

SECTION 1:

Identification of Students with Dyslexia



Computerised assessment of students for dyslexia: a preliminary report of an evaluation of the StudyScan screening and assessment suite.

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ABSTRACT

The StudyScan computerised assessment suite for dyslexia was evaluated during an eighteen month trial as part of a collaborative project between three universities on the Learning Support services for students with disabilities or specific learning difficulties. Attrition and filtering of students from various parts of the StudyScan assessment process is described. The relationship between the initial QuickScan assessment and the main StudyScan assessment is examined. Preliminary findings from a validity study comparing StudyScan classifications and Educational Psychologists' assessments for dyslexia are reported. Ease of use of the StudyScan suite is discussed from both the students' and Learning Support services' perspectives. The study is being extended to increase the number of complete data sets.

Keywords: dyslexia, computerised assessment, QuicKScan, StudyScan, Educational Psychologists.

INTRODUCTION

The number of home based UK students with dyslexia entering Higher Education increased from 1,930 in 1994 to 4,964 in 1999 (UCAS statistics) and recent government initiatives in widening participation are broadening the spectrum of students entering Higher Education. The number of students with study skills deficits and literacy difficulties is likely to continue to increase as will the number of dyslexic students. The survey of the National Working Party on Dyslexia in Higher Education (Singleton, 1999) found that 57 percent of students with dyslexia are already known to be dyslexic on entry. This leaves 43 percent being identified and assessed in HE. In addition, application for the Disabled Student's Allowance required, until recently, a current (less than two years old) assessment of dyslexia. Already hard pressed HE Learning Support/Disability Resource Centres are experiencing significant increases in demand for their services both with respect to the identification of specific learning difficulties and the provision of learning support.

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The current process for the identification of dyslexia in HE usually consists of an initial interview including a preliminary assessment. This may be followed by referral to an educational psychologist for an in-depth assessment, follow-up interviews to support application for the Disabled Students Allowance, advice on using the DSA and provision of further personal and remedial learning support. All this is costly in terms of both student and Learning Support services time.

A computerised assessment offers the possibility of standardised assessment and availability to all. If such an instrument were attractively designed, easy to use, valid, and reliable, it would be possible to adopt with confidence a process akin to the triage model of Accident and Emergency Departments. Students could obtain information about their difficulties very quickly and, if necessary, be channelled rapidly towards scarce learning support resources.

This screener + diagnostic model was adopted by Zdzienski (1998) in the development of the computerised StudyScan Suite (Pico Educational Services Ltd, 1997). It consists of a preliminary screener (QuickScan) which can be followed by StudyScan, a suite of tests designed to refine the QuickScan diagnosis of dyslexia (but not to supplant the role of the educational psychologist).

Not all students who attempt QuickScan will be dyslexic but they may still need further information and learning support. QuickScan is designed to cope with this by offering an identification of learning styles and indication of whether learning support would be helpful. Indeed the manual appears to suggest that the provision of information on learning styles is the primary aim of the package.

Sanderson (2000) examined consistency of categorisation from QuickScan for both learning style and dyslexia for five university students. Whilst the sample was too small to calculate test-retest reliabilities it is disturbing to note that not one of the five students retained their initial learning style categorisation on the repeat QuickScan, and four of the five changed their dyslexia classification.

Clearly a large scale reliability study is needed. Validity studies are also needed and to this end, the present study examined the use of the full StudyScan Suite. The relationship between QuickScan results and StudyScan results was investigated together with their ability to predict the results of subsequent educational psychologists' assessments of the same students.

METHOD

The data were collected as part of the WEBB Accessibility Project on the provision of learning support for students with disabilities or specific learning difficulties. This was a collaborative project between the Universities of Bath, Bristol and the West of England, Bristol, funded by the Higher Education Funding Council disability special initiative. The University of Bath Learning Support team took particular responsibility for the Dyslexia project, which was one of four projects on services for students with disabilities. The working group for the Dyslexia project was drawn

from all three universities. The data for this particular analysis come from the Bath aspect of the project. StudyScan was launched at Bath as an integral part of the Learning Support Service, and consequently, data were available on many more students at Bath than the two other universities.

