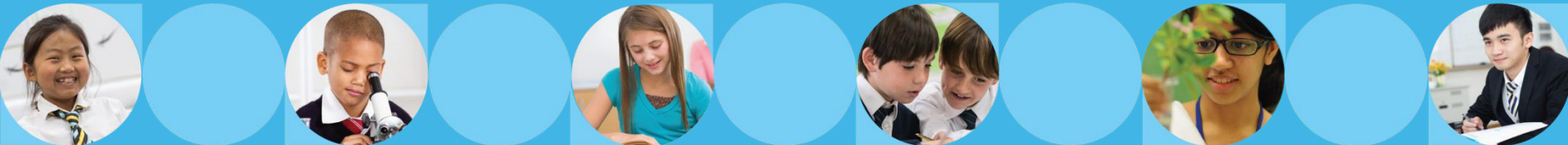# Investigating language used in on-screen assessment and digital literacies

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'Translated' questions

▸ **What do we mean by a 'translated' test?**

　▸ One that mimics its paper-based original and involves the same wording and task on screen and in as close a format as possible to how it appears on paper?

▸ 'Translated' test should attempt to <u>maintain integrity of specific features of task or context deemed most likely to have an impact on test performance</u> when replicated on screen

▸ Measurement of intended constructs <u>not undermined by presence of *unnecessary* technological demands</u>

　▸ level of technological familiarity is not integral to construct(s) of interest

　▸ integrity of constructs must not be threatened by need to remove construct Irrelevant barriers to test performance

▸ Those who contend that computer literacy should be conceptualised as a significant contextual factor <u>interacting</u> with construct measured in a CB language assessment

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The language of instructions in assessments

▶ Exam questions draw upon a number of factors deemed most likely to have an impact on test performance – contextual parameters

▶ These factors can influence the <u>difficulty</u> of the task and how test-takers will perform

▶ Bachman and Palmer (1996, p.121) propose three indispensable guidelines for test question instructions. Instructions should be:

  ▶ sufficiently simple for learners to comprehend

  ▶ short enough so as not to take up too much of the test administration time

  ▶ sufficiently detailed for learners to know exactly what is expected of them

Distinguishing 'cognitive' from 'technical' command words

▸ Anatomy of a question - command words:

   ▸ shape scope, nature, depth of treatment expected in a candidate response

▸ Two types of command word:

   ▸ *cognitive process* e.g., *identify*, *predict*, *explain*, *contrast*

   ▸ *how to respond* – the technical language of assessment instructions e.g., *circle, tick* or *write*

▸ Cognitive language indicates the kind of <u>content expected in an answer</u>

▸ Technical language guides learner on <u>physical steps by which they should register their response</u>

▸ Cognitive command words - focus of scrutiny and meaning of certain command words have been explored in detail (Fisher-Hoch & Hughes, 1996)

▸ Technical commands (such as "write") - not warranted same discussion:

   ▸ process of picking a pen up and writing is clear - category of command word has been relatively neglected

To "write"

▸ Process of writing is obvious - this appears to be a less meaningful feature of instruction

▸ When appended to its <u>cognitively-laden counterpart</u>:

   ▸ *"Explain the difference between a metaphor and a simile. Write your answer here"*

▸ Technical words "Write your answer here" does not appear to add any additional information that would not already be known

▸ However, when used in <u>place of cognitive command</u>

▸ "Explain", technical commands seem not to reflect the complexity of cognitive processing required:

   ▸ *"Write down the difference between a metaphor and a simile"*

To "write"

▶ **Cognitive instructions generally more suitable than technical ones in conveying information to the learner**

   ▶ Little loss to clarity (if any) to the sole use of the cognitive instruction

   ▶ Expect using a precise cognitive instruction - improve learner's score, whereas pointing out use of a writing instrument would not reasonably be seen to do so

   ▶ Students already have a clear *expectation* which does not need to be explicitly confirmed

▶ **Replacing a technical instruction with a cognitive one** has the <u>positive effect </u>of

▶ retaining most important aspect of the instruction

   while

▶ not burdening a question with an excess of command words

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▶ *..... refers to whether a feature of the assessment can be said to make sense regardless of the medium of delivery*

▶ Cognitive command words are <u>always medium independent </u>while technical command words are not necessarily so

▶ "Explain the difference between a metaphor and a simile"

    ▶ cognitive process of explanation is the same both on paper and on screen

▶ "Circle the prime numbers" - contains a technical instruction

    ▶ mechanism for answering the question on screen may be different

    ▶ not necessarily <u>medium independent </u>and could be misleading on screen.

