



Northern Ireland  
Assembly

## Research and Information Service Briefing Paper

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# **Visual Impairment and Educational Attainment**

# 1. Summary

Visual Impairment is defined as sight loss that cannot be fully corrected using glasses or contact lenses. Several academic studies have concluded that, in general, visual impairment has a negative impact on educational attainment. However, it is recognised that other or additional Special Educational Needs (SEN) have a more significant impact on educational achievement than visual impairment.<sup>1</sup>

At least one third of children (in England and Wales) with visual impairment have additional and/or complex disabilities. Therefore, the number of students with visual impairment who undertake public examinations is small.<sup>2</sup>

There is evidence to suggest that attainment gaps between pupils with visual impairment and other students emerge before entering post-primary education. It is argued that early diagnosis of visual impairments is vital, given that eye problems may impede learning.<sup>3</sup> Early diagnosis also increases the chances of successful corrective intervention. Indeed, studies have indicated that effective screening and subsequent referral of students with visual impairment leads to stronger academic attainment as well as improving the pupils' quality of life.<sup>4</sup>

Visual Stress is a condition defined as the inability to see comfortably due to visual perceptual distortions. There has been little research carried out into the links between Visual Stress and academic attainment.<sup>5</sup> However, young people who suffer from this condition may suffer from a reading impediment which would prove challenging for a student.

This paper gives a background to visual impairment by summarising childhood vision development. It then outlines the incidence of visual impairment and its effect on development and academic attainment, making reference to a number of academic studies. Finally, the paper examines Visual Stress, and discusses the challenges faced by pupils with this condition.

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<sup>1</sup> Chanfreau and Cebulla (2009) *Educational attainment of blind and partially sighted pupils* : NatCen

<sup>2</sup> Cobb (2005) *Assessing the attainment of children with visual impairment in public tests and examinations* London: International Congress Series Volume 1282

<sup>3</sup> Toledo et al (2010) *Early detection of visual impairment and its relation to academic performance São Paulo*: Revista da Associação Médica Brasileira vol.56 no.4

<sup>4</sup> As above

<sup>5</sup> Crabtree (2011) *Educational Implications of Meares-Irlen syndrome*: British Journal of School Nursing May 2011 Vol 6 No 4

## 2. Key Terms

### Visual Impairment

Visual impairment is defined as sight loss that cannot be fully corrected using glasses or contact lenses. It is estimated that 2 million people in the UK live with visual impairment. Of these, approximately 365,000 are registered as blind or partially sighted.<sup>6</sup>

### Visual Stress

Visual Stress is a condition defined as the inability to see comfortably due to visual perceptual distortions. This leads to difficulty with fine vision tasks. Sufferers describe reading difficulties with text appearing to move on the page. Although not fully understood, it is known to affect reading ability. The condition is also known Meares-Irlen syndrome.

### Disability

Disability has been defined as a physical or mental impairment that has a substantial and long-term adverse effect on a child's ability to carry out normal day-to-day activities.

### Special Educational Needs (SEN)

Children of school age have Special Educational Needs if they 'have a significantly greater difficulty in learning than the majority of children of the same age; or have a disability which prevents or hinders them from making use of educational facilities of a kind generally provided for children of the same age.'<sup>7</sup>

Not all disabled children have Special Educational Needs. Indeed, the term does not relate to a level of expected attainment.<sup>8</sup>

The Special Educational Needs and Disability (Northern Ireland) Order 2005 (SENDO) came into effect in 2005. The law increases the rights of children with Special Educational Needs (SEN) to attend mainstream schools. It also introduces disability discrimination laws for the whole education system in Northern Ireland.<sup>9</sup>

### Visual Acuity

This is the ability to see fine detail measured from a variety of distances. A test called the Snellen test is often used to measure visual acuity. It involves reading letters off a

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<sup>6</sup> NHS Website: Available at <http://www.nhs.uk/conditions/Visual-impairment/Pages/Introduction.aspx>

