

## **Guidance on the Principles of Language Accessibility in National Curriculum Assessments**

Referring to the *Regulatory Arrangements for National Assessments: National Curriculum and Early Years Foundation Stage* (Ofqual, 2011)

Audience: Test designers



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## The purpose of this guidance

This guidance on language accessibility in National Curriculum assessments describes the principles which should guide the development of clear assessment questions. In a separate document, *Guidance on the Principles of Language Accessibility in National Curriculum Assessments: Research Background* (Ofqual, 2012), the research underpinning these principles is discussed in detail. If you are seeking ways in which the accessibility of a National Curriculum assessment, such as a key stage test, could be evaluated after the assessment has been released, refer to *Guidance on Evaluating Access to National Curriculum Assessments* and *Evaluating Access to National Curriculum Assessments: Research Background* (Ofqual, 2012).

The guidance builds upon the *Regulatory Framework for National Assessments: National Curriculum and Early Years Foundation Stage* (Ofqual, 2011). This framework proposes that National Curriculum assessments should be:

- appropriate to the age of the pupils
- an effective measure of their abilities, skills and concept development
- fair to all irrespective of gender, language, religion, ethnic or social origin or disability.

The rationale for the present language accessibility guidance is that ‘fairness’ is closely aligned with language. This is the means of expression within the National Curriculum assessments, and it is the means by which the performance of those who undertake the assessments is judged.

The guidance sets out the principles of language accessibility as follows:

- The length of a word is an uncertain guide as to its difficulty and the familiarity of a word to its target audience is a more useful indicator.
- Sentence length is not an absolute guide to sentence difficulty. Sentence complexity, which can cause misunderstandings in inexperienced readers, is a more useful indicator.
- The success of pupils in assessments can be influenced by the coherence of the texts used to introduce and pose assessment questions.
- Features for test developers to be aware of in terms of content structure include (a) the need for unambiguous information and (b) the propositional density of the text used.

- Consideration needs to be given to the use of format variables and advance organisers: that is, summarising pieces at the beginning of longer texts to alert the reader to what is coming and help enhance his/her conceptual organisation.
- The readability of assessment items is determined as much by characteristics of the pupils who undertake these items as it is by features of the texts themselves.

## Introduction

The *Regulatory Framework for National Assessments* (Ofqual, 2011) sets out a number of common criteria which apply to all aspects of the development and implementation of National Assessments. One of these criteria refers to the need for assessment procedures to minimise bias: “The assessment should minimise bias, differentiating only on the basis of each learner’s ability to meet National Curriculum requirements” (Section 5.39, page 16). The Framework goes on to argue that: “Minimising bias is about ensuring that an assessment does not produce unreasonably adverse outcomes for particular groups of learners” (Annex1, page 29). This criterion reinforces the guiding principle that any form of assessment should provide information about the knowledge and understanding of relevant content material. That is to say that the means through which this knowledge and understanding is examined, the design of the assessment and the language used should as far as possible be transparent, and should not influence adversely the performance of those being assessed.

There is clearly a large number of ways in which any given assessment task can be presented and in which questions can be asked. Some of these ways will make the task more accessible – that is, easier to complete successfully – and some will get in the way of successful completion. Section 26 of the *Fair Access by Design* (2010) document lists a number of guiding principles for improving the accessibility of assessment questions, although the research basis for these principles is not made completely clear in that document. The aim of the current guidance is to build upon the issues highlighted in *Fair Access by Design* and to update the principles outlined there through a synthesis of research findings into the concept of language accessibility.

We need, of course, to recognise that the guidance which follows applies when what is being assessed in a test is not the reading skill of the pupil. If reading skill is the key focus of the assessment then test items may be designed to test the ability of the pupil to interpret successfully the linguistic features of written text. The fact that a pupil can cope or not cope with, for example, complex sentence structures might tell us a great deal about that pupil’s proficiency in reading. And if deriving such an insight into the pupil’s ability was the point of the assessment then it was appropriate for the test to employ such complex sentence structures.

There are many assessments, however, whose aim is not to assess reading ability, but some other body of knowledge and/or skill. In such assessments, features such as the linguistic structure of assessment items may prevent the pupil from demonstrating successfully his/her command of the targeted knowledge/skill. It is to the composers of assessments such as these that the present guidance is addressed.

## **Assessment questions: context and content**

Whilst part of the difficulty of an assessment task will be due to the intrinsic demands of the subject content of that task, the actual difficulty can be affected, sometimes in unexpected or unfair ways, by features of the way that questions are asked.

Inevitably, putting test questions into any kind of context involves using extra words to ask the question. If pupils have to read more text in order to answer a question then their reading ability is being tested as well as their understanding of concepts. This may be the aim in some assessments, where reading skill is itself being directly assessed. But for assessments in other subject areas, complexities in the way assessment questions are expressed and indeed the visual context within which an assessment task is embedded (accompanying pictures and so on) can interfere with the accurate operation of the assessment.

