample was representative of the general population of adults with dyslexia. Also a large majority of the respondents went to the same specialist school and it may this school in particular that made a difference. Lastly, all the data can show is that there is a positive difference between adults who attended different school settings; whether the specialist school directly influenced self-esteem or served as a protective factor in itself, can only be inferred and not attributed to causality.
Dyslexia and neuroscience
Research marked with * denote those articles where the abstract has been summarised.


Developmental dyslexia, characterized by difficulty in reading, has been associated with phonological and orthographic processing deficits. Functional Magnetic Resonance Imaging (fMRI) was performed on dyslexic and normal-reading children (8–12 years old) during phonological and orthographic tasks of rhyming and matching visually presented letter pairs. During letter rhyming, both normal and dyslexic reading children had activity in left frontal brain regions, whereas only normal-reading children had activity in left temporo-parietal cortex. During letter matching, normal-reading children showed activity throughout extrastriate cortex, especially in occipito-parietal regions, whereas dyslexic children had little activity in extrastriate cortex during this task. These results indicate dyslexia may be characterized in childhood by disruptions in the neural bases of both phonological and orthographic processes important for reading.


Dyslexia is a specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition, spelling and decoding abilities. Research findings agree that these and other observed behavioral manifestations largely result from a deficit in the phonological component of language. However, conflicting theories on the exact nature of the phonological deficit have given rise to divergent treatment approaches. Recent advances in functional brain imaging and genetics have allowed these theories to be examined more closely. If implemented appropriately, commercial programs can be effective in identifying dyslexia. Treatment of dyslexia has been advanced through neuroscience, yet further study is needed to provide rigorous, reproducible findings that will sustain commercial approaches.


Neuroscience has provided fascinating glimpses into the brain's development and function. Despite remarkable progress, brain research has not yet been successfully brought to bear in many fields of educational psychology. In this article, work on literacy serves as a test case for an examination of potential future bridges linking mind, brain, and educational psychology. This article proposes a model for integrating research in the cognitive neurosciences with educational psychology and reviews how neuroscience is providing new data relevant to 3 major controversies in the field of dyslexia. This article also discusses the relevance of these findings for psycho-educational assessment and instruction and suggests innovative venues for interdisciplinary research.


Dyslexia is a complex learning disability with evidence for a genetic basis. Strategies that may be useful for dissecting its genetic basis include the study of component phenotypes, which may simplify the underlying genetic complexity, and use of an analytic approach that accounts for the multi-locus nature of the trait to guide the investigation and increase power to detect individual loci. Here we present results of a genetic analysis of spelling disability as a component phenotype. Spelling disability is informative in analysis of extended pedigrees because it persists into adulthood. We show that a small number of hypothesized loci are sufficient to explain the inheritance of the trait in our sample, and that each of these loci maps to one
of four genomic regions. Individual trait models and locations are a function of whether a verbal IQ adjustment is included, suggesting mediation through both IQ-related and unrelated pathways.


This research investigated children at familial risk for dyslexia in kindergarten and first grade. The familial risk saw 40% of the children developing reading deficits in first grade. Unlike previous research, the authors did not find any relationship between a phonological awareness or other phonological processing deficits in kindergarten and reading deficits in first grade. Also they did not find evidence for the claim that a phonological awareness deficit causes a reading deficit via 'unstable' or otherwise corrupted letter-speech sound associations. Although earlier research indicated letter knowledge as another significant determinant of later reading deficits, they found no support for this claim. The authors concluded that letter knowledge learning and learning to associate and integrate letters and speech sound are different processes and only problems in the latter process seem directly linked to the development of a reading deficit.


Reading is a complex process drawing on a variety of brain functions in order to link symbols to words and concepts. The three major brain areas linked to reading and phonological analysis include the left temporoparietal region, the left occipitotemporal region and the inferior frontal gyrus. Decreased activation of the left posterior language system in dyslexia is well documented but there is relatively limited attention given to the role of the right hemisphere. The current study investigated differences in right and left hemisphere activation between individuals with dyslexia and non-impaired readers in lexical decision tasks (regular words, irregular words, pseudowords) during functional Magnetic Resonance Imaging (fMRI). Results revealed the expected hypo-activation in the left posterior areas in those with dyslexia but also areas of over-activation in the right hemisphere. During pseudoword decisions, for example, adults with dyslexia showed more right inferior occipital gyrus activation than controls. In general the increased activation of left-hemisphere language areas found in response to both regular and pseudowords was absent in dyslexics. Laterality indices showed that while control participants showed left lateralised activation of the temporal lobe during lexical decision making, dyslexic readers showed right activation. The researchers concluded that these findings could inform theories of reading and have implications for the design of reading interventions.


