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The investigation and evaluation of the support mechanisms offered to adults with a diagnosis of dyslexia in higher education study

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Appendix to Thesis

The investigation and evaluation of the support mechanisms offered to adults with a diagnosis of dyslexia in higher education study.

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Appendix to a Thesis Submitted for the Award of Doctorate of Education

School of Education

Durham University

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Appendix A Search terms and holding template

Search terms	Information and website links
1. Dyslexia Support	
2. The disability resource centre	
3. Prospective students	
4. Current students	

Appendix B Template for the organisation and categorisation of data applied to the web text and associated documents printed from the web for each institution included in the survey

Institution Code:



Colour codes were attached to categorise the data as follows:

Green: Generic Study Skills Support (all disabilities/learning difficulties)

Purple: Dyslexia Specific

Red: Assistive technology

Orange: Auxiliary (relevant but not directly related to learning)

Available for  Category of Information 	Generic: All disabilities/learning difficulties (including dyslexia)	SpLDs (inc: autistic SD, dyslexia, dyspraxia)	'Additionality' Dyslexia targeted only (or can be inferred to be dyslexia specific support)
Needs Assessment (also known as Study Aids and Study Strategies Assessment) (green)			

Dyslexia Assessment (purple)			
In class adaptations in seminars/lectures (green)			
Amanuensis (green)			
Proofreading (green)			
Specialist 1-1 support (purple)			
Mentoring (green)			
Specialist Equipment (red)			
Exams (green)			
Auxiliary (orange)			

Appendix C – Data collection table for all included HEIs



HEI 01

Green: Generic Study Skills Support (all disabilities/learning difficulties)

Purple: Dyslexia Specific

Red: Assistive technology

Orange: Auxiliary (relevant but not directly related to learning)

Available for  Category of Information 	Generic: All disabilities/learning difficulties (including dyslexia)	SpLDs (inc: autistic SD, dyslexia, dyspraxia)	‘Additionality’ Dyslexia targeted only (or can be inferred to be dyslexia specific support)
Needs Assessment (also known as Study Aids and Study Strategies Assessment) (green)	Bring a list of things you want to discuss Discussion around the profile of difficulties the learner has then the identification of study strategies that might assist in academic study Assistive technology (possible benefits and access to) Report is provided to the student post meeting		Asked to bring along a ‘dyslexia assessment’ if has one
Dyslexia Assessment (purple)			Information on how to apply for a dyslexia assessment and guidelines on the professional status of those required for the report to be accepted, reports must be less than three years old and written after the age of 16. The assessment is to ‘Provide that student with a greater understanding of his/her profile of strengths and

			weaknesses and to consider how this profile pattern might impact upon academic study.' And to 'develop greater self-awareness and inform strategy development in managing key academic tasks.'
In class adaptations in seminars/lectures (green)	Notes can be taken by a note taker in the students 'preferred style format' the note taker can also 'make an electronic recording or record the lecture only' Recording of Lectures (agreement must be signed by the lecturers)		
Amanuensis (green)	Exam practice prior to exams		
Proofreading (green)	To identify and highlight errors in written work and indicates where modifications may be required in terms of spelling, punctuation and grammar and not academic content (and proofreading is used when assistive technology may not pick errors up, so AT is the preferred option)		
Specialist 1-1 support (purple)	Understanding individual learning style Understanding strengths as well as areas of challenge Develop efficient modes of study Time management and organisational skills Spelling, grammar, punctuation skills Proofreading skills How to store and retrieve information effectively How to use IT and software to assist learning Effective revision methods Analyzing wording of exam questions Making effective use of special exam concessions	Note taking from texts Techniques for making notes in lectures and using handouts	Refine the range of compensatory strategies already developed Efficient strategies for reading academic texts Introduce new strategies Mind mapping and planning strategies Organising, ordering, structuring and expressing your ideas in written assignments Developing listening skills and ways of sustaining concentration
Mentoring (green)	Tips for :		management of academic workload Planning a work schedule



	Managing your new environment, meeting people, making friends and building relationships University life management of academic workload Planning a work schedule How to cope with anxiety Pastoral support 'how has your week been' Practical things such as time management, organisation Personal assistance e.g. shopping Past learning experiences Student services		How to cope with anxiety Pastoral support 'how has your week been' Practical things such as time management, organisation
Specialist Equipment (red)	Completed as part of a general needs assessment , includes access to laptops, etc.		As part of dyslexia assessment and subsequent report recs can be made as to any specialist assistive technology that would benefit.
Exams (green)	Additional Time (a % must be specified) amanuensis, reader , separate room, and assistive technology can be used in exams if this is a formal requirement as cited in the Assessment Report		
Auxiliary (orange)	Develop and implement support for disabled students to ensure equal opportunity, access and attainment : Orientation Library assistance Transcription support (visual impairment) Practical assistance (physical)	Specific Learning Difficulties Social Group (for those with any form of SpLD, social support network) They meet to 'discuss topics, share experiences and information' 60 second impression video clips (a range of short clips of students with a range of learning difficulties/disabilities) explaining how their needs have been met Potential applicants advised to liaise with tutors to discuss individual needs. Advised that information on accessing 'specialist study skills tuition' is available.	60 second impression video clip – Jono History student has 'study skills sessions' 'someone to read over my essay and give suggestions on how to make it flow better and have a better reading piece of work has been really helpful' DQ Advised to inform of dyslexia on application. Applicants directed to DRC for more specific information (web template) which links to all categories of information listed in this spreadsheet.

Green: Generic Study Skills Support (all disabilities/learning difficulties)

Purple: Dyslexia Specific

Red: Assistive technology

Orange: Auxiliary (relevant but not directly related to learning)

Available for  Category of Information 	Generic: All disabilities/learning difficulties (including dyslexia)	SpLDs (inc: autistic SD, dyslexia, dyspraxia)	'Additionality' Dyslexia targeted only (or can be inferred to be dyslexia specific support)
Needs Assessment (also known as Study Aids and Study Strategies Assessment) (green)	Full assessment of academic needs		
Dyslexia Assessment (purple)			
In class adaptations in seminars/lectures (green)	Communication support such as note taking in lectures		
Amanuensis (green)			
Proofreading			

(green)			
Specialist 1-1 support (purple)			One to one dyslexia tuition and small group workshops on study skills
Mentoring (green)			
Specialist Equipment (red)	Equipment loan facility		
Exams (green)	Examination arrangements can be made with appropriate evidence		
Auxiliary (orange)	Disability Support Service list support for: A recognised disability A specific learning difference A medical condition A mental health problem Students are encourages to contact the centre to make an appointment for needs to be discussed Physical support can be arranges such as carrying books, getting photocopying done Liaison with other university services such as careers and counselling		

HEI 03



Colour codes were attached to categorise the data as follows:

Green: Generic Study Skills Support (all disabilities/learning difficulties)

Purple: Dyslexia Specific

Red: Assistive technology

Orange: Auxiliary (relevant but not directly related to learning)

Available for  Category of Information 	Generic: All disabilities/learning difficulties (including dyslexia)	SpLDs (inc: autistic SD, dyslexia, dyspraxia)	'Additionality' Dyslexia targeted only (or can be inferred to be dyslexia specific support)
Needs Assessment (also known as Study Aids and Study Strategies Assessment) (green)			
Dyslexia Assessment (purple)		Short assessment completed by UCL SpLD assessor – this is completed even if a student has a full in date Psych report or not. Screening is available	

		Full assessment is available at the Uni if needed and a full report is provided	
In class adaptations in seminars/lectures (green)		Copies of lecture notes and handouts a week early	
Amanuensis (green)			
Proofreading (green)			
Specialist 1-1 support (purple)			General study support skills are delivered which are not subject based such as structuring assignments, essay writing, exam technique (offered for one hour weekly) indicated that this is specifically designed for dyslexic students but it is not 'specialist tuition' such as developing multi-sensory strategies to learning or short term memory development
Mentoring (green)			
Specialist Equipment (red)		Assistive technology Digital voice recorder Text to speech Magnification software	
Exams (green)	Application to academic registry must be completed and evidence of disability must be supplied via a report Rest breaks Additional time Smaller exam venue Adjustable chair Alternative assessment format Exam paper use of pc Amanuensis		
Auxiliary (orange)	Welcome applications from disabled students Splds (e.g. dyslexia, dyspraxia)		

	<p>Blindness and visual impairment</p> <p>Mobility difficulties (e.g. wheelchair users, back pain)</p> <p>Mental health difficulties (e.g. depression, anxiety)</p> <p>Autistic Spectrum Disorders (e.g. Asperger's Syndrome)</p> <p>Long term health issues (e.g. diabetes, cancer) note on website that this is not an exhaustive list and should contact the disability team if they have any barriers to learning</p> <p>A range of downloadable student handouts as follows:</p> <p>Effective reading</p> <p>Essay writing in 8 steps</p> <p>Note taking</p> <p>Exams prep and technique</p> <p>Time management</p>		
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HEI 04

Green: Generic Study Skills Support (all disabilities/learning difficulties)

Purple: Dyslexia Specific

Red: Assistive technology

Orange: Auxiliary (relevant but not directly related to learning)

Available for ➔ Category of Information ↓	Generic: All disabilities/learning difficulties (including dyslexia)	SpLDs (inc: autistic SD, dyslexia, dyspraxia)	'Additionality' Dyslexia targeted only (or can be inferred to be dyslexia specific support)
Needs Assessment (also known as Study Aids and Study Strategies Assessment) (green)	Encourage disclosure on application Meeting with disability support officer to discuss specific needs		
Dyslexia Assessment (purple)			Screening process is available
In class adaptations in seminars/lectures (green)	Note takers		
Amanuensis (green)			

Proofreading (green)			
Specialist 1-1 support (purple)		Provision for study skills support for students with SpLDs but no detail of what this is.	
Mentoring (green)	Peer support scheme but again no real details of what this is		
Specialist Equipment (red)	Extensive IT facilities Specialist software available e.g. for those visually impaired/blind	Specialist software but no e.g. or details of what this might be	
Exams (green)		Exam 'support' but need formal report and recs	
Auxiliary (orange)	Student services centre Disabled student support For students with SpLDs (such as dyslexia) Mental health difficulties (such as anxiety) Medical conditions (such as epilepsy, arthritis) Deaf and hard of hearing students Blind and partially sighted students		



HEI 05

Green: Generic Study Skills Support (all disabilities/learning difficulties)

Purple: Dyslexia Specific

Red: Assistive technology

Orange: Auxiliary (relevant but not directly related to learning)

Available for  Category of Information 	Generic: All disabilities/learning difficulties (including dyslexia)	SpLDs (inc: autistic SD, dyslexia, dyspraxia)	'Additionality' Dyslexia targeted only (or can be inferred to be dyslexia specific support)
Needs Assessment (also known as Study Aids and Study Strategies Assessment) (green)			
Dyslexia Assessment (purple)		Screening is available followed by reference to an Ed Psych. (dyslexia, dyspraxia and dyscalculia mentioned specifically here)Opps for screening are included in introductory lectures at the beginning of semester one and links to an online questionnaire are shared.	Service is offered to at the Uni for full assessment for application for exam concessions etc. to be considered

In class adaptations in seminars/lectures (green)	<p>There is reference that ‘adjustments’ to teaching methods and materials can be made, specifically:</p> <p>Copies of presentations/overheads in advance</p> <p>Outline of lecture notes before the lecture</p> <p>Sensitive feedback on written work (out and inside class)</p> <p>Note takers in lectures</p> <p>Notes in accessible formats. E.g. large print, electronic)</p> <p>Making adjustment to delivery methods to accommodate different needs (but no info or examples of what this might be and how it would work in practice for a student)</p>		
Amanuensis (green)			
Proofreading (green)			
Specialist 1-1 support (purple)			
Mentoring (green)	Study coaches available one-to-one or small groups (generic study skills only)		
Specialist Equipment (red)	<p>Loan of IT Equipment</p> <p>Digital Voice Recorders</p> <p>Audio Aids</p>	Assistive software such as voice recognition software with equipment to support its use	
Exams (green)	<p>Extra Time</p> <p>Note Taker/scribe/reader</p> <p>‘adjustments’ mentioned vaguely but no examples</p> <p>Specialist equipment</p> <p>Different forms of assessment may be available</p>		
Auxiliary (orange)	<p>‘The Disability Service@</p> <p>One to one and group study skills sessions – for generic study skills advice in the form of clinics (specifically tailored sessions to meet individual needs) and workshops (general study skills</p>		

	<p>sessions covering set themes). Workshop sessions are as follows (with supporting workshop packs):</p> <p>Managing your time</p> <p>Getting the Most out of your lectures</p> <p>Note-taking skills</p> <p>Dealing with challenging situations</p> <p>Designing effective presentations</p> <p>Delivering presentations setting goals for success</p> <p>Action planning and SMARTs</p> <p>Planning exam revision</p> <p>Exam revision strategies</p> <p>Writing essays in exam conditions</p> <p>Using marker feedback</p> <p>My feedback says....</p> <p>Reflective practice</p> <p>Using theories and sources in reflection</p> <p>Reflective writing in assignments</p> <p>Effective reading strategies</p> <p>Reading journal articles critically</p> <p>Speed-reading strategy</p> <p>What is critical analysis?</p> <p>Critical analysis in writing</p> <p>Using sources in assignments</p> <p>Using internet sources</p> <p>Understanding essay questions and assignment briefs</p> <p>Planning your assignment</p> <p>Drafting and editing your assignments</p> <p>Writing in an academic style</p> <p>Writing introductions and conclusions</p> <p>Structuring written assignments</p> <p>Developing an argument in writing</p> <p>Effective report writing</p> <p>Improving lab report writing</p> <p>Writing a literature review</p> <p>Reviewing literature for dissertations</p> <p>Managing your final year project writing up your dissertation</p>		
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	<p>Common grammar mistakes Getting punctuation right Citing, referencing and avoiding plagiarism Proofing your own work</p> <p>Support workers to assist in labs or other academic situations 24 hour care Support for those with mental health issues, deaf or hearing impaired and blind or partially sighted.</p>		
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HEI 06

Green: Generic Study Skills Support (all disabilities/learning difficulties)

Purple: Dyslexia Specific

Red: Assistive technology

Orange: Auxiliary (relevant but not directly related to learning)

Available for  Category of Information 	Generic: All disabilities/learning difficulties (including dyslexia)	SpLDs (inc: autistic SD, dyslexia, dyspraxia)	'Additionality' Dyslexia targeted only (or can be inferred to be dyslexia specific support)
Needs Assessment (also known as Study Aids and Study Strategies Assessment) (green)	Self-assessment form can be completed by students and submitted Study support advice and signposting to how form can be completed/accessed		
Dyslexia Assessment (purple)			
In class adaptations in seminars/lectures (green)			
Amanuensis			

(green)			
Proofreading (green)			
Specialist 1-1 support (purple)	General study skills support available		'Specialist' study skills tutor – planning and writing essays, grammar, spelling but no mention of specific strategies that are used
Mentoring (green)			
Specialist Equipment (red)	Digital recorder Specialist software		
Exams (green)	Extra time if formal report is evident		
Auxiliary (orange)		FAQs sheet – support not arranged automatically for any SpLDs – advised to apply to DSA and complete self-assessment form.	

HEI 07

Colour codes were attached to categorise the data as follows:

Green: Generic Study Skills Support (all disabilities/learning difficulties)

Purple: Dyslexia Specific

Red: Assistive technology

Orange: Auxiliary (relevant but not directly related to learning)

NOTE: Called specific learning differences throughout their website

Available for ➡ Category of Information ↓	Generic: All disabilities/learning difficulties (including dyslexia)	SpLDs (inc: autistic SD, dyslexia, dyspraxia)	'Additionality' Dyslexia targeted only (or can be inferred to be dyslexia specific support)
Needs Assessment (also known as Study Aids and Study Strategies Assessment) (green)			
Dyslexia Assessment (purple)			Can be accessed via the DAS team Offer information about dyslexia and screening sessions which are offered

In class adaptations in seminars/lectures (green)			
Amanuensis (green)			
Proofreading (green)			
Specialist 1-1 support (purple)			
Mentoring (green)			
Specialist Equipment (red)	Assistive technology Voice recognition software Text help software Mind mapping software digital recorders electronic dictionaries and thesaurus		
Exams (green)			
Auxiliary (orange)	Disability Advice Support Service Team Each faculty has a disability co-ordination to provide advice and guidance on available support	Useful information sheets on what dyslexia, dyscalculia and dyspraxia are and how a student might identify them	

HEI 08

Colour codes were attached to categorise the data as follows:

Green: Generic Study Skills Support (all disabilities/learning difficulties)



Purple: Dyslexia Specific

Red: Assistive technology

Orange: Auxiliary (relevant but not directly related to learning)

Note: Disabled and Dyslexic Students is the tag line for all their disability information pages, which is an interesting delineation to make IMO.