There are two categories of potential difficulty in any assessment item:

- Concept difficulty – the intrinsic difficulty of the concept itself
- Question difficulty – which may be rooted in the language of the questions, the presentation of questions and the use of mark schemes in rewarding responses.

Therefore the accessibility of the language through which assessments are made is a crucially important consideration for the designers of these assessment instruments. The language used needs to be readable in the broadest sense, and the principles underpinning success are the principles underpinning the concept of readability. A number of factors influence the readability of any text, and test designers need to be alert to the influence of these factors.

### **Key principles**

- The success of pupils in assessments can be influenced by:
  - the context provided for assessment questions
  - the language in which assessment questions are expressed.
- Readability of assessment questions is a key consideration for assessment designers.

## **The nature of readability**

Readability is the study of matching a reader and a text. An important target for teachers is to ensure that pupils are supplied with reading materials, in whatever subject, that are at an appropriate level of difficulty for them. Pupils who are given reading materials that are too easy are not sufficiently challenged and their learning can be stunted. Pupils who are given reading materials that are too difficult can fail to make progress, are frequently off task and may exhibit behavioural problems or just give up.

Similarly, without an assessment of the readability of assessment questions, the test developer risks producing items that do not correctly match to the reading abilities of those for whom the assessment is planned. If the readability level of a test item is higher than the reading ability of the pupil then it is likely that the item is not assessing the construct of interest (the subject matter) but rather the pupil's reading ability.

Most studies of readability have assumed that the difficulty of a text is determined by factors within the text itself, and have seen reading as a matter of getting meaning from the page. However, views about the nature of the reading process have changed over the past 20 years or so towards a definition which emphasises that making meaning through reading comes from a process in which the reader's mind interacts with the text. As a result, research into readability has also changed. In the current guidance, we allow for these two dimensions of the readability question by focusing firstly upon factors within the text itself, and secondly upon characteristics of readers.

### **Key principles**

- Readability is influenced by:
  - characteristics of the text itself
  - **and** characteristics of the readers of the text.
- Writers of assessment questions need to take both of these dimensions into consideration.

## Readability: looking at text features

A number of text features affect the readability of texts. These are:

- linguistic features:
  - word difficulty
  - sentence difficulty
- cohesion and coherence
- content structure and complexity
- legibility and print issues
- text organisation.

The *Fair Access by Design* (2010) document focused almost exclusively on the sentence difficulty and legibility aspects in the above list. The Validity Evidence Template used by key stage test developers draws attention to the following aspects of test design: fonts, specific words, specific phrases or sentence structures, overall page layout, specific images or artwork, and background colours. Research suggests, however, that readability problems can also be caused by other textual factors. Factors to do with textual cohesion and coherence have been especially neglected in the past.

It is difficult to be precise about the age and reading maturity level at which particular linguistic difficulties in a test item will have a major negative impact upon test performance. The principles outlined below should be read, therefore, as a set of general advice of which test designers need to be aware as they write test items.

### Linguistic features

#### Word difficulty

Word difficulty has to do with the pupil's understanding of individual words. The difficulty of words is measured in two ways:

- the length of the word
- the familiarity of the word.

#### *The length of the word*

Word difficulty has traditionally been measured by the length of the word, with the assumption that longer words are harder to read than short ones. However, there

have also been findings suggesting that short words are not always easier to read than long ones.

Neither is it always the case that longer words are harder to read. There are very few 7- to 11-year-olds, for example, who will not be able to read and understand long words such as *tyrannosaurus* and *diplodocus*. Children's motivation to read a word and their existing familiarity with it are much more significant indicators of reading ease.

### Word familiarity

Word difficulty is affected by word familiarity. From analyses of English word usage, a fairly small number of words appear to make up a substantial proportion of words in common use. One implication is that minimising the text used in written assessment tasks to, say, the most familiar 1,000 words would maximise the readability of these tasks. The most familiar 1,000 words are given in an alphabetical list in the Appendix. Unfortunately, there are some questions about the validity of the means used to determine lists such as this, many of which are based on frequency counts done in the United States. Nevertheless, the advice given in the *Fair Access by Design* (2010, p.19) document that "Differentiation should be based on subject content rather than vocabulary" is sensible because marks awarded to a pupil should reflect pupil's knowledge of the content being assessed rather than their familiarity with words used by test developers.

#### **Key principles**

- Word difficulty can play a part in the readability of assessment questions. But there are some caveats which writers of these questions need to take into consideration:
  - The length of a word is an uncertain guide as to its difficulty.
  - The characteristics of the readers of the text are not the same.
  - The familiarity of a word to its target audience is a more useful indicator.
- Therefore: Lists of familiar or frequently occurring words need to be examined carefully to ensure they relate to the target audience.