<sup>7</sup> Dfes (2001) *Special Educational Needs Code of Practice* London

<sup>8</sup> Ofsted (2010) *The special educational needs and disability review* London

<sup>9</sup> DENI website [http://www.deni.gov.uk/index/7-special\\_educational\\_needs\\_pg/special\\_needs-legislation\\_pg/special\\_educational\\_needs\\_-\\_legislation\\_sendo\\_pg.htm](http://www.deni.gov.uk/index/7-special_educational_needs_pg/special_needs-legislation_pg/special_educational_needs_-_legislation_sendo_pg.htm)

chart on which the letters become progressively smaller. This chart is used during a routine eye test.<sup>10</sup>

### 3. Background

#### 3.1. Childhood Vision Development

The eye continues to develop rapidly from birth, until the age of 2 or 3. Thereafter, development decelerates until it is complete by the time a child reaches the age of 7 or 8. It is particularly important to identify and address visual impairment whilst the eye is developing if corrective procedures are to have the best chance of success.<sup>11</sup>

Early vision development is largely measured using the following indicators:<sup>12</sup>

- month - baby turns to light and shows steady fixation. The eyes widen and other movements are stopped when shown an interesting visual stimulus.
- 2-3 months - there is visually directed reaching. At this stage the most rapid visual development will have occurred and further changes are more gradual.
- 3-5 months - there is blinking to threatening stimuli. Objects are examined in more detail.
- 6-12 months - the baby's vision approaches normal adult acuity. By a year old, near and distant acuities are good. The child has depth perception, can discriminate between simple geometric forms and can scribble with a crayon.
- By 2 years - All optical skills are smooth and co-ordinated.
- By 3 years - There is slower ongoing development for another 4 or 5 years until complete.<sup>13</sup>

#### 3.2. Incidence of Visual Impairment

The Royal College of Ophthalmologists monitors the incidence of visual impairment in children within the UK:<sup>14</sup>

- There is an incidence of 6 per 10,000 children in the UK each year *developing* severe visual impairment or becoming blind by their 16th birthday.
- There are at least 4 children diagnosed as being visually impaired each day in the United Kingdom.

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<sup>10</sup> NHS Website <http://www.nhs.uk/conditions/Visual-impairment/Pages/Introduction.aspx>

<sup>11</sup> Willshaw et al (2000) *A Handbook of Pediatric Ophthalmology*

<sup>12</sup> As above

<sup>13</sup> As above

<sup>14</sup> The Royal College of Ophthalmologists: Available at <http://www.rcophth.ac.uk/page.asp?section=293&sectionTitle=Ophthalmic+Services+Guidance>

### 3.3. Effects of Visual Impairment on Development

The rate and order in which skills develop may differ between children with visual impairment and children without a sight problem. Visual impairment can impede the development of motor skills, cognition, and language.<sup>15</sup> Also, the difficulties experienced by children with vision impairment are not always obvious.

Children with visual impairment can experience:

- difficulty seeing things at a distance
- difficulty seeing things that are near
- difficulty seeing clearly
- limited field of vision
- inability to see in colour

The level of vision of a child who has visual impairment may fluctuate. Their vision may dependant on lighting and even the child's mood. If a child is tired, unwell or stressed, their vision may not perform to its maximum potential.

The development of children with visual impairment may take place more gradually and erratically, with unforeseen gaps in understanding. In general, children with visual impairment have less opportunity to learn incidentally, in the manner that sighted pupils do. Therefore, children with visual impairment may need to be deliberately taught skills which sighted children pick up intuitively.

The variety of activities experienced by sighted children may not be realistically achievable for children with visual impairment. For example, the daily routine of bathing, eating and dressing which leads to independence for sighted children is sometimes unattainable for children with visual impairment. Moving around can also be challenging; this can restrict their interaction with the physical environment.