Note: this is the worst one for level of information provided

Available for  Category of Information 	Generic: All disabilities/learning difficulties (including dyslexia)	SpLDs (inc: autistic SD, dyslexia, dyspraxia)	'Additionality' Dyslexia targeted only (or can be inferred to be dyslexia specific support)
Needs Assessment (also known as Study Aids and Study Strategies Assessment) (green)			
Dyslexia Assessment (purple)	Offer a screening service to establish learner needs/problems and which can indicate a specific profile of dyslexia		May advise a full dyslexia assessment as this is needed to gain access to full support – but no indication if this is offered on site

In class adaptations in seminars/lectures (green)	'reasonable' adjustments is listed in website but no specific info or e.g.'s		
Amanuensis (green)			
Proofreading (green)			
Specialist 1-1 support (purple)			
Mentoring (green)			
Specialist Equipment (red)	In the library there are scanners, text speak, braille printers as bookable units/spaces		
Exams (green)	Exam arrangements and other 'reasonable' adjustments can be made		
Auxiliary (orange)	Subject Librarian to help with research Advised to drop in to make appointment with disability adviser		

HEI 09



Colour codes were attached to categorise the data as follows:

Green: Generic Study Skills Support (all disabilities/learning difficulties)

Purple: Dyslexia Specific

Red: Assistive technology

Orange: Auxiliary (relevant but not directly related to learning)

Available for  Category of Information 	Generic: All disabilities/learning difficulties (including dyslexia)	SpLDs (inc: autistic SD, dyslexia, dyspraxia)	'Additionality' Dyslexia targeted only (or can be inferred to be dyslexia specific support)
Needs Assessment (also known as Study Aids and Study Strategies Assessment) (green)	A general needs assessment is offered to all students		
Dyslexia Assessment (purple)	Students are advised to get any full psych assessment done of needs (including dyslexia) BEFORE enrolling to the programme (which will lead to support being arranged once enrolled)		Dyslexia support team will advise how students can access and full psych assessment but don't offer them on campus
In class adaptations in seminars/lectures (green)	Extra time to complete activities		

Amanuensis (green)			
Proofreading (green)			
Specialist 1-1 support (purple)			<p>‘Specialist support is provided by e.g. a dyslexia specialist’ DQ in:</p> <ul style="list-style-type: none"> developing writing skills individual coping strategies drop in sessions writing assignments time management Organisational skills development Preparing presentations Essay structuring techniques exam preparation
Mentoring (green)			
Specialist Equipment (red)	Computers, specialist software, digital voice recorders		
Exams (green)			Extra time
Auxiliary (orange)	<p>University disability services will arrange for assessments for disabled students once the funding body can confirm funding, a pre-assessment of needs is then completed and a visit to the centre for assessment organised. Reference to: sensory impairment</p> <ul style="list-style-type: none"> Physical impairment A disabling mental condition Mental health difficulties Specific learning difficulties 		Enhanced library services for learners with dyslexia is indicated in the web information

	Assessment of needs will then be completed Reports from needs assessments and psych reports are distributed to appropriate academic/teaching staff with the permission of the students		
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HEI 10



Colour codes were attached to categorise the data as follows:

Green: Generic Study Skills Support (all disabilities/learning difficulties)

Purple: Dyslexia Specific

Red: Assistive technology

Orange: Auxiliary (relevant but not directly related to learning)

Available for  Category of Information 	Generic: All disabilities/learning difficulties (including dyslexia)	SpLDs (inc: autistic SD, dyslexia, dyspraxia)	'Additionality' Dyslexia targeted only (or can be inferred to be dyslexia specific support)
Needs Assessment (also known as Study Aids and Study Strategies Assessment) (green)	Access to a needs assessment via the 'assessment centre'		
Dyslexia Assessment (purple)			Full assessment This is offered on campus
In class adaptations in seminars/lectures (green)	Note taking Reading help in class if needed Sign language/interpreter		
Amanuensis			

(green)			
Proofreading (green)			
Specialist 1-1 support (purple)	Mentor, note taker, deaf support, mobility assistance	Right hand column can go in here too for SpLDs but the info is very dyslexia focused, some will be useful to learners with other SpLDs	<p>Specialist Dyslexia tuition following production of a full assessment report. Document on the web 'specialist study skills tuition and support for students with SpLDs such as dyslexia' includes what is available to students:</p> <p>Strategies for organisation and time management Improving literacy skills Develop reading and proof reading skills Improve research skills Planning and structuring reports</p> <p>All available weekly/fortnightly as needed Aims and targets developed at first session which are then tracked regularly (ILP process) Example is provided of how a student with e.g. dyslexia (this is the specific example used) might plan for coping with the university year.. they are called 'a year in the life of' useful month by month guide with examples of the specific activities the students can engage in, this is all with a specialist tutor, practical strategies are listed, such as:</p> <p>using a time planner note taking strategies for lectures using templates and writing frames to structure essay plans mind mapping, paired proof reading for spelling for punctuation, grammar developing multi-sensory strategies to cope with course related spellings understanding and learning new academic language help with preparing final drafts of assignments help to check that assessment criteria is being met and that students are using accepted referencing and citation conventions</p>

			memory development strategies examination techniques extended support via email and phone is offered
Mentoring (green)	Specialist mentors to manage anxiety and to help students manage uni life, coaching in; Organisation and time management Presentation skills Academic stress management Enhancing social skills and confidence Increase assertiveness Develop strategies to reduce procrastination Weekly if needed But need evidence formal report of disability before this can be accessed.		
Specialist Equipment (red)	Digital voice recorders Specialist software		Extra time Amanuensis reader/writer (if report in place)
Exams (green)			
Auxiliary (orange)	Service provided to students who are Visually impaired Hearing impaired Wheelchair users Mobility difficulties medical conditions Autistic spectrum disorders Mental health service users People with SpLDs (for example dyslexia) This list is not exhaustive: Getting evidence of disability is managed here		

	Recommendations for support for your course is distributed from central disability services.		
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HEI 11

Colour codes were attached to categorise the data as follows:



Green: Generic Study Skills Support (all disabilities/learning difficulties)

Purple: Dyslexia Specific

Red: Assistive technology

Orange: Auxiliary (relevant but not directly related to learning)

Notes: there is a public letter on the web to students with dyslexia which provides information on how to access support

Available for  Category of Information 	Generic: All disabilities/learning difficulties (including dyslexia)	SpLDs (inc: autistic SD, dyslexia, dyspraxia)	'Additionality' Dyslexia targeted only (or can be inferred to be dyslexia specific support)
Needs Assessment (also known as Study Aids and Study Strategies Assessment) (green)	Study needs assessment is offered which is then developed into an individual learning plan (ILP) this will identify needs with equipment, software, study skills, mentoring support, IT training and additional travel costs and personal care. This is then forwarded by SLDD co-ordinator to the appropriate academic staff		
Dyslexia Assessment (purple)		Specific refs to dyslexia, dyscalculia and other SpLDs. Contact the Disability Advice Team which may lead to referral to an Ed Psych for full assessment. All asked to complete an 'educational psychologist	

		questionnaire' and sample of free writing. The outcome of this may mean they are referred for a full assessment but not what happens after this	
In class adaptations in seminars/lectures (green)	Accessible curriculum??!! But not what this is??? Large print books and journals		Colored paper on request
Amanuensis (green)			
Proofreading (green)			
Specialist 1-1 support (purple)	General study skills support is offered whilst waiting for the full assessment		
Mentoring (green)			
Specialist Equipment (red)	Dictaphone loans Specialist software in the library		
Exams (green)			Alternative assessment methods can be made available Exam 'support'
Auxiliary (orange)	Welcomes disclosure of a disability recommend speaking to the disability advice team there is a checklist for disabled students which signposts to general information and advice e.g funding.	Link from the disability checklist Asperger's and autism web page is there with the same sort of information and in the dyslexia/dyscalculia one	Link from the disability checklist if you think you may be dyslexic, have you enquired about diagnostic testing? This links to dyslexia/dyspraxia information page: £50 for photocopying Financial help Access to disability co-ordinator designated support from the disability team Priority access to learning fund Large print books/journals

Appendix D Summary table showing incidences/patters of support across all 11 sample HEIs

Category of Support for Learners with Dyslexia	Institution/s
Assessment	
General Needs Assessment	HEI 01, HEI 02, HEI 04, HEI 06, HEI 09, HEI 10, HEI 11 (7/11)
Dyslexia Assessment/Screening	HEI 05, HEI 03, HEI 04, HEI 08, HEI 07, HEI 10, HEI 11 (7/11)
Full Psychological Assessment for Dyslexia on campus	HEI 01, HEI 03, HEI 05, HEI 07, HEI 08, HEI 09, HEI 10, HEI 11 (8/11)
Support in Lectures/Seminars	
In class adaptations to curriculum delivery	HEI 05, HEI 08, HEI 09, HEI 11 (4/11)
In class note takers/assistants	HEI 01, HEI 02, HEI 04, HEI 05, HEI 10 (5/11)
In class adaptations to materials	HEI 01, HEI 05, HEI 011 (3/11)
Additional Support	
Generic study skills support	HEI 01, HEI 05, HEI 06, HEI 11 (4/11)
Specialist tuition (SpLDS)	HEI 02, HEI 03, HEI 04, HEI 06, HEI 09, HEI 10 (6/11)
Specific reference to strategies that support dyslexic learning style, e.g. multi-sensory teaching/learning, structured language and literacy development tasks/ activities for short-term memory development etc.	HEI 01, HEI 10, (2/11)
IT Equipment and Assistive Technology	
General such as PC loans and digital voice recorders	All eleven HEIs (11/11)

Specific to SpLDs such as speech to text software	HEI 03, HEI 05, HEI 07 (3/11)
Mentoring and Coaching	
Generic	HEI 01, HEI 04, HEI 05, HEI 10 (4/11)
Focused on supporting the dyslexic learner	HEI 01 (1/11)
Exam Support	
	All 11 HEIs But information varies, all learners with dyslexia must have a full assessment report with recommendations to have any requests implemented. (11/11)
Central Disability Service	All
Downloadable Study Skills Packages (generic)	HEI 03, HEI 05 (2/11)
Enhanced Library Services	HEI 08, HEI 09 (2/11)

Appendix E Detailed data analysis by institution

1. HEI 01

Assessment	In Class Adaptations/ Support	Additional Learning Support (including mentoring and coaching)	Assistive Technology and ICT	Examination Support	General Disability Support
Needs assessment available for IT and Assistive Technology	Note takers Lectures may be recorded	range of 'generic' and 'specialist' additional learning support systems are available	Is available – e.g voice activated dictation software, recording devices	Is available.	Central Disability Service

This institution offers a range of additional learning support for its students whom have a learning disability (identified or suspected). *Additional learning support* can be defined as extra help or support provided so that children and/or young people can get the most out of their education and reach their fullest potential; a person is said to have additional support needs if they need more, or different support to what is normally provided to other children/young people of the same age. (Enquire, 2014; Powell and Tummons, 2011) It is clear from the data for this institution that additional learning support external to the lecture or seminar environment is central to the process of improving learning opportunities, rather than any modifications to curriculum design or delivery methods being employed by the tutors. For example, lectures and seminars may be recorded, a note taker can be utilised for individual learners if necessary; neither of which will necessarily promote access to learning for learners with dyslexia. What can be concluded from this web data is that there is a focus on utilising as much support outside of the classroom as possible rather than suggesting that what happens in the lecture/seminar situation should be a focus for criticism or change; even if this may provide better in class learning opportunities for learners identified as having dyslexia. So what is this support which is available outside of the classroom? There is information indicating that 'generic' and 'specialist' additional learning support is available for students with dyslexia in order to progress their academic development; however, the information on the webpages does not indicate specifically which aspects of support may be more beneficial to learners with dyslexia over other strategies. Given the cross-over and 'non-specificity' of some of the information in the website it is difficult to establish if some of the support mechanisms in place *are* clearly more focused upon and utilised by both staff and students alike for learners whom have a diagnosis of dyslexia; for example, The '60 Second Impressions' video clip featuring a student with dyslexia also does not indicate anything beyond the 'proof reading' of work are being advised on 'the best reading' to complete, can we conclude that this service is available to all students and is in fact not 'specialist intervention'? Further to this are all of the students accessing the support to develop 'listening skills and ways of sustaining concentration' diagnosed with dyslexia or not? This could certainly be considered to be a type of focused intervention that would assist the learner with dyslexia (Lee, 2002). It is clear that there is some provision for support for learners with dyslexia that takes place outside of the normal classroom environment and that some of this may be more beneficial in addressing the weak modality areas that are commonly seen in dyslexia than others. It is also true that some of these additional support activities may develop learning skills that can be transferred into the lecture/seminar environment thus potentially increasing accessibility to the curriculum. Assistive technology (AT) is available to students following a needs assessment, this AT is

available to all students deemed to have an identified need, the website information indicates that specific information as to the available software which may be more appropriate to a learner with dyslexia over other software (for example, types of voice activated dictation software) can be included as part of this needs assessment. Exams concessions are available but students must have a dyslexia assessment in place in order to access these, there is no indication of the form that these concessions might take.

2. HEI 02

Assessment	In Class Adaptations/Support	Additional Learning Support (including mentoring and coaching)	Assistive Technology and ICT	Examination Support	General Disability Support
General study skills assessment	Communication support Note taking	Specialist one-to-one dyslexia tuition Small group workshops	Equipment loan facility	Is available	Disability Support Service

As with most other institutions in this survey the emphasis on support for learners with a specific learning difference is carried out as additional learning support (so outside of the formal lecture/seminar teaching situation). There is nothing referring to other in class adaptations, e.g. modifications to curriculum delivery. There is no identifiable information with regard to access to screening or assessment for dyslexia, though this may be something that the disability team would advise about as there are one to one appointments available that the students are encouraged to make.

3. HEI 03

Assessment	In Class Adaptations/Support	Additional Learning Support (including mentoring and coaching)	Assistive Technology and ICT	Examination Support	General Disability Support
Dyslexia short assessment Dyslexia Screening Full psychological assessment	Copies of lecture notes and hand outs provided a week before the session	general study skills support	Text to speech software, Magnification software, Digital voice recorders	Amanuensis Reader Rest breaks Additional time Smaller exam venue Adjustable chair Alternative assessment format Personal computer	Central Disability Service

The information on this institution's website indicated that there is a well-rounded support package (within the additional learning support model again) for students with disabilities including dyslexia; with assessment, out of class 'specialist' support and the exam support available documented in some detail. The arrangements for an alternative assessment format are not common throughout

other website information, through this could be deemed to be a 'reasonable adjustment' that other institutions may offer but do not specify. There is nothing with reference to other in class adaptations, e.g. modifications to curriculum delivery.

Specific to learners with dyslexia, the website suggests that there is specialist study skills support offered which has been designed to meet the needs of a learner with dyslexia but which is not subject (discipline) based such as structuring assignments, essay writing and exam technique. However, this is not specified as 'specialist tuition' does not make reference to any of the specialist approaches to teaching such as structured approaches to language development, multi-sensory strategies for learning or short term memory development which one would normally expect to be apparent in a programme specifically designed for a learner with a diagnosis of dyslexia (Towend, 2000; Thompson 1990) therefore it could be argued that this input is more generic than specialist. A range of downloadable student hand outs to support learning are also available, but again, in a textual format only so it is arguable how useful/accessible to a learner with dyslexia these could be.

4. HEI 04

Assessment	In Class Adaptations/ Support	Additional Learning Support (including mentoring and coaching)	Assistive Technology and ICT	Examination Support	General Disability Support
Dyslexia screening	note takers	Study skills support Peer support scheme	Extensive facilities Specialist software Assistive technology	Is available	Student Services Centre Disability Support Officer

Again, it appears that the majority of support focuses around the additional learning support model and is arranged outside of the formal lecture/seminar setting, this includes study skills support for those with dyslexia (SpLDs) but no detail of what this is, who delivers it, the content delivery methods etc. A service is available for those who believe they may be dyslexic but there is no additional information on how this might be progressed to a full assessment by a specialist or Educational Psychologist; it could be assumed that this level of detail will be gained through the appointments with the disability advisers that are encouraged. There other facilities available (such as IT) are in line with the practice that is evident in the majority of the institutions surveyed, as is much of the auxiliary support offered.

5. HEI 05

Assessment	In Class Adaptations/ Support	Additional Learning Support (including mentoring and coaching)	Assistive Technology and ICT	Examination Support	General Disability Support
Dyslexia screening Psychological assessment	Adjustments to teaching methods and materials can be made Copies of presentations/overheads in advance Online lecture notes before the lecture Sensitive feedback on written work Note takers in lectures	Sensitive feedback on written work Study coaches One to one and group study skills sessions	Digital Voice Recorders Assistive software e.g. voice recognition software Equipment	Extra time Note taker/scribe Reader Other 'adjustments'	Central Disability Service

This institution appears to offer a good all round support package from assessment through to additional learning support based on the website data available. It also states that adaptations are also being made at lecture/seminar level to make the curriculum accessible and provides examples of how adjustments can be made to accommodate different needs, though these examples do focus upon the use of note takers, making materials available in accessible formats etc. rather than any specific examples of how delivery of curriculum content is (or could be) adjusted to meet different leaning styles/preferences (e.g. multi-sensory) which may open access to learning further for a student with a diagnosis of dyslexia. Extensive downloadable support packages are available; the content of these is very good, however these are not in a textual format only so may prove relatively inaccessible for a learner with dyslexia. Study skills support is available but appears to be standard delivery; there is no mention of the use of specialist tutors. Study coaches are available for one-to-one or small group sessions to support generic study skills development; study skills advice is provided in the form of clinics (specifically tailored sessions to meet individual needs) and workshops (general study skills sessions covering set themes).

6. HEI 06

Assessment	In Class Adaptations /Support	Additional Learning Support (including mentoring and coaching)	Assistive Technology and ICT	Examination Support	General Disability Support
General learner self-assessment questionnaire	No information	One-to-one study skills support Access to a specialist study skills tutor	Specialist equipment and software Digital voice recorders	Extra time	Study support advice and signposting service

As with most other institutions in this survey the emphasis is on support for learners with a specific learning difference is as additional learning support outside of the formal lecture/seminar teaching situation. There is no identifiable information following the search string completed, with regard to access to screening or assessment for dyslexia, though this may be something that the disability team could advise about at the one to one appointments that the students are encouraged to make.

There is one to one general study skills support available to all learners but no information on how this is set up or accessed. There is reference to a specialist study skills tutor who will assist learners who have dyslexia planning and writing essays, grammar, spelling but no mention of specific strategies or approaches that are used (no reference, for example, to multi-sensory spelling programmes or short-term memory development). However, the information from this website is not detailed enough to draw any significant conclusions as to the level and type of support provided to learners with dyslexia.

7. HEI 07

Assessment	In Class Adaptations /Support	Additional Learning Support (including mentoring and coaching)	Assistive Technology and ICT	Examination Support	General Disability Support
Dyslexia Screening	No Information Available	No information available	Specialist equipment Assistive technology Recognition software Text help software	No information available	Disability Advice Support Service Team Disability co-ordination officer

What can be inferred from the data is that there is no evidence that any class support, such as a note taker or reader, is available to learners with an identified learning difficulty and/or disability. There is also no reference to any modifications/adaptations to the content delivery method being employed by any tutors in lecture/seminars. In terms of additional learning support there is no indication of any specialist dyslexia tuition or support, mentoring, amanuensis, readers, proof readers or a proofreading service. Assistive technology is available such as mind mapping software, digital voice recorders and electronic dictionaries/thesaurus if a full disability assessment is in place. A dyslexia

screening process is available but there is no further information beyond this. There are useful information sheets on the website linked to this screening process webpage re: what dyspraxia, dyslexia and dyscalculia are and how a student might identify them but nothing beyond this.

The website information is limited so the information above may not be a complete reflection of what is available to support learners with dyslexia. However, in terms of collecting the information the search strategy and key words adopted were the same as the other web searches.

8. HEI 08

Assessment	In Class Adaptations/ Support	Additional Learning Support (including mentoring and coaching)	Assistive Technology and ICT	Examination Support	General Disability Support
Screening service m May advise a full dyslexia assessment	'reasonable' adjustments' can be made	No information	Scanners Text speak Braille printers Bookable units/spaces available	Are available 'Reasonable Adjustments'	Disability Adviser

The information on this website was very limited so it was problematic to try and draw any solid conclusions on what is offered. It is inferred that 'full support' is available post dyslexia testing but there is no advice as to what this is, how it is organised and how it delivered and by whom, there is also no information as to how the dyslexia assessment is organised and how the support is put in place following this. In class Reasonable adjustments are referred to in the website information but there are no specific examples of what this might be; this felt more like an effort to conform to legislative requirements (The Equality Act 2010) rather than any real action to make the curriculum more accessible, however this is inference only. There is a dedicated subject Librarian to help with research, this is in the students with learning disabilities section of the website with specific reference to dyslexia.