Participants

The QuickScan screener was completed by 126 students during the 18 month period of the study. This was preceeded by a six month period of system preparation and launch time.

The StudyScan Assessment Suite (Pico Educational Systems Ltd 1997)

StudyScan was designed as a computerised assessment instrument for use with students in Further and Higher Education. Its basis is the work carried out by Zdzienski (1998) for her doctoral thesis. The assessment suite consists of a “screener” (screening instrument) QuickScan which takes about 15 minutes to complete, and a much longer StudyScan assessment which contains a number of tests and takes between two and four hours to complete, although rest periods are advised.

QuickScan is a 112 item self completion questionnaire and was constructed using items from the Adult Dyslexia Checklist (Vinegrad,1994), and questions inviting self report of learning experiences, personal details and assessment history. “The QuickScan Report outlines individual learning preferences and study styles and includes personalised study guidelines. Furthermore, it indicates whether the student shows any significant possibility of being dyslexic and may result in a recommendation to go on to complete the full assessment in StudyScan” StudyScan User Guide 1997 page 3.

StudyScan is based on the SATA (Scholastic Abilities Test for Adults devised by Bryant, Palton and Dunn, 1991) which is an American test with nine sub tests and provides norms for 16 to 70+ year olds. Zdzienski (1998) adapted the test for UK students by anglicising the language, adjusted sub-test norms for a UK population, ran the full test on a group of confirmed dyslexic students and added tests of phonological and visual processing and working memory. She reports that the StudyScan outcome is based on a range of discrepancies, fluctuations in performance, and individual background information. The algorithm for computing the final categorisation, however, has not been published.

The StudyScan assessment consists of seventeen sub-tests. These cover non-verbal reasoning; verbal reasoning; digit-symbol coding; visual and auditory short term memory (digit span); visual short term sequential memory (snowflakes); vocabulary; spelling auditory; spelling recognition; silent reading and auditory reading comprehension; reading speed; writing speed; copying speed; punctuation; numerical calculations; applications of arithmetic.

Some of these are adapted from the SATA; some are SATA tests with modified scoring systems and some are additional tests. StudyScan was constructed using Rasch modelling. Internal reliabilities reported for sub-tests range from .599 for Application of Maths to .804 for Reading Comprehension. The lower reliabilities were attributed to the shortness in length of some of the sub-tests. Not all of the items fitted the Rasch model and presumably were removed before the commercial version was published.

In the printed report for each user, individual test results are given as raw scores, standard scores and histograms. The results are summarised in words and a dyslexia categorisation attributed. Finally, recommendations for different types of tutorial support and a synthesis derived from the QuickScan and the StudyScan results are provided. As yet, there are no published normative data.

Educational Psychologists' assessments

The diagnostic conclusions ("dyslexic"/"not dyslexic") of subsequent assessments of the students for dyslexia by educational psychologists were collated. Six educational psychologists were involved. Students gave permission for their results to be used in the study. All the assessments involved the use of the Weschler Adult Intelligence Scale (Revised) and a variety of reading, spelling and arithmetic tests.

Procedure

Students can approach the Learning Support Staff for help by telephone, email or by attending a weekly drop in session, telephone or email. They come either through self-referral or recommendation from a tutor. For the purposes of the present study, a first brief interview was conducted to identify the immediate circumstances surrounding their visit. If difficulties were presented which suggested specific learning difficulties, they were recommended to try QuickScan. A second meeting was held to discuss the QuickScan report, to discuss personal learning history and to establish immediate learning support parameters.