Research indicates that it is important for teachers to recognise the impact of visual impairment on *attitudes* to learning. In addition, visual impairment limits the perception of eye contact, facial expressions, body language and gestures. This means that children with visual impairment need help in interpreting signals in social situations to enable them to build relationships.<sup>16</sup>

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<sup>15</sup> Toledo et al (2010) *Early detection of visual impairment and its relation to academic performance* São Paulo: Revista da Associação Médica Brasileira vol.56 no.4

<sup>16</sup> Department for Education (2012) *Information About Visual Impairment* London: Early Support For Children and Young People

## 4. Academic Attainment

### 4.1. The Royal National Institute of Blind People

The Royal National Institute of Blind People (RNIB) commissioned the National Centre for Social Research (NatCen) to report on the educational attainment of blind and partially sighted pupils in England, Wales, Scotland and Northern Ireland. The study, published in 2009, focused on educational achievement in secondary education.

The research compared the attainment of visually impaired young people with that of young people without visual impairment (VI). The study also compared the attainment of young people with visual impairment to that of young people with other special educational needs; the inquiry isolated the influence of visual impairment on educational attainment.

#### 4.1.1. Educational attainment of pupils with VI in England<sup>17</sup>

The research showed that the attainment levels of pupils with VI were below those of pupils without Special Educational Needs (SEN). This applied to students whose VI was their only SEN as well as to pupils who had additional SEN. After applying controls for deprivation, gender and ethnicity of pupils, the results held true.

It should be acknowledged that the attainment gap between pupils with VI only and pupils without SEN was reported as small. Furthermore, the report stated that the attainment gap probably existed before the pupils began post-primary school. The gap persisted largely unchanged in years thereafter.

However, for blind and partially sighted pupils with an additional SEN the outcomes were significantly different. Pupils with VI and supplementary SEN performed less well at KS3 and at KS4 than pupils with no SEN. In terms of progress, this group did worse at GCSE than would have been predicted (based on their KS3 results).

Pupils with additional SEN fell behind further between KS3 and KS4. Almost a third of pupils with VI and additional SEN were not awarded a level at KS3. Nearly all of these pupils subsequently failed to meet the lower benchmark of attainment at KS4 (five or more GCSE passes at grades G or above).

#### 4.1.2. Educational attainment of pupils with VI in Wales<sup>18</sup>

Attainment levels at KS3 and KS4 varied by SEN status: Pupils *without SEN* performed best on average, followed by *pupils with VI only* and then pupils *with VI and additional SEN*.

Similarly to England, the RNIB research suggests that the attainment gap between these groups of pupils may have developed during primary school; the report stated

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<sup>17</sup> Chanfreau and Cebulla (2009) *Educational attainment of blind and partially sighted pupils* : RNIB

<sup>18</sup> As above

that progression between KS3 and KS4 was the same for pupils with VI and pupils without SEN.

#### **4.1.3. Educational attainment of pupils with VI in Northern Ireland**

The RNIB study reported on the standard measure of KS4 attainment (five or more GCSEs graded A\* to C). The proportion of students with visual impairment as their only SEN attaining this level was lower than the percentage of pupils without SEN reaching this threshold of attainment.<sup>19</sup>

However, the report indicated that the difference between the attainment of 'VI only' students and pupils without SEN could possibly be attributed to variances in the social composition of these students, rather than their SEN status.

Nevertheless, the study reported that the attainment of students with VI and additional SEN was below that of students without SEN. This remained the case even after applying controls for variances in pupil and school characteristics. The report concluded that it was likely that the attainment gap had resulted from the students' multiple special educational needs rather than VI alone.

#### **4.1.4. Educational attainment of pupils with VI in Scotland**

The RNIB report advises that there are significantly lower levels of attainment among leavers with visual impairment compared with leavers without any special educational needs. The lowest levels of attainment were reported for students with SEN other than VI.<sup>20</sup>

The report found that there was a lower performance of blind and partially sighted young people in Scotland compared with the other countries. It concluded that this may be because of the data collection arrangements in Scotland.