9. HEI 09

Assessment	In Class Adaptations/ Support	Additional Learning Support (including mentoring and coaching)	Assistive Technology and ICT	Examination Support	General Disability Support
General needs assessment Full assessment can be obtained but not offered on campus.	Extra time to complete activities	Specialist support provided by a dyslexia specialist	Computers Specialist software Digital voice recorders	Extra time	Dyslexia Support Team

This institution prefers learners to have full psychological assessments completed and in place before students enrol to the programme, this is perhaps to ensure that the correct support can be put in place quickly. It will refer students for a full psychological assessment of dyslexia but it does not provide this service itself. In class adaptation does not seem to be a focus for this organisation, though extra time is provided for the completion of in class activities there is no reference to any adaptations to curriculum delivery etc. as with most other institutions and also like most of the other institutions support is primarily provided via the additional support model. Small group and one-to-one sessions are provided by a dyslexia specialist, these include developing writing skills; individual coping strategies; drop in sessions ; writing assignments ; time management, organisational skills development, preparing presentations, essay structuring techniques and exam preparation. However, there is no indication of how these are delivered (e.g. structured language, multi-sensory approaches to spelling). Information to academic staff is managed via the central disability support service who ensure that any needs assessments completed and recommendations from these are distributed to the appropriate people (teachers/academics) but there is no information on how this is monitored or checked with reference to the provision of support.

10. HEI 10

Assessment	In Class Adaptations /Support	Additional Learning Support (including mentoring and coaching)	Assistive Technology and ICT	Examination Support	General Disability Support
Needs Assessment Full Psychological Assessment for Dyslexia	Note taking Reading Signers/ Interpreters Handouts on coloured paper	Note taking One-to-one specialist support for those with a Specific Learning Difficulty Specialist group sessions skills tuition Individual Learning Plans Mentoring Exemplar 'a year in the life of' and other planning/organisational resources Examination techniques	Equipment Digital voice recorders Specialist software	Amanuensis Reader Extra time	Central Disability Service

This website provided comparatively detailed information as to the service which is offered for learners with dyslexia in comparison to others. There is no reference to any modifications/adaptations to the content delivery methods being employed by any tutors in class; this appears to be an emerging pattern. However, this is the only institution which makes specific reference to the use of multi-sensory strategies and developing short term memory in specialist tuition sessions via additional learning support, although this is delivered outside of the lecture/seminar setting it may have a positive influence upon the learners ability to absorb the content delivered in the lectures and seminar sessions, for example, training in increasing the short-term memory capacity is a transferable skill which could increase a dyslexic learner's ability to absorb and process information being delivered by a lecturer in the lecture/seminar situation; (Klein and Krupka 1995) in addition to this; knowing how to apply some multi-sensory strategies to learning, for example, new and discipline relevant spellings will be beneficial both inside and outside of the lecture/seminar situation (Lee, 2002). It could be argued that all study skills developed are transferable into the classroom, but the specialist techniques outlined above will have a positive impact on learning for those with dyslexia and may to some extent be seen to be levelling the playing field in addressing some of the 'learning modality deficits' that are apparent in the dyslexic learner's profile (Klein and Krupka, 1995).

The information regarding the one-to-one additional specialist learning support that students can access is aimed at those with 'specific learning difficulties' however, the content of the majority of the intervention support offered is more focused for a learner who has a dyslexic profile. Learners can access a range of sessions ranging from strategies for organisation and time management; Improving literacy skills; development of reading and proof reading skills; improvement to developing research skills and planning and structuring reports.

An example of 'a year in the life of' is provided as a month by month guide of how a learner with dyslexia may go about being organised and the specific learning activities a student can engage in with a specialist tutor, practical strategies are listed such as: using a time planner; note taking strategies for lectures; using templates and writing frames to structure essay plans mind mapping; paired proof reading for spelling for punctuation, grammar developing multi-sensory strategies to cope with course related spellings; help with preparing final drafts of assignments; memory development strategies and examination techniques. Specialist mentors are available to enable students to manage stress and anxiety, including academic stress management; enhancing social skills and confidence and increasing assertiveness as well as offering generic study skills support such as: organisation and time management; presentation skills; developing strategies to reduce procrastination. This institution does provide targeted additional support and help in developing multi-sensory strategies to assist learning and strategies for memory development as well as a range of other useful study skills.

11. HEI 11

Assessment	In Class Adaptation s/Support	Additional Learning Support (including mentoring and coaching)	Assistive Technology and ICT	Examination Support	General Disability Support
Study needs assessment Psychological Assessment Disabled student checklist	Curriculum will be made accessible Handouts on coloured paper	Individual learning plan Mentoring 'generic' and 'specialist' study skills support Large print books and journals	Dictaphones Specialist software		Disability Advice Team

The information on this institutions website throughout states what is available to learners in terms of assessment and support but there is no substantial information as to how this is implemented or accessed for the learners. For example planning after assessment's are completed for learners who access this generic service but there is no information on how this ILP is developed, who with and how the study skills sessions are organised, is it one-to-one? Is it small group workshops? Who delivers them? The website states that until the full dyslexia assessment is in place generic support is provided as an interim measure, which infers that there is something more specialised after this; but there is no detail as to what this will consist of. The website states that there is designated support for learners with dyslexia but there is no information on how it is delivered and by whom (does the institution employ specialist tutors to work with these learners?). The website claims that it delivers an accessible curriculum in classroom situations, but there is no specific reference to how any modifications/adaptations to the delivery methods are employed by any tutors and for whom, so it is difficult to come to any clear conclusions. What is apparent is that there is no reference to any specific strategies, such as utilising multi-sensory approaches in the classroom or delivering content in a variety of ways that would be deemed to provide better opportunities for learners with a diagnosis of dyslexia to access learning.



A documentary analysis of the support services offered to adult learners with dyslexia in higher education

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A documentary analysis of the support services offered to adult learners with dyslexia in higher education

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ABSTRACT

The National Student Survey (NSS) seeks to measure how 'satisfied' students are with their programmes of study and educational experience. Ongoing NSS data demonstrates that global satisfaction scores are increasing; however, when this is separated into disabled and non-disabled students, downward satisfaction trends for disabled students are apparent. Around half of these students will have dyslexia. This 'snapshot' documentary analysis evaluates the currently publicly available information outlining the support services that are available for students with dyslexia. The survey focuses upon a sample of higher education institutions (HEIs) in England. Findings indicate that there are notable differences in the types and consistency of support offered across the sample institutions. The most frequently used model is that of additional learning support (ALS), where support is provided outside of the usual class contact time. Mentoring provides benefits for students with dyslexia but fewer than half of the institutions surveyed offered this. Subject specialist mentoring is particularly beneficial but there is little evidence of this taking place. There is a level of support in all the institutions that appears to meet the requirements of the Equality Act (2010) but this does not necessarily indicate that dyslexic students are supported in the most effective way.

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Introduction

This cross-sectional documentary analysis of website text taken from a sample of higher education institutions (HEIs) in England aims to provide a 'snapshot' of the generic and specialist support services promoted to students with dyslexia at the time of this survey. It is not intended to give a full and detailed picture of the reality of the student experience in the institutions, but rather is a scoping exercise that endeavours to establish how the support services are advertised, accessed and potentially implemented.

Since the introduction of the National Student Survey (NSS) in 2005 there have been ongoing efforts to improve the quality of the educational experience and outcomes for all students on undergraduate programmes of higher education (HE). The NSS provides students with the opportunity to provide feedback to the providers of their learning experience in order for any suggested changes to be made for subsequent student groups should this be desired (National Student Survey 2013). Although the survey itself is open to many criticisms (Buckley 2011), research has shown that 'student satisfaction scores' are becoming an increasingly important metric in establishing the quality of higher education programmes both internally and for external audiences, and that this data plays an important role in the choices future students make. This includes those with diagnosed learning difficulties and/or disabilities such as dyslexia. There are significant numbers of students on HE

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programmes with identified learning difficulties and/or disabilities, for example in the 2010 NSS data over 15,000 students identified themselves as having a learning disability (Higher Education Funding Council for England 2011). Evidence shows that around 43% of these learners will have a diagnosis of dyslexia (National Union of Students 2013; Richardson and Wydell 2003) and it thus follows that almost 7000 of these students will have dyslexia. It can be assumed that these numbers have increased in proportionate numbers as the student population has grown.

Students with dyslexia demonstrate a year-on-year significant downward trend in course satisfaction scores, as demonstrated in Surridge's (2009) analysis of the 2005–2008 NSS data. More recently, NSS survey time-trial data analysis of outcomes, including all data from 2006 to 2010 (Buckley 2011; Higher Education Funding Council for England 2011), demonstrates that there is consistently less overall satisfaction for learners identifying themselves as having a learning disability than for those who do not. This is a concern because the general trend is for increasingly improved satisfaction scores but when this is disaggregated into disabled and non-disabled student data, those learners who are disabled demonstrate an ongoing downward trend in these scores (in 2006 the global score for those with a learning disability was down by 3.8% in relation to the global satisfaction score, and in 2010 it was down by 4.0%). It can be concluded that the overall upturn in satisfaction figures masks this potentially worrying trend. Students with dyslexia are also likely to withdraw in the first year of their programme of study, citing a lack of support and failure to cope with the demands of the programme as being significant factors (Richardson and Wydell 2003).

The specific aims of this small piece of research are thus to:

Explore and establish the support mechanisms that are offered, via analysis of publically available HEI website information, to adults with a diagnosis of dyslexia on HE programmes.

To provide an insight into how these support mechanisms may be developed to further promote and support opportunities for learning for this particular student population.

Dyslexia

Developmental dyslexia is commonly cited as a 'hidden disability' and literally means 'difficulty with words' (Lee 2002). Dyslexia has been the subject of investigation in the fields of medicine, psychology and education since the late nineteenth century, when Pringle Morgan (1896) could not explain the reading and writing difficulties of an orally bright young man in his classroom who had no observable disabilities. Since then, many theories regarding the causes and indicators of dyslexia have evolved; the vast majority of these are deficit models that attempt to explain the condition from the basis of a deficiency or problem at the biological and/or cognitive functioning level. These deficiencies lead to language processing problems and an observable difficulty with reading, spelling and writing at the behavioural level, as well as other more general issues related to learning and study (Bradley and Bryant 1978). This difficulty can often be unexpected in relation to the subject's more general abilities (Lee 2002). There is no global agreement as to the cause of dyslexia or even how it is defined, but individuals of all ages can demonstrate a cluster or pattern of characteristics that can lead to a diagnosis of dyslexia (Klein and Krupka 1995; Lee 2002; Rice and Brooks 2004). There are many different dimensions to dyslexia; Reid (2017) suggests that it is a multi-faceted specific learning difficulty, which explains why a single universally accepted definition has not yet been achieved. It can be argued, however, that there is some agreement on the grouping of factors that can contribute to dyslexia on which these definitions are based (British Dyslexia Association 2015; Dyslexia Action 2017). Definitions can serve an important function; for many parents and teachers, a label is necessary as it can help to start the support process. For adults with dyslexia, a label can help them to develop self-knowledge of their abilities and issues, and eventually coping strategies (Reid 2017).

The majority of definitions of dyslexia are focused on the characteristics that are seen in children. However, whilst these definitions are useful, dyslexia is a disorder that presents a potentially different pattern of issues in adults and therefore interventions for learning must take account of these differences. The definition of dyslexia below is reflective of these existing

definitions but has also been developed from existing case studies of dyslexia in adults (NRDC, 2004), and from the research and anecdotal experiences that 16 years of assessing for dyslexia and teaching adults with dyslexia in the post-16 sector has provided:

Adults with dyslexia can have a reduced capacity to process and comprehend oral information which comes at speed. Reading can be slow and laborious with persistent difficulties in the application of phonic attack; though good comprehension is often evident. Writing is often disorganised and illogical with incorrect application of syntax and grammar; spelling is often an issue. More generally adults with dyslexia develop strategies which utilise key strengths and which can help to mask areas of weakness; this is called compensation. Attention span can be limited, compounded by reduced short term memory capacity. Some adults with dyslexia have increased right brain function thus non-language based 'knowledge' and non-verbal intelligence is often higher than verbal intelligence on IQ scales. They can be highly intuitive. They often have self-esteem issues, lack confidence and do not cope well in stressful situations. Organisation skills, temporal processing and laterality issues can also be present.

Dyslexia, learning and higher education

There is a school of thought that suggests that the identification of dyslexia within the deficit models proposed has limited and restrictive use (beyond providing a label). They suggest that a much more positive and useful stance, from an educational perspective, is the consideration of dyslexia as a 'specific learning preference'. This indicates that there is a potential for increased opportunities for learning which can be facilitated via adaptations to the way teaching is delivered and how the presentation of learning material is constructed (Klein and Krupka 1995). How well this is transferred to delivery in the HE classroom is something this survey may help to identify. Research shows that the delivery of HE programmes still predominantly follows a traditional lecture and seminar pattern (Fry, Ketteridge, and Marshall 2009) and that around 90% of traditional classroom instruction is geared towards the auditory-verbal learner, which means that most teachers adopt, by accident or design, the left hemisphere (language-based) approach to teaching (Klein and Krupka 1995). This is a concern given that adults with dyslexia do not have a natural preference for language-based learning, often preferring the more right-brained visual or kinaesthetic approaches. It could be suggested that the traditional delivery of learning in HE, whereby large numbers of students are often taught in a large auditorium, is not the easiest teaching and learning environment to adapt. However, it is known that learners with dyslexia can be as successful as other learners provided appropriate support is in place (Dyslexia Action 2013; Richardson and Wydell 2003). As previously indicated the aim of this survey is to help establish what some of these support mechanisms in higher education might be and to evaluate how useful they may be in supporting positive outcomes and a more satisfying learning experience for adult learners with dyslexia.

Many HEIs have some support strategies in place to facilitate access to learning for learners with dyslexia in lecture and seminar situations; for example, tutors may provide materials a week in advance so that the learner can read and absorb them prior to class. Handouts on coloured paper may also be provided in advance or coloured overlays may be provided to stabilise lettering on the page due to magnocellular deficits (Stein 2001). However, beyond this there appears to be little happening to make learning more accessible for learners with dyslexia in the lecture and seminar situation (Klein and Krupka 1995). Evidence suggests that the integrated use of the four modalities of verbal, auditory, visual and kinaesthetic channels, also known as multi-sensory approaches to teaching and learning (MST and MSL), are not widely practised. If they were, this would enable the session content to be more readily accessible to learners with dyslexia as simultaneous use of the four learning modalities has been seen to promote their sustained learning significantly (Dyslexia Institute 1998). These approaches to teaching and learning may not be being practised for a number of reasons; a lack of staff development is one example. Best practice in facilitating learning for dyslexic adults tells us that tutors should be provided with training on how to make learning

accessible at the design stage, explaining the concepts of MST and MSL and how they can be incorporated into all types of teaching and curriculum delivery, the benefits they can bring to all learners and, finally, how to choose and use resources that can support learning for all (Klein and Krupka 1995; Lee 2002; NRDC, 2004; Reid 2017).

Many HEIs offer additional learning support (ALS) to students in need of academic support. This may be in the form of study skills support and library skills support (Fry, Ketteridge, and Marshall 2009). What is not known is the extent to which the support will be appropriate to meet the needs of adult learners with dyslexia. This will depend to some extent on the severity of the dyslexia and the skills of the tutor. According to Lee (2002), an aware tutor will be able to meet with the student and evaluate (via the reading of provided psychological reports, by implementation and analysis of a diagnostic assessment or by discussion with the learner) the severity of the problem and then be able to put in place an appropriate learning plan. Lee suggests that, for a mildly dyslexic learner, a support package may include a multi-sensory spelling programme that will enable them to learn key words associated with the discipline area. For moderate dyslexia, Lee suggests offering a multi-sensory spelling programme alongside the use of a structured language program, as such as Alpha to Omega, in order to develop reading and spelling skills in a logical and sequential way (Hornsby, Shear, and Pool 1974). This can be a fast or slower track programme according to identified need. Finally, for severely dyslexic learners all of the above should be utilised, but the programme of structured language development should be applied in a rigid way. In addition, exercises and activities to increase short-term memory capacity should be used where possible. Learners with dyslexia may also need support for organising note taking, organising handouts in class, work planning to meet assignment deadlines, proof-reading and organising writing; these elements should also form part of the overall support package (Klein and Krupka 1995).

Methodology

The research used a cross-sectional design, and the methodology was qualitative as the purpose was to gain meaning from the textual data (including visual/audio information) provided in the website texts. The purpose of exploring the sample website texts was to identify key emerging patterns or themes for discussion via a process of thematic content analysis. It was intended to identify 'the what' of the given situation, and the discussion is grounded in the identification of the existing differences in the advertised support offered between the sample institutions at one set point in time. It was not interested in outcomes or impact, as is typical of this approach to research design (De Vaus 2001). The data collection method was a survey of the sample websites. The sampling process is explained below; however, it is important to make clear at this point that this is, in effect, a case study of a sample of websites and, though conclusions and some recommendations for future practice are drawn from it, it is not intended to represent a generalisable picture of current activities across HEIs.

Sampling

A non-random and systematic sampling strategy was used, which followed a sequential procedure to identify the cases or institutions that were to be included in the survey (Arthur, et al. 2012; Cohen, et al. 2011; Newby 2010). The first stage was the identification of the target population; thus an initial scoping exercise was carried out to establish the number of universities in England, of which there are currently 111 (About History 2015; A History of the World 2015). The second stage was to provide each 'unit' with an identifier to assist with the initial sorting and categorisation during the process of selecting the sample. These identifiers or labels were university types and timescales of formation as indicated in Table 1.

The third stage was to select the sample from these institutions. The potential universities for inclusion were split into two representative groups: pre-1992 universities (50 institutions) and post-1992 universities (61 institutions). This separation of pre- and post-1992 institutions was chosen as

Table 1. Higher education institutions showing type, formation date and number.

Type	Formation date	Number of institutions in England
Ancient universities	(founded 1167–1209)	2
Eighteenth- and nineteenth-century universities	(founded 1832–1836)	2
London Federation of Universities	(founded 1836–1971)	13
Civic universities (which include those known as 'red brick universities')	(founded 1900–1957)	Red brick 6 Non-red brick 6
Plate glass universities	(founded 1961–1969)	23
Intermediate-era universities	(founded 1969–1984)	2
New universities	(founded 1992–2013)	61

Source: A History of the World (2015).

this was when the more 'vocationally orientated' polytechnics were re-categorised as universities as a result of the Further and Higher Education Act 1992. This arguably brought them in line with the previously established universities and also widened access to university education to a broader student population. This separation enabled the exploration and evaluation of data from what some may still consider to be two distinct sets of 'institution types' and 'student populations'. This separation provided a pivot for some comparative analysis to be undertaken. It is acknowledged that this process of sampling did not provide proportional representation for all universities in the pre-1992 representative group; however, because each university type is represented in the sample and, as indicated previously, the proposed findings are not intended to be representative of all universities in the sector, a different sample may have led to different findings.