## Sentence difficulty

The common belief regarding sentence difficulty is that the longer its sentences, the harder a text is to read. The *Fair Access by Design* (2010) document recommends that test designers:

- use simple sentence structures with a logical conceptual flow (subject, verb, object).
- avoid subordinate clauses.
- present information in short sentences.
- divide even relatively short sentences if they contain a lot of condensed information.

Care needs to be taken, however, in using sentence length as an absolute measure of reading difficulty. Short sentences can be so dense that they make deciphering meaning harder rather than easier. In addition, at times longer sentences are easier to understand because they provide more clues as to the meaning of the sentence and the relationship between its parts.

Nevertheless, it does seem that sentence complexity can make a difference to the reading comprehension of a text. There are four variables that contribute to sentence complexity:

- The number of propositions within a sentence (this equates to the number of verbs, which in turn indicates the number of clauses within the sentence). So, a sentence such as: *The man who was driving the car was in a hurry* is more complex, and hence more difficult to read, than: *The man was driving the car. He was in a hurry.*
- The number of embeddings. Thus the following sentences increase in complexity and difficulty:
  - *The man was driving the car.*
  - *The man wearing the sweatshirt was driving the car.*
  - *The man wearing the sweatshirt with the Manchester City logo was driving the car.*
  - *The man wearing the sweatshirt with the Manchester City logo which he had bought from the Internet was driving the car.*

- The order in which major elements appear in the sentence, from simple, active sentences such as subject-verb-object (SVO) to passive sentences (OVS). Thus the following sentences increase in complexity and difficulty:
  - *John (S) kicked (V) the ball (O).*
  - *The ball (O) was kicked (V) by John (S).*
  - *It was the ball (O) that John (S) kicked (V).*
- The distance between crucial elements in the sentence. The basic premise is that when words intervene between elements that are typically closer together in a simply constructed sentence, the reader has to work harder to connect the crucial elements in the sentence.

### Key principles

- Sentence length and sentence complexity can play a part in the readability of assessment questions. But caution is needed when taking these features into consideration:
  - Sentence length is not an absolute guide to sentence difficulty.
  - Sentence complexity is a more useful indicator of sentence difficulty.
  - Sentence complexity can cause misunderstandings in inexperienced readers.
- Sentence complexity is influenced by the following features within sentences:
  - the number of propositions (clauses)
  - the number of embeddings
  - the order in which major elements appear

### Cohesion and coherence

A specific word feature, sentence construction, punctuation and language effects may lead to accessibility issues. But one of the key features of a text is that it is not just a group of words and sentences. Instead, there is a structure in a text which glues the various text components together. In reading a text, the reader needs to construct a coherent, mental representation of the ideas which have been cohesively presented in the text. The term 'coherence' refers to the way ideas 'hang together' in a text and 'cohesion' refers to the textual links through which coherent ideas are built up. The effects on readability of the cohesion and coherence of the texts used in

assessment questions are often not explicitly considered by test designers. The *Fair Access by Design* (2010) document, for example, did not mention these concepts at all.

Yet problems of cohesion can easily cause difficulties for pupils reading assessment questions. The beginning of the Key Stage 2 English (2009) Reading answer booklet, for example, has the following:

*You have now had 15 minutes to read No place like home and The Earthship leaflet. In this booklet, there are different types of question for you to answer in different ways.*

It may well be that some pupils reading this thought initially that there should be questions for them to answer in the *Earthship* leaflet. The reference 'this booklet' might well be interpreted to refer to the previously mentioned leaflet, instead of the booklet the children are actually reading.

Studies of cohesion in reading show that it can make a substantial contribution to readability. Readers develop an awareness of cohesion over time and make increasing use of it to get meaning from print. However, it has been found that higher text cohesion benefits readers with poorer levels of prior knowledge. Readers with lower levels of reading skill but higher levels of prior knowledge of the topic of a text tend to process text more shallowly and actually perform less well on a subsequent assessment of their understanding.

Texts, including those used in assessment, need to be evaluated for their levels of cohesion. But it should not be taken for granted that increasing the levels of cohesion – for example by spelling out all the cohesive links within a text – will always benefit readers.

### Key principles

- The success of pupils in assessments can be influenced by:
  - the coherence of the texts used to introduce and pose assessment questions
  - the levels of cohesion in these texts.
- Spelling out too carefully the cohesive links between the various parts of a question text might not be a useful approach.
- Cohesive ties, however, must be clear and unambiguous.

## **Content structure and complexity**

Well-written text requires, in addition to coherence and cohesion, a structure that readers can easily use to find the information they need and then to understand it correctly. Text can become confusing when information is inappropriately presented.

When a significant amount of information is conveyed in a relatively small amount of text, the reader can easily become confused. This problem is known as 'propositional density'. The greater the number of ideas expressed in a text, the more work is required of the reader to interpret the text correctly. Thus the more complex and propositionally dense the text of a test question, the harder that question is to answer, no matter the level of the pupil's content knowledge.