Many studies of developmental disorders now routinely include a brain imaging or electrophysiological component. Amid current enthusiasm for applications of neuroscience to educational interventions, the authors suggest that researchers need to pause to consider what neuroimaging data can tell us. They state that images of brain activity are seductive, and have been used to give credibility to commercial interventions, yet we have only a limited idea of what the brain bases of language disorders are, let alone how to alter them. The authors reviewed six studies of neuroimaging correlates of language intervention and found recurring methodological problems including: lack of an adequate control group; inadequate power; incomplete reporting of data; no correction for multiple comparisons; and failure to analyse treatment effects appropriately. In addition, there is a tendency to regard neuroimaging data as more meaningful than behavioural data, even though it is behaviour that interventions aim to alter. The authors concluded that in our current state of knowledge, it would be better to spend research funds doing well-designed trials of behavioural treatment to establish which methods are effective, rather than rushing headlong into functional imaging studies of unproven treatments.
Developmental dyslexia is a genetically based neurobiological difficulty. As well as reading, writing and spelling, some dyslexics also have impairments in attention, short-term memory, sequencing, eye movements and balance. Functional imaging studies suggest that the cerebellum is part of the neural network supporting reading in typically developing readers, and reading difficulties have been reported in patients with cerebellar damage. Differences in both cerebellar asymmetry and gray matter volume are some of the most consistent structural brain findings in dyslexics compared with non-dyslexic readers. However, many dyslexics do not have cerebellar signs, and many cerebellar patients do not have reading problems. Therefore, the authors conclude that impaired cerebellar function is probably not the primary cause of dyslexia, but rather a more fundamental neurodevelopmental abnormality which leads to differences throughout the reading network.

Family history and poor pre-literacy skills (referred to here as familial and behavioural risk, respectively) are critical predictors of dyslexia. This study systematically investigated the independent contribution of familial and behavioural risks on brain structures, which had not been explored in past studies. The research involved assessing 51 children (5 to 6 years of age) with varying degrees of familial and behavioural risks for developmental dyslexia. They found that greater maternal history of reading disability was associated with smaller bilateral prefrontal and parieto-temporal gray, but not white matter volumes. Taking into account behavioural risk, socioeconomic status, maternal education and other confounding variables did not change the results. No such relationship was observed for paternal reading history and behavioural risk. The results suggested greater maternal, possibly prenatal, influence on language-related brain structures. The authors concluded that these results may help to guide future neuroimaging research focusing on environmental and genetic influences and provide new information that may help predict which child will develop dyslexia in the future.

A growing number of studies examine instructional training and brain activity. The purpose of this paper is to review the literature regarding neuroimaging of reading intervention, with a particular focus on reading difficulties (RD). To locate relevant studies, searches of peer-reviewed literature were conducted using electronic databases to search for studies from the imaging modalities of fMRI and MEG that explored reading intervention. Of the 96 identified studies, 22 met the inclusion criteria for descriptive analysis. Findings from the literature review suggest differences in functional activation of numerous brain regions associated with reading intervention. Findings from the meta-analysis indicate change in functional activation following reading intervention in the left thalamus, right insula/inferior frontal, left inferior frontal, right posterior cingulate, and left middle occipital gyri. Though these findings should be interpreted with caution due to the small number of studies and the disparate methodologies used, this paper is an effort to synthesize across studies and to guide future exploration of neuroimaging and reading intervention.

Other suggested summaries

- Professor Julian (Joe) Elliot’s research should be included as he agrees there is a biologically based difference and his contention is the way it is identified and labelled. Research on e.g. phonological awareness and its impact on a learner’s ability to read is important.
• A commission by Save the Children (2013) by the National Literacy Trust
http://www.literacytrust.org.uk/news/5638_poor_children_s_life_chances_determined_by_age_s
even

• Further research on phonological awareness and its impact on a learner’s ability to read is important to give a balanced view

Additional information in literature review:

The following quotes have been lifted from the recently published book, The Dyslexia Debate - Julian G. Elliott & Elena L. Grigorenko, Cambridge University Press, 2014

49 “Research into phonological deficits has resulted in the development of a range of related interventions for struggling readers that have shown to improve the skills and, consequently, reading performance”.