The fourth stage was to categorise the institutions again, but this time by geographical location. This was to ensure that all large geographical regions would be represented in the final case study sample in order to provide as broad a picture as possible of potential activity in this area across the HEI sector. The final stage was to determine the size of the sample to ensure representation was included from across the range. Ten per cent, or 11 institutions in total, were included in the survey. This 10% sample provided opportunities to gain a qualitative feel of what was happening across the sector and also kept the scale of the survey and the subsequent documentary analysis manageable. The units (or institutions), because of the non-random approach to sampling, were given proportionate representation; that is, given that the number of new universities is slightly higher, six of these were included and five of the pre-1992 universities were included (50:61 and 5:6). This cross-sample was selected to add reliability to any generalisations drawn or concluded from the data discussion as far as is possible with a sampling strategy of this nature, because generalisation in this case had to be based on a judgement that relied upon what was known about how well the non-sampled cases match the ones in the sample (Gorard 2014). The website surveys were completed over a two-week period in November 2014, with the first institution (HEI1) being utilised as a pilot. The pilot assisted in the development of a transparent and systematic approach to the planned data collection, which helped to create a coherent, clear and logical discussion and analysis of the data findings and add credence to any conclusions drawn; this is arguably an indicator of good quality in qualitative research (Anfara, Brown, and Mangione 2002). The final sample is indicated in Table 2. Institutions have been anonymised because naming the institutions was not necessary to the purpose of the research.

Data collection

The data extraction template used included all relevant areas of interest, for example support information for applicants and current students, the role of any central institutional disability services, access to dyslexia screening and assessment. This worked effectively in structuring the website searches and was replicated for each search. The template was used primarily as an organisational aid to enable the

Table 2. Sample of HEIs showing type and regional area.

Higher education institution	Type	Location
HEI1	Pre-1992 (Ancient)	South
HEI2	Pre-1992 (eighteenth/nineteenth century)	North East
HEI3	Pre-1992 (London Federation)	London
HEI4	Pre-1992 (civic, red brick)	North West
HEI5	Pre-1992 (plate glass)	Midlands
HEI6	Post-1992 (new)	South
HEI7	Post-1992 (new)	Midlands
HEI8	Post-1992 (new)	South
HEI9	Post-1992 (new)	Midlands
HEI10	Post-1992 (new)	North East
HEI11	Post-1992 (new)	North West

collection of electronic links (structured through a number of the website pages) to be held in one place in order to establish an overview of the information and to begin to establish a method of categorising the data in order to plan the data analysis. The next stage was to explore the web text the links led to. At this point, in order to ensure that valuable data was not missed, all of the pages and subpages of the website were printed and stored for later analysis.

Data analysis

The data collected from the websites was in textual format and therefore content analysis was selected as the initial approach to analysis (Braun 2006; Newby 2010). To assist with this, a set of six criteria and associated sub-questions were developed as part of the process of organising the website data into content categories using a numerical and alphabetical process. Textual information that met one or more of the criteria was tagged 'one'; text that did not include any information relevant to any of the criteria was tagged 'zero' and removed from the scope of the survey. The next stage was organising the remaining units of data for further coding and tagging using a sequential numerical method (1–6 for the criterion) and an alphabetical method for questions related to that criteria (1a, b, c; 2a, b, c and so on), as indicated in Table 3.

This stage was completed on an institution by institution basis and achieved using the subcategory questions listed under each of the six criteria and evaluating whether or not the available data for each institution was relevant to each question. The coded aspects of the text were then extrapolated and stored in a standard data storage template on an institution by institution basis. Once the data had been extrapolated and stored for each institution, an overarching Table 4 was developed in order to collate all the relevant data from all institutions in the survey so that an overview of the data could be compiled and analysed and any cross-institutional patterns and emerging themes established. This organisation of text into themes enabled a logical and systematic discussion of each key emerging theme to then be undertaken and for observations and conclusions to be drawn.

Results

It is important to reiterate at the outset that the conclusions drawn from the information taken from the websites may not reflect the complete nature of the support offered at any of the institutions included in this survey. Although the method of gathering the data, though not scientific, was systematic in its approach, consideration must nonetheless be given to potential limitations in the validity of any generalisations that may be made from findings that are based on a relatively small representation of a population (Gorard 2014). However, it did become apparent that much of the information, through the process of data analysis, established similar and repetitive patterns and themes, and data saturation was reached for the final three institutions

Table 3. Criteria and sub-questions used for data identification, sorting and coding.

Criterion 3.					
Criterion 1. Assessment		Criterion 2. In-class adaptations/ support		Criterion 3. Additional learning support (including mentoring and coaching)	
(a) Does the institution offer a full assessment of academic needs?	(a)	(a) Does the institution adapt curriculum/delivery in lectures/seminars to meet a range of learning needs?	(a) Does the institution offer generic study skills support?	(a) Does the institution offer targeted/specialist tuition/ support for those with SpLDs/dyslexia?	(a) Does the institution provide basic assistance tools such as adaptable keyboards, PCs, laptops and digital voice recorders?
	(b)				
	(c)				
(b) Does the institution offer dyslexia screening?	(a)	(b) Does the institution offer note takers/opportunities for voice recording in lectures/seminars?	(b) Does the institution offer specialist tuition specific to the dyslexic learning style and/or to compensate for 'deficits' that may be seen in a dyslexic learner profile?	(b) Does the institution provide access to a range of more specialist software for SpLDs such as voice recognition software (e.g. speech-to-text)	(b) Does the institution have mechanisms for providing exam support such as extra time, amanuensis, reader, assistive technology etc.?
	(b)				
	(c)				
(c) Does the institution offer full psychological assessments for learners with dyslexia by a specialist tutor or Ed Psych?	(a)	(c) Does the institution provide learning materials in accessible formats to meet individual needs, including for those with dyslexia?	(c) Does the institution offer generic mentoring and coaching support?	(c) Does the institution provide access to a range of more specialist software for SpLDs such as voice recognition software (e.g. speech-to-text)	(c) Does the institution provide general on campus support and help?
	(b)				
	(c)				

Table 4. Available support summary: data taken from the sample 11 HEI websites.

	Criterion 1. Assessment	Criterion 2. In-class adaptations/ support	Criterion 3. Additional learning support (including mentoring and coaching)	Criterion 4. Assistive technology and ICT	Criterion 5. Examination support	Criterion 6. General disability support
HE1	Needs assessment available for IT and assistive technology	Note takers Lectures may be recorded	Range of 'generic' and 'specialist' additional learning support systems are available	Is available – e.g. voice activated dictation software, recording devices	Is available	Central disability service
HE2	Dyslexia screening	No information available	No information available	Specialist equipment. Assistive technology. Recognition software	Dyslexia Screening	No information available
HE3	Needs assessment Full psychological assessment for dyslexia	Note taking Reading Signers/ interpreters Handouts on coloured paper	One-to-one specialist support for those with a specific learning difficulty Specialist group sessions providing skills tuition Individual learning plans Mentoring Exemplar 'a year in the life of' and other planning/organisational resources Examination techniques Individual learning plan Mentoring 'Generic' and 'specialist' study skills support Large print books and journals No information	Equipment Digital voice recorders Specialist software	Amanuensis Reader Extra time	Central disability service
HE4	Study needs assessment Psychological assessment Disabled student checklist	Curriculum will be made accessible Handouts on coloured paper		Dictaphones Specialist software	No information available	Disability advice team
HE5	Screening service may advise a full dyslexia assessment	'Reasonable' adjustments can be made		Scanners Text speak Braille printers Bookable units/spaces available	Are available 'Reasonable' adjustments	Disability adviser

as no new information came to light. Bowen (2008) advises that there is little validity in pursuing more data at this point as new information is unlikely to be established.

Overall findings suggest that:

- (1) Across the sample institutions, there are significant differences in the types and consistency of support promoted to adults with a diagnosis of dyslexia that is deemed to be 'specialist' and 'generic'. Some institutions offered more detail about the types of examination support they offered, but provided less information about study skills support. Some claimed to offer study skills support packages tailored for Specific Learning Difficulties but did not appear to offer a thorough analysis of learning needs or dyslexia screening. This is further compounded as some institutions claim to be offering dyslexia-specific support but, on analysis, in fact appear to be offering general study skills support delivered via traditional teaching techniques rather than any specialist approaches or methods that, it could be argued, might better assist access to learning for a student with dyslexia, such as multi-sensory delivery (Lee 2002).
- (2) The preferred model of providing additional support for learning is one that happens outside of formal lecture and seminar time. There are few attempts to adapt the curriculum or the learning and teaching strategies used in the lecture and seminar situation to increase accessibility to the curriculum for adult learners with dyslexia. The 'bolt-on' ALS model is by far the most utilised option.
- (3) Mentoring was seen to provide great benefits for students with dyslexia. However, fewer than half of the institutions surveyed offered this service to its students.
- (4) There is a level of generic support available across all institutions that appears to meet the requirements of the Equality Act 2010 (and its predecessors, Disability Discrimination Act 1995 and Special Educational Needs and Disability Act 1993). However, these could be interpreted as an exercise in the public meeting of legislative requirements for students with a diagnosis of dyslexia rather than active and genuine approaches to developing individualised support packages.

Discussion

Consistency of support across institutions

Seven of the eleven institutions offered a general screening of learning needs for all learners. Seven offered a dyslexia screening service and eight offered full psychological assessments. Only HEI1, HEI10 and HEI11 appeared to offer all three; therefore, according to the website data, the remaining eight institutions can be considered to have a less systematic approach to identifying general study needs for all learners and additional needs for learners who believe they have a Specific Learning Difficulty, including dyslexia.

The most consistent support for learners across the highest number of categories and the 17 questions (within these categories) was found to be at HEI1, HEI11 and HEI5. These institutions offered a range of support opportunities that focused on the assessment of needs and the development of general study skills, as well as provided opportunities for access to specialist tuition. This sample included two pre-1992 institutions and one post-1992 institution.

Those in the middle rankings for consistency were HEI11, HEI4, HEI9 and HEI3. These institutions offered an ALS package from assessment through to generic study skills help, but information about access to specialist tuition for learners with dyslexia was missing or not detailed. In some instances, the institutions claimed to offer specialist tuition but this was not evidenced in the available data. This sample included two pre-1992 institutions and two post-1992 institutions.

Those in the lowest rankings in terms of consistency of the support packages on offer were HEI2, HEI6, HEI7 and HEI8. This sample included one pre-1992 institution and three post-1992 institutions.

Analysis of this information suggests that, using proportional representation, the pre-1992 universities appear to provide for their students with a diagnosis of dyslexia a more rounded support package than do the modern universities. However, it should be remembered that this is a tentative conclusion that is based purely on the publically available data about how assessment and support are accessed and implemented and is not necessarily a true reflection of activity in the sample institutions.

Additional learning support (ALS)

All of the institutions in the survey offered access to a range of additional learning support opportunities. The ALS model can be defined in many ways, one of the most traditional in FE/HE settings is support that is 'extra-curricula' or added to the normal class contact time associated with a programme of study (Enquire 2014). A common example of this would be additional literacy, numeracy or general study skills sessions that are scheduled around lecture and seminar time to support the development of skills/knowledge. This model is often the preferred means of supporting learning rather than modification of in-class delivery methods and the materials associated with this, which can be a complex and resource intensive process (Powell and Tummons 2011). It is perhaps not surprising that the additional support model (defined in these terms) is the most common model adopted by the institutions given the above and the ongoing traditional methods of information delivery in lecture theatres (Fry, Ketteridge, and Marshall 2009). Research tells us that this traditional method of delivering material is not the most effective in providing access to information (and learning) for those with dyslexia; however, some institutions made reference to efforts made to make the lecture delivery method more accessible. Five out of the eleven institutions stated that note takers were available if the appropriate evidence of assessment needs was in place (HEI1, HEI10, HEI2, HEI4, HEI5). One of the eleven institutions indicated that it would adapt the curriculum to make it accessible (HEI11) but did not give any examples of how this might happen; an additional four of the eleven institutions indicated they would make 'reasonable adjustments' (HEI5, HEI8, HEI9). Examples of this are providing class handouts a week early, allowing the recording of lectures and providing extra time to complete tasks. It is debatable how, if any, of these strategies can promote the learning in the lecture room, especially given the lack of detail evident in the website information claiming the curriculum is adapted.

The exception to this could be the prior provision of handouts, which may give the learner with dyslexia the additional time required to process and comprehend the textual information within, given that the learner with dyslexia will often have to allocate attentive resources to the task of decoding (unlike fluent readers – fluency is the most salient characteristic of the skilled reader; Fuchs, Fuchs, and Hosp 2001) and, further to this, comprehension is made more problematic when faced with complicated texts that may contain unfamiliar words requiring the skills of decoding and phonic attack which is the skill of using sound letter correspondence in order to work out the pronunciation of a word (this has also proven to be problematic to learners with dyslexia; Sabatini 2002; Snowling 1991; Snowling and Nation 1977). Provision of course handouts prior to lecture and seminar sessions may provide the opportunity for the learner to work with a tutor or support assistant to gain understanding of the information within and may make the subsequent lecture itself more accessible to the learner.

It may be problematic to adapt lecture sessions sufficiently given the logistics of this teaching approach. However, for seminar sessions, which are traditionally smaller, could a different argument be applied? More consideration could perhaps be given to the different needs of the individual and, consequently, the teaching/learning methods used and the materials provided to enhance opportunities for learning for those with dyslexia. This too raises further areas for consideration, however, such as the implications for staff development and training if tutors are expected to adopt specialist teaching strategies and to adapt materials for their lessons. Student expectations regarding reasonable adjustments may also change as a result of such developments.

The general feasibility of the implementation of strategies of this nature would require a cultural shift of some magnitude. Some would argue that this type of in-class adaptation is not necessary (or even a good idea) if the ALS provided outside of the lecture and seminar environment is appropriate. That said, for some learners with learning difficulties/disabilities this approach may work, but for learners with dyslexia this may not be the case as they may often experience additional difficulties relating to skill transfer and other compounding factors (Powell and Tummons 2011). Seminars may be more conducive to learning for learners with dyslexia if the delivery style adopted makes synchronised use of the full range of the four learning modalities and draws on learning and teaching strategies that will bring right hemisphere brain strengths and functions more readily into play (Krupska and Klein 1995). It cannot be suggested, based on this evidence, that tutors in seminar situations are utilising a range of media for the delivery of the session content that will increase opportunities for learning for a learner with dyslexia.

With regard to specialist tuition, six of the eleven institutions indicated that they provided a level of 'specialist' tuition for those with identified specific learning difficulties (SpLDs), including dyslexia (HEI10, HEI2, HEI4, HEI9, HEI3, HEI6). However, the information in some of the website text was not detailed enough to draw any clear conclusions. Whilst phrasing such as 'specialist tuition is available' is used, no further information is available. For those institutions that did provide more detail, examples of some of the range of support services on offer included 'one-to-one dyslexia tuition' and small study skills workshops for those with a 'specific learning difference', the development of coping strategies, help in dealing with anxiety, the development of organisational and time management skills (which are very important aspects of a dyslexic learner's life; Lee 2002). The exception to this was HEI10, which makes specific reference to offering the above services but in addition attempted (via its specialist study skills package) to develop the types of learning skill that could be transferred into the lecture/seminar situation and therefore may improve access to learning. For example, the teaching of multi-sensory approaches to learning subject-specific spellings and activities to help increase short-term memory capacity that may assist with the speed of processing and absorption of materials in the lecture and seminar (Krupska and Klein 1995; Lee 2002) were part of this institution's advertised package.

The development of proof-reading and exam preparation skills is evident across all of the sample. There is less focus on developing reading skills, which is unsurprising given that, by adulthood, most adult learners with dyslexia have mastered the skill of reading; it is the speed of reading, processing and comprehending information (Fawcett and Nicolson 1994) and dealing with new/specialist technical vocabulary (Sabatini 2002) where lingering issues occur. It can be concluded from this information that the students accessing these HEIs are skilled in the technicality of reading and comprehension to a degree that enables them to access information from text, even though it may take them longer to do so and so may not require additional input or support in this area of skill. Five of the institutions in the survey did not appear to provide any specialist dyslexia tuition but all offered study skills packages to varying degrees.

All 11 institutions indicated that they had a range of IT equipment available for learners with learning difficulties and/or disabilities to borrow, e.g. laptop computers, digital voice recorders. Three (HEI5, HEI3, HEI7) provided specific examples relevant to learners with reading and writing issues, such as speech-to-text software and interactive thesaurus/dictionary software. These could be viewed as support mechanisms that may promote accessibility to learning both inside and outside of the classroom; indeed, some research indicates that students with dyslexia using assistive software of this nature gain great benefits, especially readers with poor comprehension and limited ability to sustain concentration (Higgins and Zvi 1995). However, the extent to which this can be evaluated as good practice across the sample of institutions is limited due to the depth of information available.

Four of the eleven institutions (HEI1, HEI10, HEI4, HEI5) offered general mentoring and/or coaching to learners, and only one (HEI1) offered a mentor/coach who was a specialist in dyslexia support. This demonstrates that only a small percentage offer mentoring services in relation to the

number of institutions surveyed. The assistance of a mentor/coach can be of great benefit to all students, and not just those with a learning difficulty. All students can be assisted by the differing directive and non-directive roles fulfilled by mentors, which can typically be considered to be beyond the scope and responsibility of the academic tutor/lecturer, such as counselling or caretaking (Wallace and Gravells 2005).

For dyslexic learners, mentors can form a vital supporting role from both an academic and pastoral perspective. For example, an adult with dyslexia may experience low self-esteem and high anxiety (Lee 2002; Powell and Tummons 2011), and the mentor in a non-directive counselling role could listen, ask questions from time to time to help the student clarify things for themselves and provide a friendly ear. Some adults with dyslexia have temporal processing, laterality and spatial awareness issues (Critchley and Critchley 1978; Fawcett and Nicolson 1994; Rutter 1977; Stanovich 1988; Tallal 1976; Vellutino 1979; Wolf and Bowers 1999); here, the mentor could assume a caretaking role by assisting the learner with time management and helping them to find their way around the building. The mentor can also play a vital role as a facilitator, for example passing on e-mail contacts, conference details, etc. and, because adults with dyslexia often need help with organisation, ensuring learners are reminded of key events (Lee 2002). Finally, the mentor in the coaching role could facilitate learning both in classroom situations and by providing some direction for future study afterwards. The mentor with generic training could be useful to a learner with dyslexia, but one with training about the nature of dyslexia could prove to be invaluable. What is significant is that only four out of eleven institutions appear to offer this service, and this could be the pivotal role that would help make the adult learner with dyslexia's learning experience a truly inclusive one.

Levels of general support

In law, learners are entitled to 'reasonable adjustments' to enable their access to learning (Equality Act 2010). The data from all institutions demonstrated that support services offered are compliant with the requirements of the Equality Act 2010. All provided a level of examination support, though some of the website information at some institutions was more detailed than others, e.g. provision of extra time, a separate exam room, amanuensis, but all institutions stipulated that a full assessment report with recommendations must be provided before these adjustments could be made.

Two of the institutions (HE15 and HE13) offered downloadable study support packs, which may prove useful to learners with general study skills needs but the format of these (text documents) would not necessarily be useful to learners with dyslexia who rely greatly on interactive and repeated learning presented in a format compatible with multi-modal information processing (visual, auditory, tactile and verbal) (Lee 2002).