The second problem with text structure is called 'lexical incoherence'. This occurs when writers present new information to the reader without making clear its relationship to previous information.

### **Key principles**

- The success of pupils in assessments can be influenced by the content structure of the texts used in the assessment.
- Features for assessment developers to be aware of in terms of content structure include:
  - the need for unambiguous information
  - the propositional density of the text used, which must not be so high as to overwhelm pupils' reading and comprehension capacities
  - possible lexical incoherence issues and the need to ensure that the various parts of a text (phrases, sentences, paragraphs) clearly link together.

## **Legibility and print issues**

Studies of legibility have researched the impact of factors such as size of characters, thickness of strokes, white space between strokes, dissimilarity of characters, leading (space between lines), line length, quality of paper, colour of paper, and colour of ink. Research has shown that legibility issues such as the size of font and typeface can affect reading and reading speed.

The *Fair Access by Design* (2010) document included several examples of legibility issues which are likely to make a difference to text readability, such as font style, size and weighting. The advice given, and supported by research, is that assessment developers should:

- carefully consider the layout of written assessments, because poor presentation can hinder effective communication. Judicious use of white space is key here, to avoid the layout looking cluttered.
- use an appropriate font of sufficient size.
- use underlining, bold, italics, boxes, indentation and shading consistently.
- use headings, subheadings, bullet points and numbers to ensure questions are well structured, clear and easily managed.
- use simple rubric in plain English so that the question or task is clear.
- include diagrams, pictures or photographs in questions only when there is a clear purpose or benefit to all pupils (although of course there will be some visually impaired pupils for whom the inclusion of these graphic elements will never be of benefit).
- avoid questions where the correct answer requires pupils to distinguish between different colours. This could disadvantage colour-blind pupils.
- if answer booklets are being used, provide enough space for pupils' responses.
- clearly show the mark allocation for each question or question part.
- ensure cover pages are clearly laid out and include only essential information about the assessment.

The key issues for the legibility of various text display options are listed in the following table:

<b>Text display characteristic</b>	<b>Legibility features</b>
Font size	Optimal font size is between 10pt and 15pt. Smaller type becomes less legible. Compare the following: How easy is this to read?(10 pt) How easy is this to read?(12 pt) <b>How easy is this to read?(18 pt)</b>
Font weight	Medium-weight fonts are the easiest to read. Bold fonts attract attention in comparison. Compare the following: How easy is this to read?(Arial Narrow)

	<p>How easy is this to read?(Arial)  <b>How easy is this to read?(Arial Black)</b></p>
Font style	<p>Roman is easier to read than italic. Italic can be used to emphasise short blocks of text for greater attention. There has been debate about the merits of serif and sans-serif fonts.          Compare the following:  <i>How easy is this to read?(Italic)</i>          How easy is this to read?(Sans-serif)          How easy is this to read?(Serif)</p>
Line length	<p>Roughly 50 to 65 characters is an ideal measure. Anything significantly smaller or larger loses legibility.</p>
Letter spacing	<p>Most fonts do not need extra letter spacing (leading) because it should be part of the font design. It is best to keep with the original design.</p>
Word spacing	<p>The space between words should be large enough to indicate clearly that they are different words, but not so large as to lose their connection to each other. Compare the following:          How easy is this to read?(single word spacing)          How easy is this to read?(triple word spacing)</p>
Line spacing	<p>The vertical space between lines of type should increase as the length of the lines increases. The lack of white space between lines makes it difficult for the eye to track from one line to the next. Usually a line-height between 1.15 and 1.5 works well.</p>
Justified or flushed left or right	<p>Type that is set flush left with a soft right edge is the easiest to read. Full justification risks creating uneven spaces between words. Compare the following:          These lines are flushed left and have an unjustified right edge. Their advantage is that they maintain the same distance between words throughout.          These lines are fully justified – that is, straight on both left and right sides. It will be apparent that the between-word spaces are not equal here, which can make reading harder.</p>
Lowercase, all caps, small caps	<p>Lowercase letters have more contrast in their strokes, making them easier to read. ALL CAPS should be reserved for display type. SMALL CAPS can be used for emphasis, but sparingly.</p>
Contrast between type and background	<p>Black text on a white background is the most legible. Everything else reduces legibility.</p>

### **Key principles**

- The success of pupils in assessments can be influenced by the legibility of the texts used in the assessment.
- Assessment developers need to:
  - Carefully consider the layout of written assessments, because poor presentation can hinder effective communication. Judicious use of white space is key here, to avoid the layout looking cluttered.
  - Use an appropriate font of sufficient size (at least 12 point but 14 point is better).
  - Use underlining, bold, italics, boxes, indentation and shading consistently.
  - Use headings, subheadings, bullet points and numbers to ensure questions are well structured, clear and easily managed.
  - Use simple rubric in plain English so that the question or task is clear.
  - Use diagrams, pictures or photographs to convey key information graphically as well as textually, but only when there is a clear purpose or benefit to the majority of learners.
  - Avoid questions where the correct answer requires learners to distinguish between different colours. This could disadvantage colour-blind pupils.
  - If answer booklets are being used, provide enough space for pupils' responses.
  - Clearly show the mark allocation for each question or question part.
  - Ensure cover pages are clearly laid out and include only essential information about the assessment.

