

Appendix 6 - AB learner case study

English is AB's first language. His English for Life (L1) class at City Lit is not his first course at this level. He sees himself as street wise but not academic and he feels that he "slipped through the net" because he did not get help when he was younger. He said that if he was intelligent in an academic way he would not need to be in college.

Overview of neurodiversity / challenges to learning from initial cognitive profile screening

- Slow speed of cognitive processing –AB took a long time to start and then wrote very little by hand, which had a lot of crossing out. Not all of the tasks were completed.
- AB may have either a good working memory or a poor working memory with well-developed and effective strategies to deal with memory difficulties. His well-organised ideas and well-structured written work indicate a good working memory. However, his punctuation difficulties such as making extensive use of comma splices despite knowing about his errors when asked to correct them suggest a potential difficulty with poor working memory. Slow speed of cognitive processing combined with poor working memory suggest the learner would lose track of what he is reading, but his reading comprehension does not seem to be obviously impacted.
- Connected with the above is the likelihood of limited cognitive load evidenced by lack of punctuation and paragraphing. ('Cognitive load' assumes that the brain has a limited capacity at any one time. This capacity is impacted by the number of tasks being done and the amount of information being processed consciously and unconsciously at any one time. This capacity is affected by the type of task and information and varies greatly from person to person. If for instance a person is already able to spell, paragraph and punctuate automatically using already learned information and motor-skills, then this will take up almost none of the working load capacity. If, however, the person has to 'think' about how to do any of these tasks then it takes up space in the cognitive load. When this happens, it is very difficult for learners to then employ higher level thinking at the same time to be creative or to answer questions as the load for higher level thinking has been used up. If the learner is then anxious about the task on top of this, the cognitive load is even further compromised.)
- Extensive vocabulary with accurate comprehension of meaning. Reads slowly but accurately.
- Accurate spelling and grammar, suggesting AB does not have dyslexia or Specific Language Impairment.

Description of learner in class from early sessions by tutor

- Reported that he had been told he had dyslexia at school.
- Lacks confidence and seems anxious about written tasks and expressing himself orally, at times. His sentences are on the whole simple and lack complexity.
- Takes longer than all of his peers to start a written task and so does not produce extended written pieces in 'reasonable' length of time
- Appears to understand instructions in class, though is a quiet learner in the class

Suggested activities/strategies that would best address the learner's challenges from neuroscientist

- Additional time for all tasks, especially for written tasks requiring processing of multi-faceted components such as a purposeful original letter-writing task which requires consideration of specific format, register/formality, original content, paragraphing, punctuation
- Time for structured thinking before commencing the task so as to reduce the cognitive load.
- AB should write a draft in a 'flow' not worrying about punctuation or paragraphing. I would not recommend scaffolding necessarily for this learner as it may be one more 'higher level thinking' task too many that would impede processing.
- Once flow of writing has finished, go back and put in punctuation, paragraphing. For paragraphing, consider/discuss where each idea begins and ends—this will eventually become automatic for AB and then will not require additional cognitive load much further down the track.
- Before starting any 'extended' writing task, AB should talk about content and how he will write. This will help him free up cognitive load when he does the actual writing. Scaffolding is not recommended as this may require even more processing for AB than he is able to do.
- In reading, AB is slow and this may be due to him losing track of meaning as his processing of input does not allow him to keep up with his reading pace. AB should stop when he loses the sense of what he is reading in order for his cognition to 'catch up'.
- By implementing these strategies, AB's reading and writing will become more automatic and so his proficiency and speed will increase over time as a result. Processing, working memory and inhibiting (unconsciously) will then be 'focused' on those processes in the brain that are not automatic and taking place as higher level executive functioning in the prefrontal cortex. (See notes above about 'cognitive load'.)