All institutions have a central disability service. Two (HE19 and HE18) provide 'dedicated' support in their libraries for learners with dyslexia but provide no details of this.

Conclusions and recommendations

Within the institutions surveyed, differing levels and types of support are promoted to adult learners with dyslexia. What is clear is that the additional learning support model is the one that the majority of institutions prefer. References to adapting methods of lecture/seminar delivery are few. Less than half the institutions surveyed provided a mentoring service (by staff or other students) and only one of these indicated that dyslexia-trained mentors were available. Given research into the positive impact of mentoring and coaching on learners and the student learning experience, this is perhaps the most surprising of all the findings and may be the key to facilitating a situation where a truly accessible learning experience for all learners, including those with a diagnosis of dyslexia, can happen. In order to provide a continually improving support service for adults with dyslexia, the following recommendations could be considered: a review of the website

information to ensure it provides an adequately detailed picture of the in-class and additional learning support available; a review of the initial screening and diagnostic service promoted and offered to learners with suspected dyslexia to ensure fitness for purpose; consideration of some of the more practical adaptations that can be made to the delivery methods utilised in lecture and seminars highlighted in this article, such as delivery of material in a way that utilises a range of learning modalities (this can be of benefit to all learners and not just those with a diagnosis of dyslexia); a review of the software and assistive technology that is currently available to learners with dyslexia, with a view to addressing gaps and to bring it line with the currently available technology; and, lastly, the development of a mentoring scheme and a network of appropriately trained mentors who will then be aware of how best to support those learners with dyslexia. These actions may lead to a more positive, supported learning experience for those with dyslexia, lowering of attrition rates and improved student satisfaction.

Finally, it is worth mentioning that a range of other factors outside of the potential for dyslexia support offered by HEIs may influence a student's choice of university, for example geographical location, choice of course or avoidance of ancient universities that may be perceived as 'too academic'. University selection is a complex process that involves consideration of many variables; this article sought to explore just one of these.

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Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

Sharon Dobson is the Head of Department for Education and the English Language Unit in the School of Social Sciences, Business and Law at Teesside University. This department currently encompasses the discipline areas of education, early childhood, youth, initial teacher education and language support.

Sharon began her teaching career in the field of adult and further education before moving into higher education in 2003 in order to assist in the development of the adult literacy and numeracy subject specialist teaching qualifications in the North East of England. She has been involved in the ongoing development and delivery of initial teacher training and continuing professional development programmes for teachers practising in post-compulsory sector teaching.

Sharon is a dyslexia specialist, and completed a postgraduate diploma through the University of York and the Dyslexia Institute in Sheffield in 1998. She has developed a range of modules that sit within the subject groups of the BA in Education Studies and the MA in Education and enable educational practitioners to develop their expertise in this area of specific learning difficulty as well as in more general issues around inclusion. Sharon is currently completing her EdD thesis at Durham University, which focuses on support for adults with dyslexia in higher education settings. She has a particular interest in the motivation of adult learners and completed her MA in Education at Teesside University in 2005 on this subject.

Under her previous name of Powell, she has published two books: *Learning to Teach in the Lifelong Learning Sector* and *Inclusive Practice in the Lifelong Learning Sector* (with Tummons, Learning Matters, 2011).

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Systematic Review

Appendix G systematic review protocol

SYSTEMATIC REVIEW PROTOCOL
<p>What is the research question?</p> <p>The planned question to be answered is: <i>How effective are the interventions adopted to promote the learning of adults with dyslexia studying programmes of Higher Education?</i> Torgerson (2003) suggests that the question needs to be clear, focused, and able to be addressed by the SR, the researcher feels that the question is appropriately focused, but is aware that the question can be reviewed and/or developed as the research process is carried out (Torgerson, 2003).</p>
<p>Objective</p> <p>The SR will critically appraise the publication evidence available in order to produce a report which will assist managers, academics and practitioners delivering HE to identify strategies which will help to plan more effectively in order to promote the learning and success of students with dyslexia. This in turn should impact positively upon: retention rates, successful programme completion, an improved learning experience and improved NSS scores for students with dyslexia. This review could lead to further future research with selected HEIs to evaluate progress. A review of the national NSS trends three years following the publication of the thesis report may also be an interesting piece of follow up research.</p>
<p>Rationale for review/background</p> <p>Since the introduction of The National Student Survey (NSS, 2013) in 2005 there have been ongoing efforts to improve the quality of studies and outcomes for <i>all</i> students on undergraduate programmes of higher education The NSS provides students with the opportunity to provide feedback on their programmes of study in order for future improvements to be made (NSS, 2013).</p>

In 2010 NSS data, 15,175 students identified themselves as having a learning disability (HEFCE 2011). Evidence shows that around 43% of these learners will have a diagnosis of dyslexia (Richardson & Wydell, 2003; National Union of Students, 2013). Therefore, approximately 6,758 students attending an undergraduate programme of higher education in 2010 had dyslexia. It can be assumed that these numbers have increased in proportionate numbers as the student population increases and that this proportion of numbers will also apply to students on postgraduate programmes of study.

Why is this an issue?

Surridge (2009) demonstrated through data analysis of the 2005-2008 NSS scores that learners with dyslexia have a year on year significant downward trend in course satisfaction scores (see appendix B). More recently NSS survey time-trial data analysis of outcomes, including all data from 2006 to 2010 (Buckley, 2011; HEFCE, 2011) demonstrates that from 2008 to 2010 (post Surridge, 2009) there is still consistently less overall satisfaction for learners identifying themselves as having a learning disability than those that do not. Although overall global satisfaction scores are increasing, when this is disaggregated into disabled and non-disabled students (43% of these learning disabled students will have dyslexia) those learners whom are disabled are still on a downward trend (in 2006 global score for learning disabled was -3.8 from the global satisfaction score and in 2010 it was -4.0). Students with dyslexia are also likely to withdraw in the first year of their programme (Richardson, et. al., 2003).

An updated Data search was completed in 2017 to establish if additional data was available, this was not the case. The post 2013 the NSS data had not been updated in a way which disaggregates the satisfaction scores of non-disabled from disabled students, so there was nothing additional to add in relation to this. What the 13-14, 14-15 and 15-16 data does reflect however is a steadily increasing percentage of students on higher education programmes in England identifying themselves as learning disabled (HEFCE, 2016).

Conceptual issues

Dyslexia is a specific learning difficulty identified by a pattern of observable characteristics, however, in UK publications the term specific learning difficulties (SpLDs) is often used interchangeably with dyslexia as well being used as an all-encompassing phrase which groups dyslexia with other SpLDs such as dyscalculia and dyspraxia. SpLDs of this nature in the USA as categorised as 'learning-disabled' (NRDC, 2004). The focus of the SR is to evaluate publications which refer to HE learning programmes and specifically the term 'dyslexia' and although this may be seen by some to be a conceptual issue, with the potential to exclude publications discussing 'SpLDs (of which dyslexia is one) the decision has been made to exclude those publications which exclusively use the collective terms SpLDs or learning disabled.

Design and method

The design is a full systematic review. The design and methods used in the Systematic review will be informed by the following policy and guidance documents: The Campbell Collaboration Policy Briefs (<http://www.campbellcollaboration.org>); Cochrane Collaboration Handbook (<http://www.cochrane.org/handbook>); PRISMA Statement (<http://www.prisma-statement.org/>); EPPI Centre (<https://eppi.ioe.ac.uk/cms/>); Cooper, H. and Hedges, L. (eds.) (1994) Handbook of Research Synthesis; Torgerson, C, (2003) Systematic Reviews; Shadish, W.R. Cook, T.D and Campbell, T.D (2002) Experimental and Quasi-Experimental Designs for General Causal Inference. Boston, MA: Houghton-Mifflin and Systematic Reviews: CRD's (2008) guidance for undertaking reviews in health care

Design of studies included: All studies that can address the research question will be included, these will be studies that are able to answer an effectiveness question; these will be studies which

demonstrate how educational interventions in both study skills support and in adaptations to classroom delivery regarding classroom teaching and learning techniques and resource use have been shown to measurably improve the accessibility to learning and learning performance for the target audience. This will include studies of experimental and quasi-experimental design as it is important that causal inference in any reported improvements in learning and the products of learning can be directly related to the interventions themselves and not confounded, as far as is possible, by other nuisance factors or variables (Hedges, L. (2012), Langridge, (2004), Shadish et. al. (2002), . The review will focus upon evidence from academic journals and other published research and grey literature to reduce the possibility of publication bias. Studies included are:

1. Randomised Controlled Trials, including cross-over and cluster randomised trials (cluster by institution of delivery, e.g. FE/HE).
2. Quasi-experimental studies of any design; including non-randomised controlled studies, before and after studies and interrupted time series.

Studies in which the groups receive at least one intervention from the following areas: i. study skills support additional to classroom teaching ii. Innovations in classroom curriculum delivery in order to increase learning opportunities via multi-modal approaches to delivery. Searches for citations on other tertiary or systematic reviews in this field will be completed.

Types of participants in included studies:

All relevant documents (published and non-published) in the public domain from May 2004 will be considered for inclusion.

Publications included must be in the English Language; publications which use the term dyslexia will be included. Publications which focus upon interventions for adults with dyslexia (19 plus age range) on HE programmes both in FE and HE Settings in the UK will be included. Studies which include learners who have English as a first, second or additional language will be included.

Types of interventions (and comparisons) included:

Studies evaluating interventions have been carried out in order to promote the learning of adults with dyslexia outside of the standard curriculum delivery; these will include specialist approaches to literacy development such as structured language programmes, programmes to develop short-term memory capacity, thinking skills, vocabulary development. Studies which evaluate more general approaches to additional support for adults with dyslexia outside of the standard curriculum delivery which focus on skills such as writing development such as structure, organisation of ideas using verbal (language based, e.g. linear lists) and non-verbal (pictorial based e.g. mind maps) approaches; language expression, use of specialist vocabulary, spelling, syntax, grammar and punctuation, general organisational skills which impact upon the ability to study . Studies which include the evaluation of teaching and learning approaches which have been adopted in class room practice in order to promote accessibility to learning; including the use of adapted and specialist resources and the use of multi-sensory/multi-modal approaches to learning and teaching.

Studies in which opportunities to learn are complemented by additional learning opportunities which are completed as self-learning tasks, such as interactive learning activities via remote access in a Virtual Learning environment or other similar learning platforms or standard homework tasks,

Types of outcomes included:

Studies will be included if they contain at least one of the following kinds of quantified outcomes: Studies which demonstrate where study skills support packages delivered outside of the standard lecture and seminar setting which have been successful in supporting an identified and measurable aspect of learning.

Studies which evaluate any adaptations to classroom practice (approaches to learning and teaching) in a standard lecture or seminar setting which have been successful in supporting an identified and measurable aspect of learning, including the use of assistive specialist resources or other adaptations to learning/teaching resources.

Studies which show how the use of other assistive and specialist resources outside of the normal lecture or seminar setting such as interactive learning activities have impacted upon a measurable aspect of learning progress.

Proposed codings for assessment of risk of bias in included studies:

A modified version of the CONSORT checklist will be developed to assist in the coding of the included studies in order to assess the risk of bias. All studies included will be assessed for risk of bias (RCTs and quasi-experiments). The methodological quality of the studies included will also be assessed, this will include evaluation of key aspects such as group allocation (randomised/non-randomised allocation and concealment, sample size, attrition, blinding of intervention administrators, eligibility criteria, estimate of effect size (precision of calculation).

Methods for coding (extracting data from) included studies: A specially designed data extraction sheet will be developed for the extraction of data, this will include Author, title of publication, Publication Type: e.g. Journal article; book chapter, a full reference; the source of the reference; the setting and objective of the study; the outcome measures used; its design; information about the participants; description of the intervention, the control group/s, the results and the effect size as reported and also as calculated by the reviewer.

Synthesis:

Narrative Synthesis to combine the results of the studies that are included in the review. Meta-analysis will be applied to publications in the review which use RCTs as a method of data collection.

Proposed quality assurance procedures:

Data extraction, quality appraisal (assessment of risk of bias) and extraction of quantifiable outcomes will be completed.

References

Campbell Collaboration Policy Briefs (<http://www.campbellcollaboration.org>)

Centre for Review and Dissemination (2008) *Systematic Reviews: CRDs Guidance for Undertaking Reviews in Healthcare*. York: Centre for Review and Dissemination

Cochrane Collaboration Handbook (<http://www.cochrane.org/handbook>)

CONSORT (2013) *Consort 2010 Checklist of Information to Include when Reporting a Randomised Trial*. www.consort-statement.org/index.aspx?0=2965

Cooper, L. and Hedges, (eds) (1994) *Handbook of Research Synthesis*. New York: The Russell Sage Foundation.

EPPI Centre (2014) <https://eppi.ioe.ac.uk/cms/>

Langridge, D. (2004) *Introduction to Research Methods in Psychology*. London: Pearson

Higher Education Funding Council for England (2016) *HE Students Equality by Disability*. HEFCE: London

National Union of Students (2013) *Disability Statements and Statistics*. Retrieved 10 March 2013. www.nus.org

PRISMA Statement (<http://www.prisma-statement.org/>); EPPI Centre (<https://eppi.ioe.ac.uk/cms/>);

Rice, M. & Brooks, G. (2004) *Developmental dyslexia in adults: a research review*. London: National Research and Development Centre for Adult Literacy and Numeracy

Richardson, J., T., E., & Wydell, T., N. (2003) The representation and attainment of students with dyslexia in UK higher education. *Reading and Writing: An Interdisciplinary Journal* 16 475-503

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Surridge, P. (2009) *The National Student Survey: three years on what have we learned?* London: Higher Education Academy

Torgerson, C, (2003) *Systematic Reviews*. London: Continuum

Torgerson, C. J., Hall, J & Light, K. Chapter 30: Systematic Reviews in Arthur, J., Waring, M., Coe, R., & Hedges, L. V. (2012) *Research Methods and Methodologies in Education*. London: Sage.

Hedges, L. (2012) Chapter 4: Design of Empirical Research in Arthur, J., Waring, M., Coe, R., & Hedges, L. V. (2012) *Research Methods and Methodologies in Education*. London: Sage.

Inclusion criteria
<ol style="list-style-type: none"> 1. All relevant documents (published and un-published) in the public domain. 2. Publications in the English language. 3. Publications using the terms 'dyslexia'. 'specific learning difficulties' or 'specific learning disabilities'. 4. Publications which focused upon adults with dyslexia on higher education (HE) programmes. 5. Experiments such as randomised controlled trials (RCTs) (individual or cluster) and quasi experimental studies (QEDs) of any design, including non-randomised controlled studies and interrupted time series designs. 6. Studies where participants were aged 19 or over and studying programmes of HE in a higher education institution (HEI) or HE programmes in further education (FE). 7. Studies evaluating interventions which were used to promote accessibility to learning such as: adaptations to classroom learning and teaching practices, additional Learning Support (ALS) programmes, remote interactive learning packages on electronic platforms were included and where at least one of the groups of learners received at least one of the interventions indicated above. 8. Studies which evaluated study skills support delivered outside standard lecture and seminar settings and which have been used to support an identified and measurable aspect of learning. 9. Studies which evaluated adaptations to classroom practice (approaches to learning and teaching) in a standard lecture or seminar setting which had been used to support an identified and measurable aspect of learning, including the use of assistive specialist resources or other adaptations to learning/teaching resources.

<p>10. Studies which showed how the use of other assistive and specialist resources outside of the normal lecture or seminar setting such as interactive learning activities had impacted upon a measurable aspect of learning progress.</p>
<p>Exclusion criteria</p>
<ol style="list-style-type: none"> 1. All irrelevant documents (published and un-published) in the public domain. 2. Publications not in the English language. 3. Publications not using the terms 'dyslexia'. 'specific learning difficulties' or 'specific learning disabilities'. 4. Publications which did not focus upon adults with dyslexia on higher education (HE) programmes. 5. Experiments which were not randomised controlled trials (RCTs) (individual or cluster) and quasi experimental studies (QEDs) of any design, including non-randomised controlled studies and interrupted time series designs. 6. Studies where participants were not aged 19 or over and not studying programmes of HE in a higher education institution (HEI) or HE programmes in further education (FE). 7. Studies which did not evaluate interventions which were used to promote accessibility to learning such as: adaptations to classroom learning and teaching practices, additional Learning Support (ALS) programmes, remote interactive learning packages on electronic platforms were included and where at least one of the groups of learners received at least one of the interventions indicated above. 8. Studies which did not evaluate study skills support delivered outside standard lecture and seminar settings and which have been used to support an identified and measurable aspect of learning.

9. Studies which did not evaluate adaptations to classroom practice (approaches to learning and teaching) in a standard lecture or seminar setting which had been used to support an identified and measurable aspect of learning, including the use of assistive specialist resources or other adaptations to learning/teaching resources.
10. Studies which did not show how the use of other assistive and specialist resources outside of the normal lecture or seminar setting such as interactive learning activities had impacted upon a measurable aspect of learning progress.