128 "Those with reading difficulties, irrespective of whether these are predominantly of biological or environmental origin, are more likely to be undermined by whole-language approaches that neglect explicit instruction of letter-sound relationships." (Various authors are cited; the latest Tunmer & Nicholson, 2011).

135 "The most powerful predictors [of reading proficiency or of response to intervention] proved to be phonological awareness and rapid naming of letters."

135 Difficulties with phonological awareness, rapid naming, vocabulary, and oral language skills are seen as the most common cognitive attributes of poor responders to intervention. (Fletcher et al., 2011)
Current legislation

1. Equality/Disability

What is disability?
The Equality Act defines a disabled person as a person with a disability. A person has a disability for the purposes of the Act if he or she has a physical or mental impairment and the impairment has a substantial and long-term adverse effect on his or her ability to carry out normal day-to-day activities.

This means that, in general:
- the person must have an impairment that is either physical or mental;
- the impairment must have adverse effects which are substantial;
- the substantial adverse effects must be long-term; and
- the long-term substantial adverse effects must be effects on normal day-to-day activities.

All of the factors above must be considered when determining whether a person is disabled.

Legislative and policy position
The duties of the Equality Act 2010 (commenced 1 Oct 2010) require responsible bodies to actively deal with inequality, and to prevent direct disability discrimination, indirect disability discrimination and discrimination arising from disability and harassment or victimisation of pupils on the basis, or a perceived basis, of protected characteristics, including disability. The provisions include:
- prospective pupils
- pupils at the school
- in some limited circumstances, former pupils


In addition, under the Equality Act 2010 responsible bodies have a duty to make reasonable adjustments for disabled pupils and provide auxiliary aids and services. The duty is ‘to take such steps as it is reasonable to have to take to avoid the substantial disadvantage’ to a disabled person caused by a provision, criterion or practice applied by or on behalf of a school or by the absence of an auxiliary aid or service. (Commenced 1 Sept 2012)


Further, under the Education (Disability Strategies and Pupils' Educational Records) (Scotland) Act 2002 responsible bodies have duties to develop and publish accessibility strategies to increase pupils’ access to the curriculum, access to the physical environment of schools and improving communication with pupils with disabilities.
Also education authorities and other agencies have duties under the **Additional Support for Learning Act 2004** (as amended) to identify, provide for and review the additional support needs of their pupils, including those with disabilities. The provision made to support a pupil with an additional support need arising from a disability may include auxiliary aids and services, such as communication tools and support staff.

Education authorities can ask Other Agencies (including social work services, health boards and Skills Development Scotland) for help in carrying out their duties under the Act. Other agencies must respond to the request within a specific timescale (there are exceptions to these timescales).

**Related Link**


**National Guidance**

The Scottish Government published in autumn 2014 the revised guidance ‘**Planning improvements for disabled pupils’ access to education**[1]’. The guidance, developed following consultation with stakeholders[2], supports responsible bodies (education authorities, independent and grant-aided schools) to fulfil their statutory duty to develop and publish Accessibility Strategies. In producing the national guidance, the Scottish Government aims to ensure that all education authorities support disabled children so that they are as fully engaged in their learning as they can be, that they are included in school, and therefore that their experience of school is improved.


**UNCRC**

**Related Links**

http://www.gov.scot/Topics/People/Young-People/families/rights
http://www.uncrcletsgetitright.co.uk/
http://www.sccyp.org.uk/rights/uncrcarticles

**2. Additional Support for Learning**

Education authorities and other agencies have duties under the Additional Support for Learning Act 2004 (as amended) to identify, provide for and review the additional support needs of their pupils. An additional support need can arise for any reason and be of short or long term duration. Additional support may be required to overcome needs arising from learning environment; health or disability; family circumstances or social and emotional factors.

Education authorities can ask Other Agencies (including social work services, health boards and skills development Scotland) for help in carrying out their duties under the Act. Other agencies must respond to the request within a specific timescale (there are exceptions to these timescales).

Children and young people's needs are met through planning for their learning and support, usually through an individualised educational programme (this may have another name such as Additional Support Plan) which sets out targets for learning and the support to be provided (usually termly). For children and young people who have complex or multiple needs which require significant support from education and another agency or agencies a co-ordinated support plan may be required. The purpose of the CSP is to support co-ordinated planning to meet pupils' needs. The plan lasts for up to a year.
Identification Debate

The school education system in Scotland is “needs” based, which means that the provision of support and resources for a child or young person who has additional support needs is not dependent upon a label, therefore pupil support teachers are not required to have an accreditation for assessing dyslexia. However, although a “label” is not legally required, it should be appreciated that the identification process of dyslexia may be extremely useful and important to the child or young person and their family. If an assessment is requested then the school needs to respond to this within the legal time scale (6 weeks). There is a perception that the use of the term dyslexia signifies a particular specific requirement for support and level of need and as such families feel it is very helpful.