If the QuickScan report and the learning history suggested the need for further investigation, StudyScan was recommended. Some students were asked to try StudyScan if their personal learning history, rather than QuickScan, indicated difficulties associated with dyslexia. There was a further meeting to explain and discuss the StudyScan report. The discussion included explanations of dyslexia, the potential impact on study and academic achievement. Learning support and immediate support strategies were put in place and, where appropriate, students were also referred to other student support services. Once students had had time to consider the outcome of the StudyScan report, there was another second follow up meeting where queries regarding the StudyScan report were addressed.

UK undergraduate students who would qualify for the DSA (Disabled Students Allowance) were referred to the Student Money Service to enable referral to an educational psychologist. The educational psychologist's report was then followed by an assessment of needs. Each of these reports was discussed with the Learning Support service.

Each student gave written consent to their data already being used in the study.

The QuickScan and StudyScan categorisations were coded from the computer generated student reports; outcomes from the educational psychologists' assessments were also coded. Feedback from students and the Learning Support staff on the use of the computerised assessment was recorded and summarised.

RESULTS AND DISCUSSION

Filtering and Attrition

The study involved collecting data in three consecutive stages: the QuickScan screener, the StudyScan assessment, an educational psychologist's assessment. Of 126 students who completed QuickScan, 35 (27.8%) were identified as not showing indicators of dyslexia and 91 (72.2%) showed some indicators and were recommended to try the StudyScan assessment. However, only 66 of these did so. It can be seen from Table 1 that this attrition involved potentially severely dyslexic students. This is likely to be a problem for any such two stage process. Clearly care needs to be taken that as many students who screen positive in the first stage are retained for the assessment .

Nineteen of the 35 students filtered out by QuickScan, had evidence of difficulties in their personal learning histories and so were recommended to try the StudyScan assessment by the Learning Support Staff.

Relationship between QuickScan and StudyScan

An important requirement for any screening test is that should classify users as accurately as possible. It should demonstrate both sensitivity and specificity. A primary requirement for the

TABLE 1 QuickScan and StudyScan classifications

QuickScan Dyslexia Profile	StudyScan Dyslexia Profile							
	No StudyScan	Not consistent with dyslexia	Borderline	Inconclusive indicators	Mild Dyslexia	Moderate Dyslexia	Dyslexic	Total
Not consistent with dyslexia	16 45.7%	17 48.6%		2 5.7%				35 100.0%
Borderline dyslexia	3 42.8%		2 28.6%		2 28.6%			7 100.0%
Inconclusive indicators	3 27.3%	5 45.4%		3 27.3%				11 100.0%
Some of the indicators	13 27.1%	5 10.4%	6 12.5%	13 27.1%	9 18.8%		2 4.1%	48 100.0%
Many of the indicators	4 25.0%		1 6.2%	3 18.8%	8 50.0%			16 100.0%
Most of the indicators	2 22.2%				4 44.5%	3 33.3%		9 100.0%
Total	41 33.3%	27 19.5%	9 7.3%	21 17.1%	23 18.7%	3 2.4%	2 1.6%	126 100.0%

StudyScan Assessment Suite, therefore, is that QuickScan, acting as a screener, will identify potential dyslexics, and that StudyScan, acting as a more thorough assessment will not only refine that classification but also not identify as dyslexic any one not identified by QuickScan. To put this another way, for a screener to work effectively whilst false positives may be acceptable, false negatives are not. Given that the QuickScan results, according to the publishers, contribute 30 percent to the StudyScan results, false negatives should be fairly unlikely. The relationship between the two assessments for the students in the present study is shown in Table 1.

It can be seen from the first row of data that of the 19 students recommended to try StudyScan by the Learning Support personnel but classified as "having indicators not consistent with dyslexia" by QuickScan, only 2 were reclassified by StudyScan, and these as having "inconclusive indicators".

Twenty eight students were classified as showing indicators of dyslexia by StudyScan (mild:23, moderate:2, dyslexic: 2). Tracking the changes in classification from the QuickScan to the StudyScan categories along each row it appears that generally StudyScan had the effect of reducing the number of students with "indicators of dyslexia" but data on additional students is needed to make better sense of these changes. Overall, of the students classified as having "some", "many" or "most of the indicators of dyslexia" by QuickScan and who completed StudyScan, 26 out of 54 (48%) were classified by StudyScan as having indicators of dyslexia (includes mild, and moderate).