<u>Appendix H full search strategy</u>	
1. Search String Related to Teaching and Learning and Inclusive Practice	
Search 1 Meta-analysis, Systematic Reviews' etc. (systematic review OR comparative analysis OR research review OR meta analy* OR effect size OR intervention) AND (higher education OR HE OR post-compulsory OR college OR student OR university OR undergraduate) AND (dyslex* OR specific learning difficulty OR specific learning preference OR specific learning disabil*) AND (learning OR teaching OR multi-sensory OR differentiation OR integration OR inclusion OR learning style or learning modal*)	Search 2 RCTs, etc. (experiment* OR quasi experiment* OR control OR allocate* OR randomi#ed controlled trial OR RCT OR regression discontinuity design OR RDD) AND (dyslex* OR specific learning difficulty OR specific learning preference OR specific learning disabil*) AND (higher education OR HE OR post-compulsory OR college OR student OR university OR undergraduate) AND (learning OR teaching OR multi-sensory OR differentiation OR integration OR inclusion OR learning style or learning modal*)
2. Search String Related to Study Skills	
Search 1 Meta-analysis, Systematic Reviews' etc. (systematic review OR comparative analysis OR research review OR meta analy* OR effect size OR intervention) AND (dyslex* OR specific learning difficulty OR specific learning preference OR specific learning disabil*) AND (higher education OR HE OR post-compulsory OR college OR student OR university OR undergraduate) AND (support OR study skills OR additional learning support OR learning style OR mentoring OR additional tutoring)	Search 2 RCTs, etc. (experiment* OR quasi experiment* OR control OR allocate* OR randomi#ed controlled trial OR RCT OR regression discontinuity design OR RDD) AND (dyslex* OR specific learning difficulty OR specific learning preference OR specific learning disabil*) AND (higher education OR HE OR post-compulsory OR college OR student OR university OR undergraduate) AND (support OR study skills OR additional learning support OR learning style OR mentoring OR additional tutoring)

3. Search String Related to Assistive Technology and ICT	
<p>Search 1 Meta-analysis, Systematic Reviews' etc.</p> <p>(systematic review OR comparative analysis OR research review OR meta analy* OR effect size OR intervention) AND (dyslex* OR specific learning difficulty OR specific learning preference OR specific learning disabil*) AND (higher education OR HE OR post-compulsory OR college OR student OR university OR undergraduate) AND (assistive technology OR accessibility software OR information communication* technolog* OR specialist software)</p>	<p>Search 2 RCTs, etc.</p> <p>(experiment* OR quasi experiment* OR control OR allocate* OR randomi#ed controlled trial OR RCT OR regression discontinuity design OR RDD) AND (dyslex* OR specific learning difficulty OR specific learning preference OR specific learning disabil*) AND (higher education OR HE OR post-compulsory OR college OR student OR university OR undergraduate) AND (assistive technology OR accessibility software OR information communication* technolog* OR specialist software)</p>

Appendix I Sample of stage one screening process with decisions

	A	B	C	D	E	F
1	Article Title	Notes	Decision	Author		
2	Learning disabilities and the auditory and visual matching computer programme	19 year olds but not in Uni or HE programmes. Background information.	No	Tormanen		
3	The effects of features of examination questions on the performance of students with dyslexia	15-16 age range. Useful in terms of how the way information is presented can assist/prevent lexical access. Plus how the way presentational aspects can help/inhibit. Not	No	Crisp		
4	Developmental dyslexia in adults: behavioural manifestations and cognitive correlates	Measures own awareness of literacy skills. No interventions, evaluative. Adults but not HE	No	Nergard-Nilssen		
5	Deficient morphological processing in adults with developmental dyslexia: another barrier to efficient word recognition?	Right age range and setting, but only measures morphological awareness, not interventional, not related to support or ICT	No	Schiff		
6	digital notetaking: the use of electronic pens with students with specific learning disabilities	14-18 year olds (but not on HE programmes) only 10 participants but does measure use of assistive technology and benefits, quasi-experimental?, very relevant but does not meet IC of age and HE, worth a revisit of IC?	No	Belson		
7	A comparison of spelling performance across young adults with and without dyslexia	Spelling error analysis and comparisons to controls, not about any educational interventions	No	Coleman		
8	online databases and the research experience for university students with print disabilities	quasi-experimental? Mixed methods (some aspects of qualitative) but v relevant would like to include	Yes	Dermody		
9	effective literacy instruction for adults with specific learning disabilities: implications for adult educators	Literature review of a range of studies including quasi-experimental and some experimental. Some aspects are relevant and useful and could be potentially used. Range of ages and settings.	Yes	Hock		
10	Beyond decoding: adults with dyslexia have trouble forming unified lexical representations across pseudoword learning episodes	Test of decoding skills only and comparisons to controls, not about any educational interventions	No	Howland		
11	An academic intervention programme for EFL university students with reading disabilities	English is not first language but dual interventional education programme including English development. Interventional but not clear in terms of outputs. Would like to include	Yes	Schiff		
12	beyond spelling: the writing skills of students with dyslexia in higher education	Evaluation of spelling skills in Dutch university (in Dutch) no intervention and focus on spelling error type measurement	No	Tops		
13	The relationship between language teachers attitudes and the state-trait anxiety of adolescents with dyslexia	Wrong age range and not interventional in terms of learning, study of anxiety and attitudes	No	Tsovili		
14	investigating working memory and sustained attention in dyslexic adults	Tests of STM and WM sustainment only adults but not intervention and not educationally	No	Alloway		
15	use of context in the word recognition process by adults with a significant history of reading difficulties	How context is used in reading only - adults but not intervention and not educationally focused	No	Corkett		
16						

Appendix J Data extraction template for RCTs and QEDs

Bibliographic details	
Intervention(s)	
Outcome(s)	
Research question	
Study characteristics	
Country in which study carried out	
Year in which study carried out	
Methodological characteristics	
Design	
method of assignment to condition	
blinded assessment of outcome	
attrition	
implementation fidelity	
Targeting of participants/participant characteristics	
Intervention: number and type of participants	
Control: number and type of participants	
Setting	
Intervention characteristics	
Control/comparison characteristics	
Outcome measures	
Effect on primary and secondary outcome measures	
Effect size estimated (confidence intervals)	
Results as reported by authors	
Conclusions as reported by authors	
Findings consistent with the data	
Weight of Evidence	Internal Validity: Moderate-Low
	External Validity: Low
	Relevance: Moderate
	Overall Rigour:

Key: Y = Yes

N = No

NS = Not Stated

Appendix K Completed data extraction sheets for the 10 single studies included in the review

Bibliographic details	Guyer, B. P., Banks, S. and Guyer, K. (1993) Spelling Improvement for College Students who are Dyslexic. <i>Annals of Dyslexia</i> , Vol. 43. Pp. 186-193.
Intervention(s)	(p.187) "To evaluate if college dyslexic students would make more progress when taught with the modified Orton-Gillingham Programme (O-G) with a non-phonetic approach, than with no intervention."
Outcome(s)	Progress of the group on the WRS as opposed to 2 groups, one that were on an alternative programme (non-phonetic) and one that received no remediation.
Research question	Would college dyslexic students make more progress in reading when taught with the WRS multisensory phonetic approach as compared to a non-phonetic intervention programme and no intervention?
Study characteristics	
Country in which study carried out	US
Year in which study carried out	N/S
Methodological characteristics	
Design	RCT (individual) for intervention groups 2 and 3. QED for control (group 1) , randomly selected non-equivalent.
method of assignment to condition	RCT – random allocation to group 2 or 3. QED – random sample from wider population of HELP (group 1).
blinded assessment of outcome	N/S
attrition	N/S
implementation fidelity	N/S
Targeting of participants/participant characteristics	30 Marshall University Students diagnosed as dyslexic who were enrolled in the Higher Education for Learning problems (H.E.L.P.) programme at Marshall University. Ages 18-32 (mean 21.2). 26 males and 4 females. 2 black 28 white subjects. Grade point averages from 1.8-3.8 (mean 2.9) (p. 189). The WAIS-R for IQ was used to evaluate intelligence to check that those who had not been tested within 2 years were of "normal or higher intelligence". (p. 190).
Intervention: number and type of participants	10 diagnosed as dyslexic - Group 2 – multisensory phonic remediation (WRS based on O-G) 2x 1 hr sessions per week for 16 week. 10 diagnosed as dyslexic Group 3 – non phonetic remediation 2x 1 hr sessions per week for 16 week.
Control: number and type of participants	10 diagnosed as dyslexic – Group 1 - no intervention.

Setting	N/S
Intervention characteristics	The Wilson Reading System (Adapted O-G reading programme) which utilises multisensory phonetic remediation
Control/comparison characteristics	No remediation (group 1). Non-phonetic remediation (group 2) (p.188).
Outcome measures	Measured with WRAT-R before and after tests to measure achievement for reading (word recognition) spelling and arithmetic. (p. 190).
Effect on primary and secondary outcome measures	Y
Effect size estimated (confidence intervals)	N/S
Results as reported by authors	Table 1. (pg. 190) Students who made the most progress in reading tested against WRAT-R were on the WRS phonetic multi-sensory programme (group 2) (76.7 up to 91.0); followed by group 3 on the non-phonetic remediation (83.8 up to 86.0) and the control group (group 1) made the least progress (86.9 up to 88.8). The paper reports that there was "Significant difference in progress for the group receiving the intervention." (p. 190).
Conclusions as reported by authors	That an integrated approach (multisensory) approach to teaching reading, spelling and written language will improve spelling in the dyslexic college student when compared to non-integrated approaches and no intervention.
Findings consistent with the data	Y

Key:

Y = Yes

N = No

NS = Not Stated

NA = Not Applicable

Weight of Evidence

Areas of Consideration	Rating (low/moderate/high)
Internal Validity	Moderate-Low
External Validity	Moderate
Relevance	High
Overall Rigour	Moderate

Other

IQs at entry different – so no equivalence at baseline data

Post-hoc test used (user adjusted)

No discussion of limitations of study (design).

Bibliographic details	Guyer, B. P. and Sabatino, D. (1989) The Effectiveness of a Multisensory Alphabetic Phonetic Approach With College Students Who Are Learning Disabled, Vol. 22. pp. 430-433.
Intervention(s)	(p.430) "To determine if college students with LD would make more progress when taught with the modified Orton-Gillingham Programme (O-G) approach".
Outcome(s)	Progress of the group on the adapted O-G as opposed to 2 groups, one that were on an alternative programme (non-phonetic) and one that received no remediation.
Research question	Would college LD students make more progress in reading when taught with the O-G multisensory phonetic approach as compared to a non-phonetic intervention programme and no intervention?
Study characteristics	
Country in which study carried out	US
Year in which study carried out	N/S
Methodological characteristics	
Design	RCT.
method of assignment to condition	Random allocation.
blinded assessment of outcome	N/S
attrition	N/S
implementation fidelity	N/S
Targeting of participants/participant characteristics	30 Marshall University Students diagnosed as LD who were enrolled in the Higher Education for Learning problems (H.E.L.P.) programme. Ages 17- 24 (mean 20.3). IQs range from 94-135 (mean 105.7) (p. 430).
Intervention: number and type of participants	10 diagnosed as LD - Group 2 – multisensory phonic remediation (WRS based on O-G) 2x 1 hr sessions per week for 16 weeks. 10 diagnosed as LD Group 3 – non phonetic. 5 week programme (no hours etc. stated).
Control: number and type of participants	10 diagnosed as LD – Group 1 - no intervention.
Setting	N/S
Intervention characteristics	The Adapted O-G reading programme which utilises multisensory phonetic remediation.
Control/comparison characteristics	No remediation (group 1). Non-phonetic remediation (group 2) (p.431-432).
Outcome measures	Measured with WRAT-R and the Woodcock Mastery Reading Tests (WMRT) before and after to measure pre-test and post-test performance. (p. 431).
Effect on primary and secondary outcome measures	Y
Effect size estimated (confidence intervals)	N/S

Results as reported by authors	Figs 1 and 2 (pg. 432-433) Students who made the most progress in reading tested against WRAT-R and WRMT were on the modified O-G phonetic multi-sensory programme (group 2). This was reported as a statistically significant improvement when compared to the non-phonetic (group 3) and control group (no intervention group 1).
Conclusions as reported by authors	That an integrated approach (multisensory) approach to teaching reading, spelling and written language will improve spelling in the LD college student when compared to non-integrated approaches and no intervention.
Findings consistent with the data	Y

Key:

Y = Yes

N = No

NS = Not Stated

NA = Not Applicable

Weight of Evidence

Areas of Consideration	Rating (low/moderate/high)
Internal Validity	Moderate-Low
External Validity	Moderate
Relevance	High
Overall Rigour	Moderate

Other

Queries were raised as to the possible effects of the differing IQ of those who participated in the study.

No baseline data included

Bibliographic detail	Kirby, J. Silvestri, R., Allingham, B., Parrila, R., and La Fave, C.B. (2008) Learning Strategies and Study Approaches of Post-Secondary Students with Dyslexia. <i>Journal of Learning Disabilities</i> . Vol. 41. No. 1. pp. 85-96.
Intervention(s)	"The self-reported learning strategies and study approaches of college students who are dyslexic, tests which measured reading rate, reading comprehension, reading history, learning strategies and learning approaches were utilised." (p. 85).
Outcome(s)	Measurements and comparisons of how the dyslexic and non-dyslexic students approached their selection of main ideas and test talking strategies (p. 85).
Research question	What learning strategies and study approaches to postsecondary students with dyslexia select and use in comparison with the strategies and approaches of non-dyslexic students?
Study characteristics	
Country in which study carried out	Canada.
Year in which study carried out	N/S
Methodological characteristics	
Design	QED. However, the control condition is in the nature of the learners as all are exposed to the intervention.
method of assignment to condition	N/S
blinded assessment of outcome	N/S
attrition	N/S
implementation fidelity	N/S
Targeting of participants/participant characteristics	"There were 102 participants in the study. 36 students with dyslexia and 66 without dyslexia recruited from 4 Canadian post-secondary institutions. 17 of the 36 students with dyslexia were female, mean age of this group 22.60yrs and 16.70 years of formal education. 58 of the 66 non-dyslexic group were women, this group had a mean age of 20.34 yrs and 14.95 years of formal education." (p. 88) so some differences here in terms of group sizing's, gender, age and educational experiences! NB! "The university students were taking part in academic study, the college students in vocational programmes." (p.88). Different types of study requires different strategies therefore the sample is potentially not equivalent in terms of educational experiences and how it may answer the questions.
Intervention: number and type of participants	32 were dyslexic – all participants all exposed to the intervention.
Control: number and type of participants	66 were non-dyslexic – all participants all exposed to the intervention.
Setting	N/S in terms of location, "all participants were tested individually in a quiet room" (p. 90).

Intervention characteristics	Not an intervention as such, more a self-assessment of current skill levels. Batteries of tests were delivered to the participants, these were: Reading Speed and Comprehension, (NDRT), Word Reading (WRMT-R),] Reading History (ARHQ-R), Approaches to Learning (SPQ-R) and Learning and Study Strategies (LASSI-2) (pp.88-90).
Control/comparison characteristics	All were exposed to the tests, the control is in the nature of the learners exposed (dyslexics as opposed to non-dyslexics).
Outcome measures	The results of the reported self-evaluations of the participants across this range of tests was the outcome measure: Reading Speed and Comprehension, (NDRT), Word Reading (WRMT-R),] Reading History (ARHQ-R), Approaches to Learning (SPQ-R) and Learning and Study Strategies (LASSI-2) (pp.88-90).
Effect on primary and secondary outcome measures	N/S
Effect size estimated (confidence intervals)	Y
Results as reported by authors	<p>Table 1 (p. 89), table 2 (p. 90) and table 3 (pg.91) and Figs 1, 2 (p. 91) and 3 (p.92) demonstrate the performances and comparisons of the two groups across the tests.</p> <p>"Students without dyslexia significantly outperform those with dyslexia in reading rate and comprehension and the students with dyslexia reported a significantly greater history of reading difficulties." (p.90.).</p> <p>"There were four significant differences between the groups. Students with dyslexia had lower scores on selecting main ideas and test taking strategies students with dyslexia reported higher use of study aids and of time management principles." (p.91)</p> <p>The college and university students did not differ in their approaches to learning An independent <i>t</i> test just on university students demonstrated that students with dyslexia favoured strategies associated with deeper approaches to learning." (pp.91-92).</p>
Conclusions as reported by authors	<p>"Postsecondary students with dyslexia have a different profile of self-reported learning strategies and study approaches than their peers without dyslexia. Although the students with dyslexia have partially compensated for these deficits, these results suggest that they still have significant difficulties with implementing learning strategies concerning identifying main ideas in text and preparing for tests. Lower performance of the scales is associated with weaker reading performance." (pp.92-91).</p> <p>It is suggested that these problems in reading performance stem from deficits in phonological processing and phonological memory. Generally speaking those with dyslexia has poorer reading rates, comprehension rates (select main ideas) and</p>

	test taking strategies and the non-dyslexics but they reported more use of study aids, time management and a deep approach to learning indicating that they may have selected/developed compensatory strategies.
Findings consistent with the data	Y

Key:

Y = Yes

N = No

NS = Not Stated

NA = Not Applicable

Different types of study requires different strategies therefore the sample is potentially not equivalent in terms of educational experiences and how it may answer the questions

This is self-report data and not based on any external observations of the participants' task performances.

Weight of Evidence

Areas of Consideration	Rating (low/moderate/high)
Internal Validity	Moderate-Low
External Validity	Moderate
Relevance	High
Overall Rigour	Moderate

Bibliographic details	McNaughton, D. Hughes, C. and Clark, K. (1997) The Effect of Five Proofreading Conditions on the Spelling Performance of College Students with Learning Disabilities. <i>Journal of Learning Disabilities</i> . Vol 30, NO. 6. Pp. 643-651.
Intervention(s)	"Five proofreading conditions were examined: handwriting, no additional assistance, handwriting with a conventional print dictionary, and handwriting with a hand help spelling checker, word processing with no additional assistance and word processing with an integrated spell checker". (p. 644).
Outcome(s)	To assess which of the five proof reading conditions presented are most, effective, efficient and likely to be adopted longer-term by the participants.
Research question	An investigation into the effects of five proofreading conditions on the identification and correction of spelling errors for college students with LD.
Study characteristics	
Country in which study carried out	USA
Year in which study carried out	N/S
Methodological characteristics	
Design	QED – All participants were exposed to all five proofreading conditions and were subject to a within-participants univariate analysis of variance (to test for the main effects of the IV (the proof reading conditions).
method of assignment to condition	N/S
blinded assessment of outcome	N/S
attrition	N/S
implementation fidelity	The same instruments (spell checker, version of word etc.) were used for all participants. In the 'word processing alone' test the spell checkers were turned off. "Five different writing topics were used within the different proofreading conditions in order to minimise interference effects across conditions." (p. 645).
Targeting of participants/participant characteristics	Enrolled on university programme and identified as meeting a set of criteria for being learning disabled.
Intervention: number and type of participants	12 participants who were enrolled on a university programme and who had been "identified as learning disabled according to the federal guideline adopted by the University's Program for Learning Disabled Students (i.e. a different between intelligence percentile ranking and performance ranking in reading, maths, writing etc.) and identified as having a functional difficulty in spelling." (p. 644). So based on discrepancy model.