For those in transition there may be a need for a formal assessment of dyslexia when a young person is moving to college, university or a place of work. With regards to college and university the assessment must meet set criteria and can be used as evidence to ensure additionally is in place during the course for example, extra time and the use of IT. Such assessments can support the application for funding to SAAS to pay for IT equipment, proof reading, reader scribes etc.

When planning the post school transition which should start timeously, it is important that the young person/family liaise with appropriate staff in the college or university of the student’s choice to ensure that updated assessment is carried out if this is going to be necessary - for example, to apply for Disabled Student Allowance.

If the young person decides to go straight into the world of work, then they should ascertain how much reading and writing will be required and if they feel they will be able to cope. Arrangements for work experience if these are handled sensitively might help alleviate any fears the young person has.

Sustaining and Developing Professional Learning

Four broad elements of CLPL have been identified by Education Scotland as below:

Reflection on practice:
- Asking questions, being curious and looking closely at practice
- Ensuring that professional practice is evidence-based
- Developing skills in observing what is happening
- Developing skills in analysing and evaluating what is happening
- Exploring roles and approaches in professional practice
- Ensuring that professional practice is collaborative

In Literacy and Dyslexia this could translate into:
- Engaging in ongoing enquiry into relevant evidence and research into language development, literacy and dyslexia
- Keeping a professional learning journal including self-reflection on practice
- Ensuring the child’s views are listened to and valued
- Ensuring good communication with the parent/carer in the educational planning and identification process
- Using video to capture and analyse learning and teaching
- Asking colleagues to observe and feedback on practice
- Devising questionnaires and other research methods to capture learners’ views on practice
Experiential learning:

- Trying out and exploring the impact of Multi-sensory approaches
- Ensuring good practices are implemented when supporting children and young people with literacy difficulties and dyslexia
- Monitoring and tracking progress and outcomes

In Literacy and Dyslexia this could translate into:

- Ensuring multi-sensory approaches are embedded and evaluated
- Ensuring that children and young people with literacy difficulties and dyslexia are given appropriate opportunities to achieve the four capacities within Curriculum for Excellence – Confident, Successful, Responsible and Effective learners.
- Ensuring all individuals are achieving progress and are meeting their targets and potential

Specifically, these broad approaches could lead to focussed CLPL activities as follows:

- Self-evaluation and reflection
- Experiential, action or enquiry-based learning
- Focused professional reading and research
- Curricular planning
- Peer support e.g. coaching or mentoring
- Classroom visits/observation
- Work shadowing
- Co-operative or team teaching
- Participation in collaborative activity e.g. professional learning community, learning round
- Leading or participating in a working or task group
- Planning learning which is inter-disciplinary or cross-sectoral
- Participation in activities relating to assessment and moderation
- Secondments, acting posts and placements
- Accredited courses or activity related to achieving national professional standards for teachers

In addition, CLPL can contribute to the GTCS Professional Recognition process for practitioners. Information about this can be found at:

http://www.gtcs.org.uk/professional-recognition

Accessing CLPL
A range of professional activities contribute towards CLPL, for example:

- Professional reading and enquiry
- Meetings with colleagues
- Attending events
- Short courses
- Extended courses and award-bearing courses
Key Stakeholder Organisations in Scotland who can support CLPL in Dyslexia
A range of organisations are involved in providing CLPL support for educational practitioners

- Education Scotland
- Dyslexia Scotland
- Addressing Dyslexia Toolkit
- GTCS
- CALL Scotland
- Local Authorities
- Universities

**General Teaching Council for Scotland (GTCS)**

[GTCS logo]


**Professional update**
The key purposes of Professional Update for teachers are:

- To maintain and improve the quality of our teachers as outlined in the relevant Professional Standards and to enhance the impact that they have on pupils' learning.
- To support, maintain and enhance teachers' continued professionalism and the reputation of the teaching profession in Scotland.

**Professional Recognition**
Professional Recognition is looking at expertise that moves beyond that expected of a teacher, for example moving from a grounded knowledge of assessment as set out in the Standard for Registration, to one where they have become an expert in this area, perhaps helping to support others.