Almost half of students with VI attended special schools, in contrast with only about one-fifth of pupils with other SEN. The report suggests that this may highlight support needs among students with VI.

The report concluded that visual impairment reduced the likelihood that a school leaver obtained attained five or more Scottish Credit and Qualifications Framework (SCQF) Level 5 qualifications.

## **4.2. Research conducted at Universidade Federal de Juiz de Fora: Brazil<sup>21</sup>**

This study sampled 8 year old children and involved pupils performing a visual acuity test. The research team aimed to find out whether there was a significant link between poor visual acuity and poor performance in examinations.

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<sup>19</sup> Chanfreau and Cebulla (2009) *Educational attainment of blind and partially sighted pupils* : RNIB

<sup>20</sup> As above

<sup>21</sup> Toledo et al (2010) *Early detection of visual impairment and its relation to academic performance* São Paulo: Revista da Associação Médica Brasileira vol.56 no.4

The researchers surveyed 222 students and found that:

- among the students with normal visual acuity, 89.5% attained 'satisfactory' academic performance
- among those with impaired visual acuity; 75% achieved 'satisfactory' academic performance

The research concluded that vision problems may affect children's learning process and social development. It is argued that screening and subsequent referral of students with visual impairment contributes to stronger academic performance. Therefore, the study stresses the value of early preventive measures and encourages the development of campaigns for the detection and prevention of vision problems.<sup>22</sup>

## 5. Visual Stress

Visual Stress is a condition defined as the inability to see comfortably due to visual perceptual distortions. Children who experience Visual Stress describe reading difficulties, with text appearing to move on the page. Although not fully understood, it is known to affect reading ability. The condition is also known Meares-Irlen syndrome.<sup>23</sup>

A major challenge in the diagnosis of Visual Stress is that often the child is not aware that his/her own visual perceptions are different from those of others. Therefore, young people can grow up without realizing that they have Visual Stress. It is argued that this leads to a lack of recognition and reporting and continuing problems for the people concerned.<sup>24</sup>

People with the condition may experience:

- eye strain
- headaches
- fatigue
- nausea

As a consequence of the strain of reading, children with Visual Stress are often easily distracted, and display poor concentration. Some children with the condition misread words and have poor spelling and comprehension. Another characteristic associated with Visual Stress is a slower than average reading rate. The condition may manifest itself through disengagement with class work or disruptive behaviours.

There has been some cynicism over the authenticity of the condition, as most of the symptoms are non-specific to Visual Stress. Research suggests that it is probable that

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<sup>22</sup> Toledo et al (2010) *Early detection of visual impairment and its relation to academic performance São Paulo: Revista da Associação Médica Brasileira* vol.56 no.4

<sup>23</sup> Crabtree (2011) *Educational Implications of Meares-Irlen syndrome: British Journal of School Nursing* May 2011 Vol 6 No 4

<sup>24</sup> As above



Visual Stress is a continuum, ranging from mild symptoms to more severe cases where reading can be severely impeded. Whilst there is a lack of research to support a link between the condition and academic attainment it could be logically inferred that a severe impediment to reading would prove challenging for a student.<sup>25</sup>

## 6. Habilitation: Moving from School to Work

Blind and partially sighted people can experience problems as they move from the supportive confines of school into adult life. For example, in Scotland, two-thirds of visually impaired people of a working age do not have a job.<sup>26</sup>

A Scottish study reports that many people with a visual impairment cannot meet the basic requirements of the workplace. It is argued that habilitation services are essential in bridging the gap between examination grades and employment prospects.<sup>27</sup> Habilitation services concentrate on developing the skills required to live independently.

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<sup>25</sup> Crabtree (2011) *Educational Implications of Meares-Irlen syndrome*: British Journal of School Nursing May 2011 Vol 6 No 4

<sup>26</sup> Hepburn (2013) *Scotland must do better for visually impaired* Times Educational Supplement : Published in TESS on 10 May, 2013

<sup>27</sup> As Above