Control: number and type of participants	N/S
Setting	Higher Education Institution.
Intervention characteristics	<p>These are the interventions:</p> <p>Handwriting with no additional assistance</p> <p>Handwriting with a conventional print dictionary</p> <p>Handwriting with a hand help spelling checker</p> <p>Word processing with no additional assistance</p> <p>Word processing with an integrated spell checker (p.644).</p> <p>"Participation in each condition was separated by a gap of a week. A Latin square was used to counterbalance the order of the 5 conditions. Following each composition activity participants were asked to detect and underline any spelling errors. For those conditions in which a spelling correction technique was made available to the participant (handwriting with a conventional print dictionary, handwriting with a hand-held spelling checker, word processing with an integrated spell checker) he or she was provided with a small demonstration of the spelling correction technique." (p. 645) Then were then given a list of the five most commonly misspelt words by college students and asked to correct them using the technique demonstrating they could use it correctly. In the two no additional assistance conditions (handwriting and work processing) they were asked to try and correct spelling errors without the use of any corrective aids. (p. 645).</p>
Control/comparison characteristics	<p>No control all participated in all the conditions.</p> <p>There was a within-participants univariate analysis of variance (to test for the main effects of the IV).</p>
Outcome measures	<p>Data for the 5 techniques was collated into three major domains: effectiveness (which addresses the primary issue of whether an intervention produces the desired results – measured by examining detection rate and correction rate and by comparing the error rate in the original draft with the error rate in the final draft), efficiency (which is re: the production of the desired effects in a timely manner – measured by the total time used to detect and correct proofreading errors and the time per error corrected) and acceptability (which is re: initial information on the participants potential for long term adaptation of the intervention technique – measured by students preference ratings for the 5 proofreading conditions. (p. 644). The Tukey and Fisher test were used to guard against type I errors and loss of power in post hoc corrections. Specific Outcomes measured are: 1) error rates in the original draft, 2) detection of spelling errors, 3) correction of spelling errors, 4) errors in the final text 5. Time required to detect and correct errors, 6, student preference and 7) interrater agreement. (p. 646).</p>

Effect on primary and secondary outcome measures	Y
Effect size estimated (confidence intervals)	Y
Results as reported by authors	<p>"Errors in the original draft: high levels of spelling errors. Grand mean error rate for the five conditions was 7.8." (p. 646).</p> <p>"Detection of Spelling Errors: Differed for the five conditions, word processor with spell checker condition provided a statistically significant advantage (69.3% errors detected) over the other 4 conditions where no assistance with spelling error detection was provided writing (40.1%, handwriting with print dictionary (35.9%) handwriting with spelling checker (42.1%) and word processing (44.3%). Participants identified a large number of false errors (25.5%) identified were spelled correctly. Only 3% of the errors in the word processing with spelling checker were in fact correctly spelled words." (pp. 446-447).</p> <p>"Correction of Spelling Errors: statistically significant differences in the proportion of detected errors that were corrected were observed among the 5 conditions. Word processor with spell checker (mean proportion of errors corrected = 81.9%) had a statistically significant advantage over both of the unaided conditions, followed by handwriting with a spell checker ((76.1) then handwriting with a print dictionary (65.9) then word processing (51.1) then handwriting (36.1)." (p. 647) and (p. 648 table 4).</p> <p>"Errors in the final text: in four of the five conditions the detection and correction activities had a significant effect on the number of spelling errors in the final text. Advantage from use of word processor with spell checker (3.3%) Handwriting with a spell checker (4.9) Handwriting with a print dictionary (5.9) word processing (6.7) and handwriting (7.1). Handwriting and word processing with spell checkers showed no significant differences." (p. 647) and (p. 648 table 5).</p> <p>"Time for Detection and Correction of Errors: statistically significant differences in the total time needed to detect and correct errors were observed for all five conditions. Handwriting with print dictionary took significantly more time than the other four conditions (mean time 12 min 47 secs). Handwriting 6 mins 16 secs, handwriting with spell checker (hand held) 8 mins 22 secs, word processing 5 mins 4 secs and word processing with spellchecker 5 mins 51 secs. Handwriting with a print dictionary significant slower that word processing with or without a spell checker. "(p. 647).</p> <p>"Participant Preferences: Ranked by participants in order of preference for future use. Word processing with spell checker significant statistical advantage over the other four conditions. (8 out of 12 selected this as first preference) Handwriting alones was preferred option by 8 out of 12 participants.</p>

Conclusions as reported by authors	Word processing with a spelling checker provides an advantage over most other techniques with respect to effectiveness, efficiency and acceptability to students, additional research is necessary to identify techniques that will enable college students with LD to produce written work which is comparable to those without LD. The limitation of those with LD and spelling limits their ability to convey information in writing and prose which is a significant obstacle to academic and vocational achievement. (p. 650)
Findings consistent with the data	Y

Key:

Y = Yes

N = No

NS = Not Stated

NA = Not Applicable

Weight of Evidence

Areas of Consideration	Rating (low/moderate/high)
Internal Validity	Moderate
External Validity	Moderate
Relevance	High
Overall Rigour	Moderate

Bibliographic details	Osborne, P. (1999) "Pilot study to investigate the performance of dyslexic students in written assessments." <i>Innovations in Education and Training International</i> , Vol 36, Iss. 2., pp. 155-160
Intervention(s)	" 1. To examine if the performance of dyslexic students to non-dyslexic students in course work and examinations 2. To compare the grades achieved by the same group of dyslexic students in two different modes of assessment: coursework and examinations". (p. 157).
Outcome(s)	To establish any differences in performance across the dyslexic and non-dyslexic students and the dyslexic students in course work and examinations and to identify if students with dyslexia are disadvantaged when having to perform written assessments in comparison to non-dyslexics in both examinations and coursework.
Research question	To compare the performance of a group of dyslexic students with that of non-dyslexics in the completion of examinations and coursework.
Study characteristics	
Country in which study carried out	UK
Year in which study carried out	1994-1995 academic year.
Methodological characteristics	
Design	QED - Participants in intervention and comparison group received the same intervention; the comparison was in the nature of the learners observed.
method of assignment to condition	N/S
blinded assessment of outcome	N/S
attrition	N/S
implementation fidelity	All participants had followed the normal process for competing course work and examinations (with special considerations for the dyslexic participants in exams).
Targeting of participants/participant characteristics	Students on undergraduate programmes which contained coursework and examinations studying at Southampton Institute.
Intervention: number and type of participants	38 dyslexic students who had been given special measures provision and acknowledged by Southampton Institute to be dyslexic 38 non-dyslexic students randomly selected (p. 157).
Control: number and type of participants	None all were exposed to the coursework and examinations.
Setting	Southampton Institute.
Intervention characteristics	The intervention is the completion of the course work and examinations across six units of study.
Control/comparison characteristics	All students accessed the six units and completed the coursework and the examinations.

Outcome measures	A survey looked at the assessment results of students in one faculty for 1994-1995 academic year across six units of study containing coursework and examinations.
Effect on primary and secondary outcome measures	N
Effect size estimated (confidence intervals)	Y
Results as reported by authors	<p>"The dyslexic group performed less well in both coursework and examinations (coursework: DG 54.57 CG 55.64 Diff= 1.07. Examinations DG 46.26, CG 50.40 Diff 4.14)." (p. 158).</p> <p>"The dyslexic groups final results were, on average, lower (DG 50.53, CG52.37 Diff 1.84)." (p. 158).</p> <p>The difference was much greater in examinations, +4.14 for CG)." (p. 158).</p>
Conclusions as reported by authors	<p>"In the coursework tasks dyslexics get lower scores than control but the difference is not statistically significant. Therefore they are disadvantaged but not to a great extent in coursework completion." (p. 158). "In examinations there is a statistically significant difference between the dyslexic and control groups.</p> <p>Students with dyslexia are disadvantaged in examination situations, especially in time constrained examinations over those that do not have dyslexia." (p. 158).</p>
Findings consistent with the data	Y generally speaking, but cannot claim that time constraints are the only issues that impact on the performance of students with dyslexia in examination conditions.

Key:

Y = Yes

N = No

NS = Not Stated

NA = Not Applicable

Weight of Evidence

Areas of Consideration	Rating (low/moderate/high)
Internal Validity	Moderate-Low
External Validity	Moderate
Relevance	Low
Overall Rigour	Moderate

Other

Limitations of study are outlined (p. 159)

Bibliographic details	Rhul, K. L. and Suritsky, S. (1995) The Pause Procedure and/or an Outline: Effect on Immediate Free Recall and Lecture Notes Taken by College Students with Learning Disabilities. <i>Learning Disability Quarterly</i> . Vol. 18. No. 1. pp. 2-11.
Intervention(s)	The use of a pausing procedure and a lecture outline on the note taking on the performance C/LD.
Outcome(s)	To ascertain any effects of the pause procedure, a lecture outline, and a combination of both on short-term (immediate) free recall of facts.
Research question	"Do C/LD when presented a lecture in which the pause procedure is used in combination with a brief instructor-provided lecture outline, record significantly more complete notes and perform significantly better on immediate free recall than a) C/LD presented the same lecture with only the outline or b) C/LD presented the same lecture with only the pause procedure?" (p.4).
Study characteristics	
Country in which study carried out	USA
Year in which study carried out	N/S
Methodological characteristics	
Design	QED
method of assignment to condition	By Preference of meeting time
blinded assessment of outcome	N/S
attrition	N/S
implementation fidelity	Treatment delivered in a standard university classroom. Groups P and OP were provided with a N/DPCs (like TAs/coaches) in a dyad to ensure treatment fidelity (to ensure pauses were used as intended to discuss content and or update notes).
Targeting of participants/participant characteristics	33 C/LD students. "Targeted students with LD were registered in the University program for Students with Learning Disabilities. Diagnosed as LD using the discrepancy model (severe discrepancy – difference of at least 40 percentile points to be included in a range of tests). 12 females and 21 males, 3 black and 30 white students.) Mean 22.88. Mean grade point average 2.56." (p. 4).
Intervention: number and type of participants	Group O – outline (n 11) Group P - pause only (n 11) Group O/P - both pause and outline (n 11).
Control: number and type of participants	The control is in the nature of the implementation of the intervention.
Setting	University.
Intervention characteristics	O - An instructor provided outline was provided with the lecture and note paper

	P- no outline but the pause procedure (pause for 2 minutes between blocks of lecture delivery to compare notes) and given note paper OP- provided with outline and pauses (pause for 2 minutes between blocks of lecture delivery to compare notes) and given note paper.
Control/comparison characteristics	Comparative Study – all received some form of intervention - both O and P performance independently compared to each other and then to O/P combined.
Outcome measures	“Three Dependent Variables were used. IFR scores and two measures of completeness of notes- percent total correct information and percent partial correct information.” (p. 6).
Effect on primary and secondary outcome measures	Y
Effect size estimated (confidence intervals)	Y
Results as reported by authors	MANOVA and F tests. “Significant group differences were found only on Immediate Free Recall and Percent Total Correctness measures. For free recall group P was superior to group O/P and O which were equally effective. For PTC both group P and group O/P were equally effective and both were superior to O.” (p. 7).
Conclusions as reported by authors	“Results indicated that the pause procedure alone had more beneficial effect on Immediate Free Recall of C/LD than either the outline of the other two procedures in combination. Also the pause procedure was as effective as the two procedures in combination when measuring total information included in student notes. The OP condition did not outperform the O or the P which was surprising as it was though that the P would enable the completeness of note taking and the outline would assist in cuing of key points (better together) on IFR and PTC but this was not the case. Outline serving as a distractor rather than as an assistive prompt? Group P more engaged in using personal information processing strategies to generate meaning for the lecture material and to organise and store it. In conclusion the pause procedure is effective in enhancing recall of information for both ND and C/LD students. It is not surprising as it draws on principles of effective instruction i.e. a) distribution versus massed practice, b) consolidation of learning, C) clarification of concepts through active verbalisation (d) feedback on adequacy of concepts formed and e) active encoding of material to be remembered.” (p. 9).
Findings consistent with the data	Y

Key:

Y = Yes

N = No

NS = Not Stated

NA = Not Applicable

Notes:

Limitations are discussed

Very small sample.

Selection bias (allocation by preference).

No baseline data – equivalence of groups cannot be established (demographics considered but no pre-test taken).

“Possible criticism of this study is the use of information units as a means of determining student note completeness and the of the raw number of total information units from the lecture information as a basis for comparison.” (p. 9).

Weight of Evidence

Areas of Consideration	Rating (low/moderate/high)
Internal Validity	Moderate
External Validity	Moderate
Relevance	High
Overall Rigour	Moderate

Bibliographic details	Rhul, K. L., Hughes, C. A. and Gajar, A. H. (1990) Efficacy of the pause Procedure for Enhancing Learning Disabled and Nondisabled College Students' Long- and Short-term Recall of Facts Presented Through Lecture. <i>Learning Disability Quarterly</i> . Vol. 13. No. 1. pp 55-64.
Intervention(s)	The use of a pausing procedure at logical breaks in lecture delivery. (p. 55).
Outcome(s)	To ascertain any positive effects of the pause procedure on short-term (immediate) recall of facts, long-term recall of facts and performance in objective tests. (p. 55).
Research question	"When presented with a lecture in which pauses are inserted, do LD and ND students perform significantly better on short- and long-term free-recall measures and on objective tests than when presented with a lecture without the pause procedure?" (p. 57).
Study characteristics	
Country in which study carried out	USA
Year in which study carried out	N/S
Methodological characteristics	
Design	QED. Four group three phase experiment. 2x2x3 ANOVA.
method of assignment to condition	Individuals allocated to groups via preference for a particular meeting time so groups were a mixture of LD and ND students.
blinded assessment of outcome	N
attrition	N
implementation fidelity	Treatment delivered in a standard university classroom large enough to seat 40 students in desks with right hand writing surfaces. Three lectures were used. Lectures were delivered by the same individual and were determined to be comparable across lectures as they were videotapes.
Targeting of participants/participant characteristics	15 LD and 15 ND students. "Targeted students with LD were registered in the University program for Students with Learning Disabilities. Diagnosed as LD using the discrepancy model (severe discrepancy – difference of at least 40 percentile points to be included in a range of tests). The ND group were recruited from courses in special education; it was assumed these were ND." (p. 57). 18 females and 12 males, 2 black, 2 oriental and 26 white students, 26 undergraduates, 4 graduates (2 LD 2 ND) Mean age of LD 22.64 and ND 22.04. Mean grade point average for LD was 2.59 for ND was 2.99. (p. 57).
Intervention: number and type of participants	All 30 took part in the intervention though in a different group A group B combination (see characteristics of intervention). Each group met on six occasions.

	An equal number of LD and non LD were present in both Group A (7LD/7ND) and Group B (8LD/8ND) so were equivalent in this respect.
Control: number and type of participants	The control is in the nature of the implementation of the intervention.
Setting	University.
Intervention characteristics	Phased. Group A had pause procedure 2/3 sessions. Group B had pause procedure 1/3 sessions (p. 58). The IV is the pause procedure, the stopping of a videotape of a lecture for 2 minutes, three times at random intervals. Duration of lecture between pauses varied between 7 and 9 minutes. During the pause subjects performed dyads (consisting of 1 LD and one none LD subject) and discussed lecture content. (p. 58) Group A pattern: without pause, with pause, with pause. Group B pattern, without pause, without pause, with pause.
Control/comparison characteristics	Groups A and B performances compared against the below outcome measures across the three phases for all three lectures.
Outcome measures	Three Dependent Variables were used. Immediate Free recall (IFR) scores, long-term free recall scores (LFR) and scores on 15-item multiple choice objective tests taken one week after each lecture (T).
Effect on primary and secondary outcome measures	Y
Effect size estimated (confidence intervals)	Y
Results as reported by authors	"T-tests showed significant in group differences only in phase 2. The group receiving the pause performed significantly better. The significant differences were apparent on the IFR" and the second objective test." (p. 62).
Conclusions as reported by authors	"The pause procedure significantly improved student performance in two out of three measures." (p. 62). The pause procedure was effective for enhancing IMF and performance on objective tests but not for LTR." Use of the pause procedure appears to be effective for both LD and ND students, it enables structural modifications to lecture content delivery without being concerned about possible bias, it does not require the LD student to seek additional assistance for an instructor or fellow student avoiding personal reluctance or discomfort. It provides a structured in class time for discussion and sharing ideas, clarifying points etc. (p. 63).
Findings consistent with the data	Y

Key:

Y = Yes

N = No

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NA = Not Applicable

Notes:

Some limitations discussed (floor and ceiling, effects, lack of base-line equivalence).

Small sample size.

Selection bias through allocation by time preference.

Assumption that those recruited as ND from special courses were ND.
Material for the lectures and the objective tests may not have been at the same level of difficulty for each of the three phases.

Weight of Evidence

Areas of Consideration	Rating (low/moderate/high)
Internal Validity	Moderate
External Validity	Moderate
Relevance	High
Overall Rigour	Moderate

Bibliographic details	Simmons, F. and Singleton, C. (2000) "The Reading Comprehension Abilities of Dyslexic Students in Higher Education". Dyslexia, Vol. 6. pp. 178-192.
Intervention(s)	Administration of a reading passage with multiple-choice questions to assess reading comprehension ability.
Outcome(s)	To test how well a dyslexic group of students perform on a test of reading comprehension when compared to a similar group of non-dyslexics performance in the same task.
Research question	"Do dyslexic students in higher education experience reading comprehension difficulties with textual material that is age appropriate and which matches their intellectual level?" (p. 182).
Study characteristics	
Country in which study carried out	UK
Year in which study carried out	N/S
Methodological characteristics	
Design	QED. However, the control condition is in the nature of the learners as all are exposed to the intervention. Limitations are discussed re: issues with controlling factors such as the sample characteristics (I.Q) and matching for age, gender etc. (p. 187)
method of assignment to condition	Assigned to either dyslexic or non-dyslexic group (2 groups).
blinded assessment of outcome	N/S
attrition	N/S
implementation fidelity	Task administered individually in a quiet room.
Targeting of participants/participant characteristics	"Ten dyslexic adults (five male, five female, mean age 27.6 years, S.D. 10.22 years; mean single word reading standard score 93.00, S.D. 12.77) Ten non-dyslexic adults (two male, eight female mean age 21.4 years, S.D. 3.53; mean single word reading standard score 110.00, S.D. 8.23). Nineteen participants' current undergraduates, the remaining one (in dyslexic group) had graduated from the Uni within the last 3 years. The dyslexic participants' single word reading score in average range, though significantly lower than the controls." (p. 182). Some issues with 'similarly' of sample used. Gender imbalance on the non-dyslexic group, though this was considered in the analysis method (MANCOVA).
Intervention: number and type of participants	All participants were exposed to the task (20) the control was in the learner characteristics (dyslexic as opposed to non-dyslexic).
Control: number and type of participants	10 non-dyslexic students' performance in the same task as compared to the dyslexic students.
Setting	Hull University.

Intervention characteristics	All participants were asked to read through a textual passage of 655 words, then read and complete multiple-choice questions designed to measure literal and infernal comprehension skills about the passage by ticking boxes. The time each individual took to read the text and then answer the questions was measured. Informed no time limit. They were then asked to make an estimation of the number of answers they believed to be correct." (p. 183).
Control/comparison characteristics	As above. The control (non-dyslexic group) were administered with the same procedure.
Outcome measures	The number of questions the dyslexic participants got correct; and the nature of the question/s answered correctly e.g. to test literal or infernal comprehension; as compared to the non-dyslexic's performance in the same tasks against the same outcome measures.
Effect on primary and secondary outcome measures	Y
Effect size estimated (confidence intervals)	Y
Results as reported by authors	<p>Literal and non-literal scores (table 1, p.184) "Both groups found the infernal questions more difficult. On literal scores there was little difference (3.80 Non-dyslexic 3.90 dyslexic). "On infernal scores the difference between the 2 groups' performance was significant Non-dyslexics scored 2.90 and Dyslexics scored 2.10 overall scores in both differed as follows non-dyslexics 0.90, dyslexics 1.29." (p. 183). "No statistical relationship between literal question score and single word reading score. Both can read and answer the questions reasonably well. There was a moderate positive relationship between single word reading score and infernal question score." (p.185).</p> <p>Reading time (table 2) for dyslexic and non-dyslexic groups was only marginally significant ($F(1, 18) = 4.12, p = 0.059$). Dyslexic participants took longer to answer the questions. Difference was significant (following the removal of one outlier who took longer than 10 minutes to complete the task) Mean working time for dyslexic group 293.30s (S.D.117.68s) And the non-dyslexic group was 191.0 s (S.D. 62.13s).</p> <p>Self-estimation of correct answers, both groups slightly over-estimated their scores. No significant difference between the performances in this. (pp.184-185).</p>
Conclusions as reported by authors	"The reading difficulties for dyslexic students in HE have reading comprehension difficulties which cannot accounted for by an inability to decode words in the text." (p. 178). "Dyslexic individuals performed at a comparable level as the non-dyslexic participants on the literal question comprehension tasks, but significantly poorer on the infernal question comprehension tasks." (p. 185). Poor lexical automaticity may explain some of the issues, as suggested decoding and comprehension are

	<p>linked rather than separate functions – the cognitive function is more complex when trying to decode and comprehend non-literal text and so will need to utilise a greater amount of STM, which will slow the process of reading and comprehension down and affect reading accuracy.</p> <p>An impaired working memory could contribute to difficulties with reading comprehension</p> <p>The dyslexics took longer to complete the tasks possibly as a result of impaired STM. Text length and complexity also requires more working memory usage.</p> <p>There may be other reasons why comprehension is affected, such as a lack of exposure to complex texts. (pp. 185-186).</p>
Findings consistent with the data	Y

Key:

Y = Yes

N = No

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NA = Not Applicable

The person (outlier) removed from the study though the methods of data analysis accounted for this.