StudyScan and the educational psychologists' assessments

At the time of the current analysis, educational psychologists' reports were available on 40 students (Table 2). Forty percent of these were classified by StudyScan as dyslexic (includes mild and moderate), 20% as "inconclusive or borderline", and 20% as "not showing indicators of dyslexia".

Of the 16 students identified by StudyScan as showing indicators of dyslexia, 9 (56.3%) were assessed as dyslexic at an educational psychologist's assessment. This may imply quite a high rate of false positives but the StudyScan group contained mostly students with "mild" or "moderate indicators" and only 2 students with "indicators of dyslexia". Clearly further data is needed to clarify the situation.

In Table 2, 9 of the 12 students (75%) classified by StudyScan as having inconclusive or borderline indicators received an educational psychologist's assessment as dyslexic, and of the 12 students identified by StudyScan as not having indicators of dyslexia, 5 (42%) were identified by the educational psychologists as dyslexic. Both of these findings suggest a fairly high rate of false negatives.

For the moment it appears prudent to wait for further data which is still being collected. Currently there is insufficient data to carry out a statistical analysis on Table 2. Merging the top two rows for a 2 by 2 comparison using a McNemar Test currently yields a non-significant result ($p>0.3$).

StudyScan classification	EP: Dyslexic	EP: Not Dyslexic	Total
Dyslexic	9 56.2%	7 43.8%	16 100.0%
Inconclusive/ Borderline	9 75.0%	3 25.0%	12 100.0%
Not dyslexic	5 41.7%	7 58.3%	12 100.0%
Total	23 57.5%	17 42.5%	40 100.0%

TABLE 2 StudyScan and Educational Psychologists' classifications

It should be noted that it may be inappropriate to treat the educational psychologists' assessments as that rigorous a "gold standard" as six different assessors were involved. The study is being extended to increase the number of students with both assessments.

Reports of ease of use

The advantages of using the StudyScan suite reported by the students were the anonymity and the speed of access to QuickScan, the short assessment, the brief report and the immediacy of feedback. They found QuickScan easy to use and felt it was informative. Most of those who went on to do StudyScan however found it exhausting. Many ignored the in-built advice to take a break at test 7 and soldiered on to the last test. Feedback could not be immediate as the writing sample had to be scored and entered into the StudyScan database by a Learning Support tutor.

There were some problems with the hardware and software, which further delayed completion and feedback for a few students and in some cases increased their anxiety and distress. The publishers and the university's technical staff were very helpful in this respect. The problems, however, highlighted the importance of technical support in maintaining a computerised assessment tool.

The Learning Support Services found the information provided on learning styles by the QuickScan report a useful way to start talking about specific learning difficulties with the students.

Several meetings with each student were necessary to support them through the QuickScan-StudyScan assessment experience leading to the conclusion that StudyScan in its present form could not be used as a stand alone assessment. A major concern was the amount of time involved for both students and Learning Support staff.

CONCLUSION

The study demonstrates the logistical problems of a two-stage computerised assessment. StudyScan was introduced as an integral part of the Learning Support Service at Bath and yet students who were 'potentially at risk of dyslexia' were lost from the StudyScan assessment process.

Students found that StudyScan took up a great deal of their time; some students returned several times to complete the assessment. Both students and Learning Support officers found the QuickScan and StudyScan reports overly complicated and time consuming to interpret.

There is as yet no published explanation of the derivation of the QuickScan and StudyScan categories nor of the algorithmic relationship between the two.

The study is being extended to increase the number of students with complete data sets. At present it stands as a cautionary tale for the evaluation of screening and assessment programmes with respect to the length of time involved to collect data when a number of different agencies are involved.