### **Text organisation**

Two aspects of text organisation are particularly important in educational contexts: format variables and advance organisers:

- Format variables include paragraphing, headings and subheadings, and typographical effects such as bold type, underlining and italics. These may

assist understanding. But sometimes variables such as bold type, underlining and italics can be confusing or even distracting to readers.

- An advance organiser is a summarising piece that is included at the beginning of a longer text to enhance the readers' conceptual organisation. The benefits of such advance organisers are well supported by research.

### **Key principles**

- The success of pupils in assessments can be influenced by the organisation of the texts used in the assessment.
- Consideration needs to be given to the use of:
  - format variables, including paragraphing, headings and subheadings, and typographical effects such as bold type, underlining and italics.
  - advance organisers; that is, summarising pieces at the beginning of longer texts to alert the reader to what is coming and to help enhance his/her conceptual organisation.

## Readability: looking at the characteristics of readers

It is unlikely that two pupils are going to perform in exactly the same way when faced with a test, especially one which involves the extensive interpretation of written language. Pupils are not clones of one another, and each has his/her own individual characteristics which affect, however slightly, his/her responses to assessment questions. As mentioned previously, an important omission in most research into readability is the effect of various reader characteristics. We now recognise that readability and language accessibility are both products of the features in a text **and** the characteristics of a reader. Therefore it is important for writers of assessment questions to take into account these reader characteristics if they are to produce fair assessments.

Understandings of the ways in which reader characteristics can affect the readability of assessment questions have been developed over a number of years through the use of Differential Item Functioning (DIF) analysis. This well-established statistical procedure has been used to identify individual questions in assessments that may be biased against particular groups of pupils.<sup>1</sup>

Bias occurs when assessments produce different scores or promote different score interpretations for members of different groups (for example focal groups with differences in racial, ethnic, language, cultural, gender, disability or socio-economic statuses will perform differently from the reference group because of factors that are unrelated to pupils' ability levels).

### Key principles

- The readability of assessment questions is determined as much by characteristics of the pupils as it is by features of the texts themselves.
- Differential Item Functioning (DIF) analyses have been carried out extensively to try to determine the impact which particular items may introduce into assessments for particular groups of pupils.
- The aim is to produce assessment questions which are 'fair'; that is, which have no inbuilt bias for or against particular groups of pupils.

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<sup>1</sup>If you are seeking Ofqual guidance on DIF analysis, please refer to *Guidance on Evaluating Access to National Curriculum Assessments* and *Did It Work? Evaluating Access to National Curriculum Assessments: Research Background* (Ofqual, 2012).

DIF analysis now has a substantial history and large numbers of research studies have been carried out using its principles and methods. But we still lack a full understanding of exactly why DIF occurs in educational assessment. To develop such an understanding requires an appreciation of the kinds of pupil characteristics that have been shown to affect the readability of the texts used in assessments. These characteristics will be outlined in the following sections.

### **Physical capabilities**

Having a disability or impairment – for example autism, ADD (Attention Deficit Disorder) and ADHD (Attention Deficit Hyperactivity Disorder) – can influence a pupil's reading ability. Children with ADD and ADHD have difficulties in concentrating on a task for any lengthy period of time. Autistic children need special teaching techniques because they are often unable to interact with others. There is also a range of physical capability issues which may affect readers and are likely to have an impact upon the accessibility of assessment texts.

### **Reading abilities**

Well-developed reading abilities enable the reader to:

- Read meaningful language
- Read any written form with independence, comprehension and fluency.
- Mentally interact with the message from the written form.

Hence, the reader needs to master skills such as word attack skills, comprehension skills and various other reading skills. It is obvious that if a pupil is disadvantaged by lack of reading ability then he/she will be much less likely to process any form of text which involves reading, whatever the level of content knowledge he/she may have.

### **Engagement / motivation**

Engagement or motivation in reading refers to the intrinsic drive to read for the knowledge and the enjoyment that it provides. There are many examples in the literature of readers who can read beyond their normal levels when they are engaged and motivated by particular texts.

### **Prior knowledge**

Prior knowledge is an integral part of the comprehending process and it influences what is understood from text. This means that two individuals with different prior knowledge but equal levels of reading comprehension skills would still exhibit different levels of comprehension of the same text. Prior knowledge is the knowledge that stems from the pupil's experience, such as everyday activities that relate to reading and events in their lives that provide background understanding. Prior knowledge stems from family and community experiences that pupils bring to school

with them. This is precisely the knowledge that most tests assess. Not surprisingly, pupils with greater prior knowledge will understand test questions and remember content better than those with a limited knowledge.