The group characteristics could have been better controlled as this affected the quality of the study

Weight of Evidence

Areas of Consideration	Rating (low/moderate/high)
Internal Validity	Moderate
External Validity	Moderate
Relevance	Moderate
Overall Rigour	Moderate

Bibliographic details	M. Taylor, S. Duffy, G. Hughes, (2007) "The use of animation in higher education teaching to support students with dyslexia", <i>Education + Training</i> , Vol. 49 Iss. 1, pp. 25-35.
Intervention(s)	Using animated slides to assess if they support learning more effectively (as compared to non-animated slides) for learners in higher education with dyslexia.
Outcome(s)	Improved access to learning materials for learners with dyslexia. Potential for more effective approaches to teaching and learning using animation.
Research question	Do animated learning materials for support learning for students with dyslexia in a UK higher education setting more effectively than non-animated slides?
Study characteristics	
Country in which study carried out	UK
Year in which study carried out	N/S
Methodological characteristics	
Design	QED - Participants in intervention and comparison group received the same intervention; the comparison was in the nature of the learners observed.
method of assignment to condition	N/S
blinded assessment of outcome	N/S
attrition	N/S
implementation fidelity	Confounding variables could not be managed effectively in the experiment environment (classroom), "though some efforts were made to minimise noise and control lighting". (p. 28)
Targeting of participants/participant characteristics	Participants were in the author's class and were recruited from this group. Participants were Undergraduate computing students in the same year of a programme of study. Ages and genders not specified. Academic profiles of all participants were similar therefore participants appeared academically comparable based on the information provided.
Intervention: number and type of participants	13 self-declared dyslexic students 13 non-dyslexic students.
Control: number and type of participants	All participants were exposed to all slides.
Setting	Higher Education Institution.
Intervention characteristics	The intervention is a set of animated slides.
Control/comparison characteristics	The non-animated slides are the control condition. These were delivered to half of both groups (both dyslexics and control groups) first followed by the

	same non-animated slides. The other half of the groups were presented with the non-animated slides first followed by the intervention (the animated slides). (Taylor, et.al, 2007, p. 29).
Outcome measures	All the participants were asked 9 questions (following the viewing of both sets of slides) to establish how well compared to each other the animated versus the non-animated slides assisted them in developing their understanding across the range of topic areas presented. (p.29). "The 9 questions used an interval scale as follows: 1 =static version superior to 10= animated version superior." (Taylor, et.al, 2007, p. 32).
Effect on primary and secondary outcome measures	Y
Effect size estimated (confidence intervals)	Y
Results as reported by authors	"Tallies of scores were subjected to the chi-square test of the null hypothesis that scores were distributed at random and that the students had no consensus view. Results: 1. There was a low probability of the given questions being answered at random. 2. Very few questions (6 out of 234) gave a score of less than 5% on the 1-10 answer scale. 3. Both groups appeared to consider the animated learning materials as being more useful than the static versions. 4. Speed of understanding the concepts presented was higher for the control group than the dyslexic group 5. The understanding of symbols and diagrams was rated the least useful aspect by the dyslexic group as opposed to the control group who found it one of the most useful aspects. 6. Within the material content both groups of students stated that the animated materials greater assisted their understanding of the concept of data flow. 7. Both groups of students viewed the animated learning materials as being 'roughly equal' in assisting in overall understanding of concepts, interaction of concepts and application of concepts in practice. 8. Both groups viewed the usefulness of the animated learning materials for the concept of levelling as being lower than that of the other animated learning materials." (Taylor, et.al, 2007, pp. 32-33).
Conclusions as reported by authors	The animated materials appeared to be more useful in promoting understanding for both the dyslexic and the control students than the non-animated ones, though the control students appeared to find them more useful than the dyslexic ones. Even if materials of both formats are presented to dyslexic students it may still be more difficult for the students with dyslexia to access them for learning. Non-dyslexic students will also typically find these and other forms of learning materials more easy to access than those with dyslexia. (Taylor, et.al, 2007, p. 34).
Findings consistent with the data	Y

Key:

Y = Yes

N = No

NS = Not Stated

NA = Not Applicable

Weight of Evidence

Areas of Consideration	Rating (low/moderate/high)
Internal Validity	Moderate-Low
External Validity	Low
Relevance	High
Overall Rigour	Low

Bibliographic details	Zawaiza, R. W. and Gerber, M. M. (1993) Effects of Explicit Instruction on Math Word-Problem Solving by Community College Students with Learning Disabilities. <i>Learning Disability Quarterly</i> , Vol. 16. No. 1. pp 64-79.
Intervention(s)	Two explicit types of instruction used on the word problem-solving performance of postsecondary students with learning disabilities. (p. 64).
Outcome(s)	To assess which of the condition/s best assisted the performance in the problem-solving abilities of identified post-secondary students with learning disabilities. (p.64).
Research question	That is the effect of two types of instruction on the word problem-solving performance of post-secondary students with learning disabilities. (p.64).
Study characteristics	
Country in which study carried out	USA
Year in which study carried out	N/S
Methodological characteristics	
Design	RCT (p. 68). QED (math-competent peers used as comparison group)
method of assignment to condition	"Random allocation of six intact classes in turn to one of three groups (cluster), a translation (T) group, a diagram group (D) or the attention control group (ACT)." (p. 69).
blinded assessment of outcome	N/S
attrition	Y (38 completed from 44 starters).
implementation fidelity	Treatment delivered during regular class sessions. The classrooms used were well lit, spacious and quiet. Participating students attended regularly (so not every session potentially) and were motivated. The same repeated procedure was followed within each group.
Targeting of participants/participant characteristics	38 Participants were enrolled on community college programme pre-set classes were used. Age ranged from 17 to 65, mean age 26.7. 22 men and 16 women. Mean SS were: aptitude: 92.2, math achievement: 89.0 and reading achievement 88. Those allocated to the 'D' group had a, "Slightly higher level of prior achievement however an ANOVA showed that there were no statistically significant group differences." (p. 71).
Intervention: number and type of participants	13 in the Diagram group and 13 in the Translation group.
Control: number and type of participants	13 were in the Attention Control group and the baseline data from 22 math competent peers who did not participate in the experiment (but were given the pre-test) was used as a comparison.
Setting	Community College.
Intervention characteristics	"The Translation (T) group were taught explicit methods for translating compare-type word problems. The Diagram (D) group were taught the same translation methods but were also taught

	how to diagram relationships between word-problem components schematically and how to develop an action schema.” (p. 69).
Control/comparison characteristics	“The Attention Control (AC) group were exposed to similar problems but were not given specific math problem-solving instruction. They discussed the problems and their individual solution strategies.” (p. 96).
Outcome measures	The measurable effects of two different instruction intervention conditions, a comparison of pre and post-test scores on three variables: raw score, problem type and error type. (p. 71).
Effect on primary and secondary outcome measures	Y
Effect size estimated (confidence intervals)	Y
Results as reported by authors	(Table 2, p. 73) The D Group outperformed both the T and the AC group with differences in reducing reversal errors (1.1 to 0.4) reducing compare problem errors (2.8 to 1.4) and increasing correct answers (11.0 to 12.7). The AC group had slight increase in correct answers (9.3 to 10.4), decrease in compare type errors (3.9 to 3.2) and decrease in reversal errors 2.2 to 1.8). The T group had a slight increase in correct answers (9.2 to 9.5) and a slight decrease in compare problem (4.2 to 4.0) errors but an increase in reversal errors 1.2 to 2.2). However, only the D group achieved near to the correct scores of the math competent peers (MC = 13.8 pre-test) D scoring 12.7 post-test and equalled the reversal errors of MC (0.4). D group still behind on compare type errors in comparison to the MC peers (1.4 as opposed to 0.9).
Conclusions as reported by authors	“It was predicted the students receiving the schema training (the D group) would improve significantly more than the students assigned to linguistic training (the T group) on compare-word problems. We believe our results generally support our predictions. The performance of our Diagram group improved dramatically, especially on those target problems that theory suggests that would be most sensitive to this type of interventions.” (p. 75). “The findings indicate that, on compare problems, LD students function similarly to normally achieving students. Post-secondary students are responsive to strategy instruction and can change their problem solving-behaviour accordingly. Adult LD students make the same mistakes as their much more competent peers, but a greater quantity of mistakes. Over stated.
Findings consistent with the data	Y though somewhat overstated

Key:

Y = Yes

N = No

NS = Not Stated

NA = Not Applicable

Notes: 2 threats to interval validity. 1. Inability to fully control prior achievement levels and 2. Non-equivalence of groups on reversal errors at pre-test. (p. 75).

Weight of Evidence

Areas of Consideration	Rating (low/moderate/high)
Internal Validity	Moderate-Low
External Validity	Low
Relevance	Moderate
Overall Rigour	Moderate

Appendix L Data extraction template for use with reviews

Name/Nature of Review and Bib Details	Aims/question	Methods: Search	Methods: Selection	Methods: Validity assessment	Methods: Data extraction	Methods: Study Characteristics	Methods: Data Synthesis	Results: Trial Flow	Results: Study Characteristics	Results: Data Synthesis	Discussion

Key: **Y = Yes** **N = No** **NS = Not Stated** **NA = Not Applicable**

Appendix M Completed data extraction sheet for the one review included in the systematic review

Name/Nature of Review and Bib Details	Aims/question	Methods: Search	Methods: Selection	Methods: Validity assessment	Methods: Data extraction	Methods: Study Characterist ics	Methods: Data Synthesis	Results: Trial Flow	Results: Study Characteristi cs	Results: Data Synthesi s	Discussion
Hock, M. (2012) Effective Literacy Instruction for Adults with specific Learning Disabilities: Implications for Adult Educators. <i>Journal of Learning Disabilities</i> . 45(1) pp. 64-78.	“Literature on adults with Learning Difficultie/s(LD /LDs) is reviewed and evidence-based instructional practices that significantly narrow the literacy achievement gap for this population are identified.” (p. 64).	Literature search guided by questions related to evidence-based practice (p. 65 has details of the three areas of focus) Database searches were conducted. Searches limited to studies conducted after 1990. The descriptors used in the searches are on p. 66. The searches were not as ‘tightly’ managed as the SR above.	Qualitative, quantitative or empirical research studies were included if they met the inclusion criteria: 1. Pertained to adults or older adolescents (<16 (included in final study) with LD 2. They pertained to instructional methods for reading, writing, spelling, vocabulary, math, science or social studies. 223 articles and dissertations were found for screening. 11 were ‘think ‘pieces and removed. 190 adolescents so removed leaving 22.	N/S There is a note of caution at the end re: generalising the ‘findings’ from this study into ABE settings.	N/S	A mixture of experiment al studies – 4; Quasi-experiment al - 8, single participant – 7, qualitative – 4. These were divided by type and then by age range (adults v older adolescents) and then categories of skill type, e.g. reading, spelling, math. (p. 66).	The three questions outlines on p. 65 led the approach which is thematic analysis (but this is not explicitly stated in the article.	N/S	N/S	Hard to distingui sh specifics. There is extensiv e discussio n under the themes identifie d on p. 65 which focus primarily on the use of explicit instructi on. Main findings are: “Explicit instruction continues to be a practice supported by research for adolescents and adolescents with LD. They respond positively to this. Teachers can improve students learning of skills, strategies and content by: a) providing clear explanation of contents, skills , learning routines and strategies. B) modelling the cognitive and metacognitive behaviours associated with learning, c. co-constructing with students the strategies and routines that make learning more effective d) engaging students in extensive practice that includes both guided and independent activities and elaborated feedback on each performance and e) providing support for planning both proximal and distal generalization of skills, knowledge and strategies for learning.” (p. 73). “Practitioners can 9and should) incorporate proven instructional practices into their daily instruction.” (p. 74).	



Appendix N

CONSORT 2010 checklist of information to include when reporting a randomised trial*

Section/Topic	Item No	Checklist item	Reported on page No
Title and abstract			
	1a	Identification as a randomised trial in the title	_____
	1b	Structured summary of trial design, methods, results, and conclusions (for specific guidance see CONSORT for abstracts)	_____
Introduction			
Background and objectives	2a	Scientific background and explanation of rationale	_____
	2b	Specific objectives or hypotheses	_____
Methods			
Trial design	3a	Description of trial design (such as parallel, factorial) including allocation ratio	_____
	3b	Important changes to methods after trial commencement (such as eligibility criteria), with reasons	_____
Participants	4a	Eligibility criteria for participants	_____
	4b	Settings and locations where the data were collected	_____
Interventions	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered	_____
Outcomes	6a	Completely defined pre-specified primary and secondary outcome measures, including how and when they were assessed	_____
	6b	Any changes to trial outcomes after the trial commenced, with reasons	_____
Sample size	7a	How sample size was determined	_____
	7b	When applicable, explanation of any interim analyses and stopping guidelines	_____
Randomisation:			
Sequence	8a	Method used to generate the random allocation sequence	_____
generation	8b	Type of randomisation; details of any restriction (such as blocking and block size)	_____

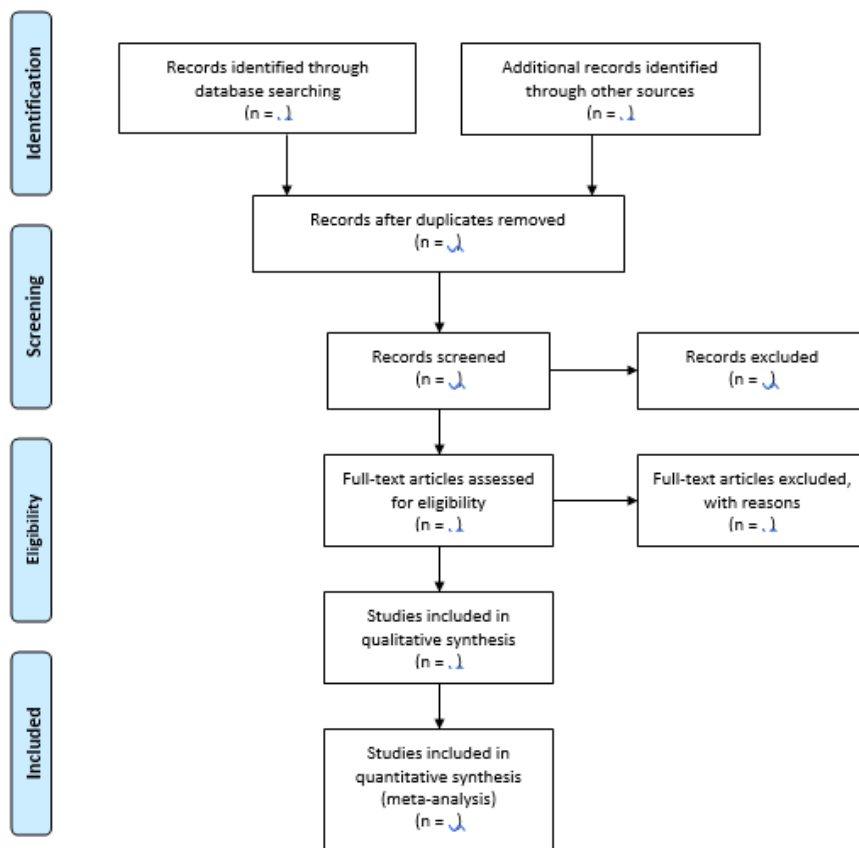
Allocation concealment mechanism	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned	<hr/>
Implementation	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions	<hr/>
Blinding	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how	<hr/>
	11b	If relevant, description of the similarity of interventions	<hr/>
Statistical methods	12a	Statistical methods used to compare groups for primary and secondary outcomes	<hr/>
	12b	Methods for additional analyses, such as subgroup analyses and adjusted analyses	<hr/>
Results			
Participant flow (a diagram is strongly recommended)	13a	For each group, the numbers of participants who were randomly assigned, received intended treatment, and were analysed for the primary outcome	<hr/>
	13b	For each group, losses and exclusions after randomisation, together with reasons	<hr/>
Recruitment	14a	Dates defining the periods of recruitment and follow-up	<hr/>
	14b	Why the trial ended or was stopped	<hr/>
Baseline data	15	A table showing baseline demographic and clinical characteristics for each group	<hr/>
Numbers analysed	16	For each group, number of participants (denominator) included in each analysis and whether the analysis was by original assigned groups	<hr/>
Outcomes and estimation	17a	For each primary and secondary outcome, results for each group, and the estimated effect size and its precision (such as 95% confidence interval)	<hr/>
	17b	For binary outcomes, presentation of both absolute and relative effect sizes is recommended	<hr/>
Ancillary analyses	18	Results of any other analyses performed, including subgroup analyses and adjusted analyses, distinguishing pre-specified from exploratory	<hr/>
Harms	19	All important harms or unintended effects in each group (for specific guidance see CONSORT for harms)	<hr/>
Discussion			
Limitations	20	Trial limitations, addressing sources of potential bias, imprecision, and, if relevant, multiplicity of analyses	<hr/>
Generalisability	21	Generalisability (external validity, applicability) of the trial findings	<hr/>

Interpretation	22	Interpretation consistent with results, balancing benefits and harms, and considering other relevant evidence	_____
Other information			
Registration	23	Registration number and name of trial registry	_____
Protocol	24	Where the full trial protocol can be accessed, if available	_____
Funding	25	Sources of funding and other support (such as supply of drugs), role of funders	_____

*We strongly recommend reading this statement in conjunction with the CONSORT 2010 Explanation and Elaboration for important clarifications on all the items. If relevant, we also recommend reading CONSORT extensions for cluster randomised trials, non-inferiority and equivalence trials, non-pharmacological treatments, herbal interventions, and pragmatic trials. Additional extensions are forthcoming: for those and for up to date references relevant to this checklist, see www.consort-statement.org.



PRISMA 2009 Flow Diagram



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med* 6(7): e1000097. doi:10.1371/journal.pmed.1000097

For more information, visit www.prisma-statement.org.