Currently, there is insufficient data to draw a firm conclusion about the relationship between the StudyScan classifications and the results of the educational psychologists' assessments.

StudyScan is an attractively designed automated assessment but there are questions to be asked about its ease of use, including the time it takes to complete, and the considerable input needed by the Learning Support staff, particularly in the interpretation of the results for the students.

It is an imaginative beginning for a computerised assessment for dyslexia, but at the moment, it appears that it will be dependent on data from first users for a while to come in order to refine the model from which its results and categorisations are derived.

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Identification, intervention, institutional issues: A further view of the study scan project learning from student experience

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Identification

Pollock (1999) proposes in his paper “Dyslexia and Identity” in *Dyslexic Learners, A holistic approach to support*, that earlier identification of dyslexia, increased support for students with dyslexia in Higher Education and wider access for mature students may all have a bearing on an individual’s sense of self. He quotes Ivanic (1998) who supports the social construction model of identity and discusses the construction of the “sense of difference” and being “other” as a consequence of difficulty with reading and writing. He suggests this experience has the potential for being compounded and further magnified as a result of a student’s experience on entering higher education and again on identification and assessment of dyslexia.

The current model for the identification of dyslexia is based on the medical model. The presumption in “diagnosis” is still that it is the individual that owns the problem, rather than the learning environment to which the individual has gained access. One of the aims of the study into computerised assessment for dyslexia was to explore whether this had the potential to be a more social model and empowering to students for identification of dyslexia.

The ease of use of the StudyScan suite is discussed from the students’ and the Learning Support Services’ perspectives. It reflects the necessity for identification both for the person and the institution, balanced by concerns about the individual, for intervention which respects a student’s sense of identity and for the impact of institutional issues involved in introducing a computerised assessment service on a university campus.

As described in the previous paper, Study Scan has two parts; Quick Scan is a quick diagnostic test aimed at identifying learning style and picking up signs of dyslexia, and the longer Study Scan diagnostic test is aimed at providing a profile of a student’s cognitive strengths and weaknesses, at indicating dyslexia, and at making recommendations for support.

At the beginning of the project, Study Scan was widely advertised, both in Student guides, in all fresher student presentations from Student Support Services, and in academic departments. Quick Scan was available on the university network and instructions for its use were advertised on the learning support website.

In order to access the full diagnostic programme, Study Scan, Quick Scan (QS) has to be completed. The QS code is entered to obtain access to the Study Scan programme. Students generally found the programme for Quick Scan easy to use and enjoyed accessing it. Many found the questions a little puzzling, and in subsequent learning support discussions had questions relating to the laterality and kinaesthetic items in the test. Some students found a yes/no answer restrictive, saying they felt they could be both. Many were surprised by the left/right handedness questions and followed that up in subsequent discussion concerning ambidextrous and one handedness training.

Nearly all the students felt the identification of their learning style extremely useful and have found the guidance for their learning style helpful. Some students, who had experienced technical problems or had lost the first code, took the test twice. Occasionally this resulted in a different diagnosis of their learning style. This led to some discussion about which code to use for the Study Scan, and ultimately the student was advised to chose the code for the QS learning style report which they felt best related to themselves. Some students did come to learning support to discuss their QS reports, but did not elect to continue with the full Study Scan report, and some students who took the QS test never approached Learning Support.

Following discussion around the QS report, students were advised where appropriate to take the Study Scan test. This advice was based on a combination of the QS results and the early learning and family history. If the latter suggested difficulties of a dyslexic nature students were advised to take the full diagnostic test regardless of the QS results.

Study Scan requires that the student take a three hour series of tests for digit span, visual coding, auditory spelling, writing speed, accuracy and comprehension. The full diagnostic test can be left and restarted at any point, however this is not clear in the test and students were advised of that prior to starting. A break is recommended, during the test, at the seventh series of tests, at the time of the study a software fault developed affecting re-entry at the eighth test, requiring technical support from the makers. Students were advised by learning support to take rest breaks and food and drink, (which is not permitted in the library) however many students reported that they had worked straight through the test, and found it very tiring, but hard to stop.

