
Maths Support for an Engineering Student with Dyslexia

I work in the Mathematics Learning Support Centre at Loughborough University, and provide maths support for several dyslexic students on a one-to-one basis. Support for dyslexic students is provided in conjunction with the English Language Study Unit and the Disabilities and Additional Needs Service. Stephen had previously spent quite a lot of time working on his study and visual learning strategies, which helped facilitate his maths support.

Nature of the Difficulties

Stephen was a first year Manufacturing Engineering student who is dyslexic. I worked with him for approximately a one-hour session each week, for about ten weeks. Due to his handwriting speed, he experiences difficulty when copying information down in lectures. Consequently, he arrived with hardly any notes. They started with the first example and skipped to the ninth. Dyslexic students often have difficulty with note taking and sometimes use a tape recorder or a note-taker. Stephen was fortunate to be regularly able to get lecture notes from his lecturer. Good quality handouts were very important to him. Long sections of text caused Stephen problems - he frequently got lost half way through, lost his place and failed to keep all the required information in his head. In working through a multi-stage problem he would sometimes become centred on one part, and fail to answer all parts of the problem. Stephen's phonological processing difficulties (problems handling words) make reading rather slow and we needed to re-read the question frequently, establish that he understood what he was being asked to do, select the most appropriate strategy, go through the problem many times, and check all parts of the question had been completed.

Maths Support Provided

During the sessions I wrote on coloured paper, which suited Stephen better. Many dyslexic students find this helpful. Within a few minutes of starting each session, there would be paper everywhere. It became important to make sure pages were numbered and the questions and examples set out clearly. Stephen finds text-based information difficult to cope with. It is easier for him to

learn from a visual source (eg diagrams, charts or graphs) and he thinks in images. Every function we came across, we would sketch, so he could see the function. We also tried to organise his work whenever possible, using tables, tree diagrams and spider diagrams. For example, one topic he had much difficulty with was partial differentiation. He got very lost with this, and often omitted some of the derivatives required. We tried to use a kind of tree diagram which, being visual, enabled him to impose an organisation on his work. It seemed to solve the problem. Stephen also found practical problems useful, and frequently needed to relate his maths to an example.

Stephen had problems associating the appropriate symbols with words eg \int and 'integration'. Whenever he saw the sign he knew what to do, but if he just saw or heard the word he was confused and would often differentiate. His short-term memory difficulties mean that he finds strings of verbal instructions difficult to follow. There was a need to match the appropriate symbols with the words. Stephen needed to pause often to take in and process information, and to review work frequently. If we covered too much ground in one session, the overload could result in confusion and no progress would be made.

Conclusion

His anxieties before starting his university course were, in the main, concerning his maths and whether he would cope. The fear of the mathematical demands of the subject affects many dyslexic students. However, with support and encouragement, this can be overcome. Stephen was able to master the demands of the course, and indeed achieved 70% in his end of module exam.

Our thanks go to Clare Trott and LTSN Engineering for granting us permission to re-produce this article. This case study is taken from the LTSN Engineering Guide: "*Working with Students with Disabilities*". This and similar case studies are available at <http://www.ltsneng.ac.uk/er/dis>

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