One aspect of prior knowledge whose effect may be underestimated is knowledge of the language of the assessment. Research has demonstrated that there is a substantial link between pupils' English language proficiency and their performance in assessments (in English) of mathematics, science and social studies. There are a number of possible responses to the problems caused by the language of assessments for English as an additional language pupils. They range from modifications of the assessment for these particular pupils (for example carrying out assessments in pupils' native languages, or modification of the language used in test directions), to modifications in assessment procedures for this group (including, for example, extra assessment time or oral directions given in the native language). Studies of the effects of such 'accommodations' has, however, proved disappointing, in finding little evidence that the assessment performance of English as an additional language pupils is much improved by them.

## **Gender**

Gender differences in test responses have been commonly found in assessment research. However, even when consistent differences between males and females are found, the amount of variance accounted for by gender is small, relative to the amount of variation within each gender. We need to be very wary of assuming that all individuals fit the characteristics of the groups to which they belong.

### **Key principles**

- Characteristics of pupils which have been shown to have an influence upon their reading and understanding of assessment questions, and hence on their success in assessments, include the following:
  - Physical capabilities – special educational needs such as autism, dyslexia and ADHD, and physical issues such as visual or hearing impairments can all influence performance in assessments.
  - Reading abilities – difficulties in reading are likely to significantly affect a pupil's performance in a test, no matter what level of content knowledge he/she may have of that subject.
  - Engagement/motivation – one of the most powerful explanations for pupils' performance in assessments is their interest in the content of these assessments and/or their emotional reaction to this content.
  - Prior knowledge – this influences not just pupils' demonstration of content knowledge of a test, but also their approach to reading the test questions. Language and cultural background are particularly strong influences on assessment performance.
  - Gender – gender differences in assessment responses have been commonly found in assessment research. But it should be remembered that there may be greater variation in responses within a gender than between genders.

## Accommodations, modifications and universal design

The list of catalogued readers' characteristics is constantly increasing. This ever-widening set of reader characteristics has a significant effect on pupils' demonstration of their capabilities in assessments in a range of subjects. The traditional response of test development agencies, both in the UK and the US, has been to explore various assessment accommodations. Suggested accommodations have included modifications of assessments for particular pupils and modifications in assessment procedures for particular groups.

The table below gives some examples of accommodations in both these categories.

<b>Modifications of assessments for particular pupils</b>	<b>Modifications in assessment procedures for particular groups</b>
Assessment in native language rather than in English	Extra assessment time
Changing (simplifying) the vocabulary used	Breaks during testing
Modifications of linguistic complexity	Administration over several sessions
Addition of visual supports	Oral directions given in the native language
Use of glossaries in native language	Small-group administration
Use of glossaries in English	Separate room administration
Linguistic modification of test directions	Use of dictionaries
Provision of additional example items/tasks)	Reading aloud of questions
	Answers written directly into test booklets
	Directions read aloud or explained

A great deal of research has been carried out to explore the effects of such accommodations. But it has rarely provided conclusive evidence about the effects of accommodations on the validity of assessments.

A more global approach to the issue is to design assessments that allow the participation of the widest range of pupils and produce valid outcomes that reflect the true capabilities of everyone who takes them.

Seven key elements underpin the concept of universally designed assessments.

- **Inclusive assessment population.** Assessments designed for national use must try to include every pupil. They need to be responsive to growing demands – increased diversity, increased inclusion of all types of pupils in the general curriculum, and increased emphasis and commitment to accountability for all pupils.

- **Precisely defined concepts.** The specific constructs tested must be clearly defined so that all irrelevant barriers can be removed. An important function of well-designed assessments is that they actually measure what they are intended to measure. Test developers need to examine carefully what is to be tested and design items that offer the greatest opportunity for success within those constructs.
- **Accessible, non-biased assessment questions.** Accessibility should be built into assessment questions from the beginning, and bias review procedures need to ensure quality in all items. Most importantly, items must be developed by individuals who understand the varied characteristics of the pupils they are aimed at, and the characteristics of items that might create difficulties for any group of pupils.
- **Amenable to accommodations.** The assessment design should facilitate the use of essential accommodations. Although items on universally designed assessments will be accessible for most pupils, there will always be some who continue to need accommodations. For example, the use of Braille as an accommodation will be facilitated if the following features are avoided in the design of the assessment:
  - Use of irrelevant graphics or pictures
  - Use of vertical or diagonal text
  - Items that include distracting or purely decorative pictures, which draw attention away from the item content.

These features are also relevant for pupils with visual disabilities who do not use Braille, and possibly also for the many for whom visual features may create distractions.

- **Simple, clear and intuitive instructions and procedures.** All instructions and procedures should be simple, clear and presented in understandable language. Assessment instructions should be easy to understand, regardless of a pupil's experience, knowledge, language skills or current concentration level.
- **Maximum readability and comprehensibility.** Plain language guidelines should be used to produce readable and comprehensible text. Plain language has been defined as language that is straightforward and concise. Listed below are several strategies that have been identified for editing text to produce plain language:
  - Reduce excessive length by reducing wordiness and removing irrelevant material.