**Self Evaluation**

**Dyslexia Learning trail - Using the Dyslexia Learning Trail to evaluate good practice**
The learning trail may be used as part of the school’s self-evaluation and focus on judgements about attainment and achievement, the effectiveness of the school’s procedures for tracking and monitoring progress, the quality of support for young people with dyslexia and the effectiveness of partnership working with key agencies and parents.


**Education Scotland Self Evaluation Framework HGIOS**

The Scottish Government, through the Scottish Teacher Education Committee (STEC), set up a Working Group to develop the Framework for Inclusion.

Who is the Framework for?
- Teacher educators designing ITE programmes
- Student teachers
- Teachers
- Teachers following advanced professional studies

What does the Framework include?
- values and beliefs for Inclusion
- professional knowledge and understanding for Inclusion
- skills and abilities for Inclusion

http://www.educationscotland.gov.uk/resources/n/genericresource_tcm4546856.asp

Dyslexia Scotland

Annual Dyslexia Scotland Education Conference

The Dyslexia Scotland Education Conference takes place every year in the autumn. This event is a useful professional learning opportunity for all teachers in building on their existing skills and experience and learning more about the practical aspects of supporting pupils with dyslexia. As well as excellent keynote speakers, the conference has a dynamic choice of practical workshops that are selected from the feedback from teachers who attended previous conferences. There is also the opportunity to visit a large marketplace, displaying the most recent materials and technologies to support teaching and learning for learners with dyslexia. Details at the following link: http://www.dyslexiascotland.org.uk/education-conference

Information leaflets on dyslexia can be accessed and freely downloaded– http://www.dyslexiascotland.org.uk/links-and-resources
All state schools in Scotland were sent free copies of two series of booklets:
Supporting pupils with dyslexia in primary schools
Supporting pupils in the secondary curriculum

These are available free to download to Dyslexia Scotland members. Members also receive quarterly copies of “Dyslexia Voice” magazine to support CLPL and discounts on their annual Education conference. Details at the following link: http://www.dyslexiascotland.org.uk/why-join

Addressing Dyslexia Toolkit

Toolkit CLPL activities 1-5 including a range of professional resources

Learning for Sustainability – equality and capacity building within the educational establishment/system

Support Staff and Generic Approaches
Local Authorities Examples of Building Capacity

Support Staff and Generic Approaches
It is important that all classroom practitioners involved in supporting learners have a similar approach. This is assisted by ensuring all support staff are given the same training across establishments and across education authorities. A common approach to e.g. Paired Reading, scribing for readers, overlearning activities and games would be of great benefit to learners who find it difficult to adapt to different methodology. It also gives support staff a greater confidence in their vital role within additional support for learning. For the same reasons, parents should also be encouraged to adopt a common approach to supporting their child at home.

Resources to support all teachers and help build capacity within schools
The Primary One Literacy Assessment and Action Resource (POLAAR) is designed to help P1 teachers identify and assess children who are most at risk of developing later difficulties with reading and writing. It is based on a staged intervention model of ‘observe-action-observe’ which helps identify the most effective intervention to take at classroom and child levels.

It is designed for use by P1 teachers and others who support young children’s literacy learning and development.

An illustration of the staged intervention model of ‘observe-action-observe’.
Local Authorities Examples of Building Capacity

Glasgow Dyslexia Support Service (GDSS)

- Phonological awareness programme – use timelines on Action Research paper, quotes from the action research and current update including city steering group (MG, Jane B) statement with Action Research paper, Stages of PA. Highlight the need for training of classroom practitioners before using materials. TRACKING

GDSS offer a variety of training units to Glasgow teachers in order to build capacity within establishments. Each training unit follows the support and development model in which participants learn about a key area of literacy based on current research. Participants engage in activities and are supported in how to deliver these in the practical setting of the classroom. Training units run over a period of 3-4 sessions allowing time for teachers to carry out allotted tasks and discuss findings with fellow attendees.

Working In partnership – Local Authorities - Addressing Dyslexia Toolkit

Guidance for authorities is available, via the link below, with a view to establishing a common pathway for children and young people and consistency of approach across Scotland. Some samples of policies are also offered. It is recommended that in line with legislation, national policies and procedures, including this Toolkit, local authorities and independent schools will review and develop approaches and procedures for dyslexia when working with children, young people, families and staff. A pathway and examples of different policies are offered that local authorities and independent schools can follow.

http://www.addressingdyslexia.org/pages/index.php?category=32&sub=0