StudyScan is held on three computers in individual rooms in the learning and library centre on the campus. Students could book time in these rooms at the information desk in the library. The test asks for hand written returns in a proforma for auditory spelling, writing and copying. Since dyslexic people frequently find forms difficult to use, students were advised to take paper and pen with them for these tests and to return these with their QS code to the learning support office.

Technical problems on one of the computers in the first year of the study resulted in a long wait for some reports to be generated and some students retook their QS and their full study scan tests in an alternative room. One student also had technical problems in the alternative venue and was referred immediately to an educational psychologist for report. These problems caused distress to the group of students concerned and added pressure to the learning support service, particularly since they occurred just prior to exams.

Intervention

The learning support tutor enters information from the handwritten returns the student completes while sitting the Study Scan test in order to generate the full diagnostic report. This is quite time consuming and requires particular attention to auditory spelling (for spelling consistency) and to grammar and sentence construction. The tutor-generated areas of the results can weight the synthesis of the test significantly, particularly in support recommendations, although consistency in the coding and processing results is retained. Technical problems can also occur, particularly with printers. Two reports are generated, one is the analysis of the tests, and the other is the Dyslexia report. Both reports come with a full description of the tests and the results. It is possible to print either of these lengthy reports (which provide far more information than is required) or to select the report information required for printing on a page by page basis.

Students were usually keen to know their results. The only difficulty experienced in meeting to discuss the generated report was usually in the level of demand for the service. Students reported aspects of the test they had found easy or difficult; many found the visual coding aspects of the test extremely difficult, however a few notable cases had determined coping strategies for the test and had unusually (and discrepant) high scores on this test group. Several found the maths tests difficult. There were occasional technical problems, for example sound problems, when the headphones had been left plugged in and students had not heard the auditory spelling.

In general, students enjoyed doing the test and many preferred the computerised diagnosis to the educational psychologist's assessment. Students also reported if they felt they had "cheated" for example used coping strategies such as making visual markers, or taking longer to write the free writing than the time they had been given. Most students evidently felt quite empowered by the experience.

As the study progressed, however, it became increasingly clear that the synthesis of the report and the recommendations made were not reliable. The histogram output which shows strengths and weaknesses for a particular testee was found to be a useful indicator for auditory, visual and coding discrepancies and the learning support service focused on these results in their subsequent discussion with the student. The Study Scan report was only used as a sole method for obtaining support where other additional methods were not available, for example for reasons of lack of time prior to exams or review, or for financial constraints for an international student. Where Study Scan was used as sole evidence it was always accompanied by a report and interpretation from the learning support manager. In the few instances where the Study Scan was sole evidence, the additional advice from learning support was accepted by the departments in all but two cases. Where it was not accepted, a subsequent educational psychologist's report confirmed the learning support advice and support arrangements were then put in place.

Students found the computer production of the histogram chart helpful and easy to follow, and the learning support manager used this visual means to assist in discussion of the report, and in the explanation of dyslexia. The discrepancy between the histogram and the synthesised report

was explained, however several students returned after the first discussion and shock of seeing the results, having read the report, with concerns about the difference between the StudyScan synthesis and the discussion content. The histogram and learning support diagram tools were used to discuss the results in more depth. There was often recognition of difficulties on looking at the histogram results and these were useful in explaining the likely impact on study difficulties.

Where a discrepancy was revealed in the StudyScan report and further discussion of learning history also suggested difficulties of a dyslexic nature, the student was referred for an educational psychologist's report. As the study progressed, the learning support service was increasingly supported by the Student Money service in enabling these referrals. If the student would not benefit from an educational psychologist's report, for example an international student who would not receive DSA, or if the student did not at that stage wish to proceed further with the identification process, the DAST and BDT tests were recommended as an additional check for dyslexic difficulties. Learning support provision was put in place following identification through the use of StudyScan. The identification was made on the basis of the histogram, rather than the synthesis of the StudyScan report. Recommended strategies made by the learning support manager, were also based on the information displayed in the histogram.

