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Learning disabilities affect up to 10 percent of children, study finds

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Up to 10 per cent of the population are affected by specific learning disabilities (SLDs), such as dyslexia, dyscalculia and autism, translating to 2 or 3 pupils in every classroom according to a new study.

The study – by academics at UCL and Goldsmiths - also indicates that children are frequently affected by more than one learning disability.

The research, published today in *Science*, helps to clarify the underlying causes of learning disabilities and the best way to tailor individual teaching and learning for affected individuals and education professionals.

Specific learning disabilities arise from atypical brain development with complicated genetic and environmental causes, causing such conditions as dyslexia, dyscalculia, attention-deficit/hyperactivity disorder, autism spectrum disorder and specific language impairment.

While these conditions in isolation already provide a challenge for educators, an additional problem is that specific learning disabilities also co-occur for more often that would be expected. As, for example, in children with attention-deficit/hyperactivity disorder, 33 to 45 per cent also suffer from dyslexia and 11 per cent from dyscalculia.

Lead author Professor Brian Butterworth (UCL Institute of Cognitive Neuroscience) said: "We now know that there are many disorders of neurological development that can give rise to learning disabilities, even

in children of normal or even high intelligence, and that crucially these disabilities can also co-occur far more often that you'd expect based on their prevalence.

"We are also finally beginning to find effective ways to help learners with one or more SLDs, and although the majority of learners can usually adapt to the one-size-fits-all approach of whole class teaching, those with SLDs will need specialised support tailored to their unique combination of disabilities."

As part of the study, Professor Butterworth and Dr Yulia Kovas (Goldsmiths) have summarised what is currently known about SLD's neural and genetic basis to help clarify what is causing these disabilities to develop, helping to improve teaching for individual learners, and also training for school psychologists, clinicians and teachers.

What the team hope is that by developing an understanding of how individual differences in brain development interact with formal education, and also adapting learning pathways to individual needs, those with specific learning disabilities will produce more tailored education for such learners.

Professor Butterworth said: "Each child has a unique cognitive and genetic profile, and the educational system should be able to monitor and adapt to the learner's current repertoire of skills and knowledge.

"A promising approach involves the development of technology-enhanced learning applications – such as games - that are capable of adapting to individual needs for each of the basic disciplines."

More information: "The Challenge of Education and Learning in the Developing World," by M. Kremer, *Science*, 2013.
"Understanding Neurocognitive Developmental Disorders Can Improve

Education for All," by B. Butterworth, *Science*, 2013.