- Avoid unusual or low-frequency words and replace these with common words – for example replace *utilise* with *use*.
- Avoid ambiguous words – for example, *crane* should be avoided because it could be a bird or a piece of heavy machinery.
- Avoid words with particularly unusual or irregular spelling patterns –for example *trough* and *feign*.
- Avoid proper names and replace with simple common names such as first names.
- Avoid inconsistent naming and graphic conventions by avoiding multiple names for the same concept and inconsistencies in the use of font.
- Avoid unclear signals about where pupils' attention should be directed by using well-designed headings and other graphic features (bold, italic fonts) to convey information about the relative importance of information and the order in which it should be considered.
- Mark all questions clearly by the use of an obvious graphic signal (for example bullet, letter, number) to indicate separate questions.
- **Maximum legibility.** Legibility is the physical appearance of text, the way that the shapes of letters and numbers enable people to read text easily. Bias results when assessments contain physical features that interfere with a pupil's focus on, or understanding of, the constructs that the questions are intended to assess.

### **Key principles**

- Accommodations and assessment modifications have been widely used to cater for pupils with a variety of characteristics. It is not altogether certain how effective these have been.
- An alternative approach, currently used in the development of National Curriculum assessment materials, is to focus on universally designed assessments. Such assessments should be/have:
  - inclusive assessment population
  - precisely defined concepts
  - accessible, non-biased assessment questions
  - amenable to accommodations
  - simple, clear and intuitive instructions and procedures
  - maximum readability and comprehensibility
  - maximum legibility.

## **Conclusion**

As we argued earlier in this document, the concept of readability has developed over the past 20 or so years, in line with theories about the nature of the reading process. Traditionally, studies of readability have focused largely on features in the text itself. In this guidance we have outlined the major conclusions which can be drawn from this line of research: that the readability of a text is influenced by:

- linguistic issues such as word and sentence difficulty
- cohesion and coherence
- conceptual difficulty
- legibility and print issues
- text organisation.

More recently, the role of the reader and the readability of texts have become prominent in studies of factors which may affect text comprehension. That is why this guidance has reviewed the influence of such factors as readers' physical capabilities, reading abilities, engagement/motivation, prior knowledge and gender.

There is a strong evidence to support a modern concept of readability that takes into account both the role of the reader and readability of texts side by side with the features of a text (linguistic issues, cohesion and coherence, conceptual difficulty, legibility and text organisation). A major interest for researchers in test design, and for practitioners involved with pupils' testing, is the way in which the features of a text and a reader's characteristics might interact with each other. Test developers and designers need to understand the principles explored in this document if they are to produce 'fair access by design' for all pupils.

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## Appendix: the 1,000 most commonly used words in English text

(Taken from the General Service List, available at <http://jbauman.com/aboutgsl.html>)

a, ability, able, about, above, accept, accord, account, across, act, action, active, actual, add, address, admit, advance, advantage, affair, after, afternoon, again, against, age, agency, ago, agree, ahead, air, all, allow, almost, alone, along, already, also, although, always, among, amount, and, animal, another, answer, any, anyone, anything, appear, apply, approve, argue, arm, army, around, arrange, arrive, art, article, as, ask, association, at, attack, attempt, attend, attention, audience, average, avoid, away
back, bad, balance, ball, bank, bar, base, basic, basis, battle, be, bear, beat, beauty, because, become, bed, before, begin, behaviour, behind, believe, below, best, better, between, beyond, big, bill, bit, black, block, blood, blue, board, boat, body, book, both, bottle, bottom, boy, break, bridge, bright, bring, broad, brother, build, burn, business, but, buy, by
call, camp, can, capital, captain, car, care, carry, case, catch, cattle, cause, cent, centre, century, certain, chance, change, character, charge, check, chief, child, choice, choose, church, circle, citizen, city, claim, class, clean, clear, close, clothe, club, coat, cold, college, colour, combine, come, comfort, command, committee, common, company, compare, complete, compose, concern, condition, conscious, consider, contain, continue, control, cool, corner, cost, could, council, count, country, course, court, cover, critic, cross, crowd, cry, current, cut
daily, dance, danger, dark, date, day, dead, deal, death, decide, decision, declare, deep, defence, degree, demand, department, depend, dependent, describe, desire, destroy, detail, determine, develop, die, difference, different, difficult, difficulty, dinner, direct, direction, director, discover, discuss, discussion, distance, district, division, do, doctor, dog, dollar, door, doubt, down, draw, dream, dress, drink, drive, drop, dry, due, during, dust, duty
each, early, earth, east, easy, eat, edge, education, effect, effective, effort, either, election, electric, else, employ, employee, encourage, end, enemy, engineer, English, enjoy, enough, enter, entire, equal, escape, especially, essential, even, evening, event, ever, every, everyone, everything, exact, examine, example, except, excite, exercise, exist, existence, expect, expense, experience, experiment, explain, express, extend, extent, extreme, eye
face, fact, fail, fair, faith, fall, fame, familiar, family, far, farm, fast, father, favour, fear, feed, feel, few, field, fight, figure, fill, film, find, fine, finger, finish, fire, firm, first, fit, fix, floor, flow, fly, follow, food, foot, for, force, foreign, forget, form, former, forward, frame, free, freedom, frequent, friend, from, front, full, further, future
gain, game, garden, gas, general, get, girl, give, glass, go, god, good, govern, governor, great, green, ground, group, grow, growth, guest, gun
hair, half, hall, hand, handle, hang, happen, happy, hard, hardly, have, he, head,