Activities experimented with (in class and one-to-one) based on suggestions

- In reading, the whole class struggle at times with comprehending. So part of a number of lessons was dedicated to students learning the technique of stopping when they lose the sense of what they are reading in order for cognition to 'catch up'. We used samples of challenging printed material such as newspapers and online non-fiction for this purpose. A number of learners in the class reported that they found this strategy helpful. One learner said that it was also helpful to stop when the meaning of a word was difficult and change the word to a phrase that explained it better. Then continue reading having made sure he had recapped before.
- With writing, the tutor continued with scaffolded learning because it was a strategy that had been successful in the past - including AB's building up his writing step by step with short sentences with one subject, one verb and one object
- In his one-to-one sessions, AB chose a topic to write about from 3 suggestions and prior to writing talked about the content and how he would structure it. He wrote an enter letter by hand, using quite simple sentences in about ten-fifteen minutes.
- AB in a follow up session, typed up the letter, making changes to the wording and the punctuation
- Tutor also practised a jigsaw approach to reading, and identifying how a newspaper article can flow by asking AB to reconstitute a cut up newspaper article

Observed outcomes/results (in class and one-to-one)

- As with the whole class, reminding AB to stop and recap what he was reading, in much shorter bursts, was very successful. AB read some quite 'advanced' texts with excellent comprehension and recall that he previously had not done.
- Scaffolding writing tasks was only somewhat helpful. AB still required a long lead time to get his ideas together. (NOTE: is this then a helpful strategy for AB?)
- AB responded well to activities which were amended in line with suggestions to allow him additional time for cognitive processing
- His confidence both in- class and one-to-one seems to have markedly increased.
- Giving AB time to talk about and even plan his writing ahead of starting the writing was very successful. Writing a well-structured complete letter by hand in a short time period was a first for AB.

Student's reflections on methods and progress

- AB reported that he found it particularly helpful to talk to himself silently about what he was going to write. He reported that he didn't find a written plan or a structure i.e. model to follow helpful: he was able to picture in his head the

beginning, middle and end. He said he found knowing who he was writing to and that he was writing about something real very useful. He found it helpful to set himself the task of writing 3-4 sentences per paragraph.

- AB found the activity of putting the article back together confusing and said that he didn't enjoy it. He questioned why the tutor had chosen to do it this way. He said that it felt like doing a jigsaw puzzle and that reading wasn't like doing a puzzle. He also said he felt it broke up the flow of the text and made it harder for him to take in.

Tutor's reflections (in class and one-to-one)

- Scaffolding worked less well than other strategies. This is probably because he has too many things to control or to plan for and think about at one time. He resisted being given plans and scaffolding that he has not had a hand in.
- A number of learners in the class reported that they found this strategy of stopping and reviewing their reading helpful. One learner said that it was also helpful to stop when the meaning of a word was difficult and change the word to a phrase that explained it better. Then continue reading having made sure he had recapped before.
- AB had some 'moments' when key points regarding sentence structure and punctuation seemed to click: "I found it was best to limit teacher talking time to making a few key points and then to ask AB to put into practice what was covered in class. More teacher talk would seem to compromise AB's cognitive load and slow up his processing speed."
- "I think AB's progress will benefit from introducing the neurodiversity suggestions made by JC more slowly and over a longer period of time as he needs to be on board with them to be convinced of these changes to his normal way of working, as he may feel that if we do too many things differently from what he is used to that the activities are not very beneficial, even though they may actually be of more use to him." (class tutor)
- "I feel that the strategy for the writing task worked well.' Not having a 'plan' but talking about the writing made it become clearer to AB about 'who he was writing to and what he wanted to tell him... and gave him a clear format to put his ideas in." (one-to-one tutor)

Neuroscientist's reflections

- Marked increase in AB's confidence from the beginning of the term maintained into the rest of the course. This was evidenced in his increased participation in in-class discussions, increased activity in writing during class time. Anxiety about writing tasks seemed to be reduced. In the early part of the course, AB produced very limited written work during class. He was initially reluctant to start and then took a long time to produce little - while the rest of the class were well under way. By midway through the term, AB no longer needed coaxing or visible 'scaffolding' to start and complete written tasks. AB showed marked progress in his writing. He was able to start an extended writing task

with less lead time, but more importantly with confidence about what and how to write, using the strategies suggested.

- The feedback from both teachers suggests that having a knowledge of what strategies to try out to address his slow speed of processing and compromised cognitive load as well as an understanding of how this impact learning and tasks provides a greater chance of engaging AB in his learning.

There seem to be inroads too into AB using strategies for his reading of challenging texts that lead to improved comprehension.