A few students preferred not to go forward to the formal identification process, and some were reluctant at this stage to disclose to their departments, preferring to wait for the result of the educational psychologist's assessment before seeking alternative arrangements for exams and assessment. These students continued to receive some learning support.

Institution issues

The attraction of a computerised model of assessment for an institution is primarily resource driven. If the queue of students seeking learning support could be reduced by the student being empowered to identify their learning style, to find out themselves whether or not they have a specific learning difficulty and to receive automatic recommendations for how to study and address their difficulties, the resource savings would be significant.

This study identified that this machine model is neither possible nor appropriate, and indeed could create significant problems with mis-diagnosis and inappropriate intervention. The design of the computerised assessment had an inbuilt requirement for human intervention and the time resource commitment is potentially longer than a straightforward screener and referral to an educational psychologist.

One model that is current in some schools is not to bother with identification. This saves time and money: students report that they knew they were dyslexic and were given extra time for exams and some learning support when they were younger. However they were not formally assessed, did not know what the identification meant, nor how to work with their strengths. This is a false economy and a lost learning opportunity and results in expensive remedial work at HE level to address negative coping strategies developed as a result.

Another model, current in Further Education institutions, is that learning support personnel administrate a slightly more detailed screener/diagnostic tool to provide a diagnosis, however this assessment is not as comprehensive as an educational psychologist's report. This is not necessarily cost effective as the person time is significant, carries attendant risks of missing key difficulties and results in poorer information being delivered for the assessment of needs that ensures the student has appropriate support.

The utopian model is one where identification is not necessary and the learning environment is truly inclusive. Some schools and academic departments believe they have managed this, however learning from student experience it is clear that this is not the case. Furthermore the identification process, while time consuming and complex, does ultimately empower the individual as many case studies attest.

Conclusion

In the social model of disability it is society that disables the individual. In the context of dyslexia in higher education, the dyslexic individual is apparently disabled by the way in which information is presented and in the way in which an individual's knowledge and understanding is assessed. Ideally, we would not need to identify individual difference, and would seek to address the processing, delivery and assessment of content in diverse ways to meet diverse needs. In order to reach towards this ideal model we need to identify, quantify and value individual difference in order to reach some understanding of how the condition of dyslexia impacts on study and educational achievement.

The problem is whether we treat the symptom or the cause, and does it help to uncover the cause? In cases where dyslexia has already been identified, for example at school, many students thrive given alternative arrangements for assessment and appropriate support. Did they find the experience of identification distressing? The most usual response was "I was too young, I had no idea what it meant". Much of the support needed for students in higher education with identified dyslexia is an explanation of the condition, development of positive study strategies and appropriate tuition and equipment. In addition support is needed for the ubiquitous experience of damaged self esteem which often presents as negative coping strategies.

In students where dyslexia has never been suggested, far less identified, identification impacts on the individual and their families in profound ways. In case studies all the individuals had known they had always had a problem and had blamed themselves. Self esteem had been damaged at a crucial stage in development and a profound sense of loss of identity and separation from self was the apparently inevitable isolating result. The ensuing distress at uncovering the root cause was, in all cases, a grieving process. This process requires many months of support and encouragement to address. If students are not counselled through the process, identification alone will not support the student's development.

A major concern when embarking on an identification study is around labelling. The negative aspects to labelling are well documented and arguments against labelling are often accompanied by the ongoing “there’s no such thing as dyslexia” or the “we are all dyslexic” prejudices that abound.

The key to the value of identification practice must be in knowledge of ourselves. Ownership of the identification process has to be held by the individual concerned. A medical model diagnosis is neither helpful nor enabling if it is not accompanied by information which assists understanding as well as by appropriate support strategies. There are many aspects of StudyScan which were helpful and useful but we would be reluctant to let any student use it without full support from the learning support service.

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