health, hear, heart, heat, heavy, help, here, high, hill, history, hit, hold, hole, home, honour, hope, horse, hospital, hot, hotel, hour, house, how, however, human, husband
I, idea, ideal, if, imagine, immediate, importance, important, improve, in, inch, include, increase, indeed, industry, influence, inform, inside, instead, interest, international, into, island, it
join, judge, just, justice
keep, kill, kind, king, kitchen, know, knowledge
lack, lady, land, language, large, last, late, latter, laugh, law, lay, lead, learn, least, leave, left, leg, length, less, let, letter, level, lie, life, light, like, likely, limit, line, list, listen, literature, little, live, load, local, lock, long, look, lose, loss, lot, love, low
machine, main, make, man, manage, manner, manufacture, many, mark, market, marriage, marry, mass, master, match, material, matter, may, maybe, mean, measure, medical, meet, member, memory, mention, mere, middle, might, mile, mind, minute, miss, model, modern, moment, money, month, moral, more, morning, most, mother, motor, mountain, mouth, move, much, murder, music, must
name, nation, nature, near, necessary, need, neither, never, new, news, newspaper, next, night, no, none, nor, north, not, note, nothing, notice, now, number
object, observe, occasion, of, off, offer, office, officer, official, often, oil, old, on, once, one, only, open, operate, operation, opinion, opportunity, or, order, organize, origin, other, out, outside, over, own
page, pain, paint, paper, parent, park, part, particular, party, pass, past, patient, pattern, pay, peace, people, per, perfect, perform, performance, perhaps, permit, person, pick, picture, piece, place, plan, plant, play, please, poem, poet, point, police, political, pool, poor, popular, population, position, possible, post, pound, power, practical, practice, prepare, present, president, press, pressure, pretty, prevent, price, private, probable, problem, produce, product, production, profession, program, progress, promise, proper, property, propose, prove, provide, public, pull, pure, purpose, push, put
quality, question, quick, quiet, quite
race, radio, raise, rapid, rate, rather, reach, read, ready, real, realize, reason, reasonable, receive, recent, recognize, recommend, record, red, reduce, refer, reflect, refuse, regard, regular, relate, relation, relative, religion, remain, remark, remember, repeat, replace, reply, report, represent, representative, respect, responsible, rest, result, return, ride, right, rise, river, road, rock, roll, room, round, rule, run
sale, same, sample, save, say, scene, school, science, sea, search, season, seat, second, secret, secretary, see, seem, sell, send, sense, separate, serious, serve, service, set, settle, several, shake, shall, shape, share, sharp, she, shelter, ship, shoot, shop, short, should, shoulder, show, side, sight, sign, signal, simple, since, sing, single, sit, situation, size, skill, sleep, slight, slow, small, smile, so, social, society, soft, soldier, solid, some, someone, something, sometimes, son, song, soon, sort, sound, south, space, speak, special, speed, spend, spirit, spot, spread, spring,

square, staff, stage, stand, standard, start, state, station, stay, step, stick, still, stock, stop, store, story, straight, strange, street, strength, strike, strong, student, study, subject, success, such, sudden, suffer, suggest, suit, summer, sun, supply, support, suppose, sure, surface, surprise, system
table, take, talk, tax, teach, telephone, tell, temperature, tend, term, test, than, that, the, then, there, therefore, these, they, thick, thin, thing, think, this, those, though, through, throw, thus, time, title, to, today, together, too, tooth, top, total, touch, toward, town, trade, train, travel, treat, tree, trial, trip, trouble, true, truth, try, turn, type
under, understand, union, unit, unite, university, unless, until, up, upon, use, usual
value, various, very, view, visit, voice, vote
wage, wait, walk, wall, want, war, warm, wash, watch, water, wave, way, we, weak, weapon, wear, week, weight, well, west, western, what, whatever, when, where, whether, which, while, white, who, whole, why, wide, wife, will, win, wind, window, wine, wish, with, within, without, woman, wonder, word, work, world, worry, worth, would, write, wrong
yard, year, yes, yet, you, young, youth

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