    ▶ may be inclined to change to "Click on the prime numbers" in order to address difference

▶ Consequence of <u>translating cognitive commands into technical commands</u> - introduce multitude of instruction styles, across different devices (e.g. laptops, tablets, mobiles) which ask for a demonstration of exactly the same skill

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▸ A number of immediate concerns with this approach

▸ Practicality: by suggesting that language ought to be medium-dependent

▸ Accept that assessments are different across modes of delivery

  ▸ questions in each mode require checking for their differences in layouts (e.g., word wrapping)

  ▸ and whether appropriate technical terminology has been used

▸ In an international context (with rapidly evolving technology) it is easy to see how this could become problematic

▸ Test developers - familiar with the language of paper-based assessment - would have to consider an additional challenge of deciding whether "click on the drop-down" is appropriate language for given technology

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▸ Each practical concern risks a potential threat to validity

▸ <u>Medium-independent language may be easier to understand when transitioning from paper to screen</u>

  ▸ Why? Learners will be familiar with lexicon

  ▸ any new language needs to be used cautiously in order to obviate misunderstanding

▸ Validity threat from profligate use of command words is equally applicable to paper and screen:

  ▸ more words, more potential cognitive processing required

  ▸ greater the opportunity for introducing a barrier to clarity of instruction

  ▸ higher the risk of compromising validity

▸ As with P/B tests, technical command words - when used in place of cognitive ones - could reduce clarity of content

  ▸ prompting learners to focus on question features that have less to do with their cognitive understanding - more with how they interface with technology

The "technological fallacy"

▸ *Refers to an inherent desire on part of the test developer to introduce change when responding to the challenges of different delivery formats <u>simply because they are different</u>*

▸ Impetus for using medium-dependent language when undertaking direct, word-for-word translations from paper to a digital space grounded in two imperatives:

▸ *Accuracy* and *Clarity* - manifest in the language of question instructions

▸ Give rise to at least three scenarios when translating:

1. no perceived requirement for change as <u>accuracy and clarity in language remains same </u>across both modes

2. P/B language perceived to <u>lack accuracy and clarity </u>in new medium but a suggested solution involving medium-dependent language may not be ideal

3. P/B language is accurate but there is a choice of response methods and it needs to be considered whether this <u>gives sufficient clarity</u>

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Paper version

13 Name **two** different types of boat mentioned in the text.

- ....

- .... [1]

On-screen version

15 Name **two** different types of boat mentioned in the text.

(i)

(ii)

[1]

Cambridge *Lower Secondary* on-screen tests in development for Maths, Science and English

In this example, a <u>medium-independent</u> approach has been taken. This is appropriate given that the cognitive demand is unchanged and that no mode-specific further instructions are needed.

Focus is on cognitive processing as the command "name" does not relate to a particular mode of response.

There are a number of differences between the paper version and its digital counterpart relating to presentation and response format. The only difference in the content of the question is the technical instruction "Circle the correct answer" which has been translated to "Select the correct answer"
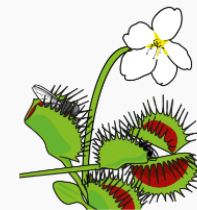

The reason for the change is principally one of *accuracy*:

it would be incorrect to retain the original technical command because circling is not the expected behaviour of learner answering the question on screen.

▶ Proposed solution is not necessarily most elegant as it introduces medium dependency

▶ Ideal solution - remove medium dependence across both formats and opt for a medium-independent instruction such as "choose the correct answer"

▶ Style of response is not intrinsic to answer - should not matter whether a test-taker circles response or indicates their choice in another way

▶ However, for medium-independent instruction to be appropriate for P/B test

   ▶ layout of question - no risk of it being unclear to a marker which response the learner intended to indicate

▶ A vertical layout of the responses similar to layout of the O/S version

   ▶ potentially avoid any such issue for P/B version

   ▶ allow medium-independent instruction to be used for both modes

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1 Safia asks 30 boys and 30 girls how they travel to school.
The bar chart shows her results.

(a) Write down the modal method of transport for boys.

.... [1]

The difference between formats relates to the following instruction: "Write down the modal method of transport for boys".

This has been changed to "Type in the modal method of transport for boys" in the digital format presumably in order to enhance *accuracy* across mediums.
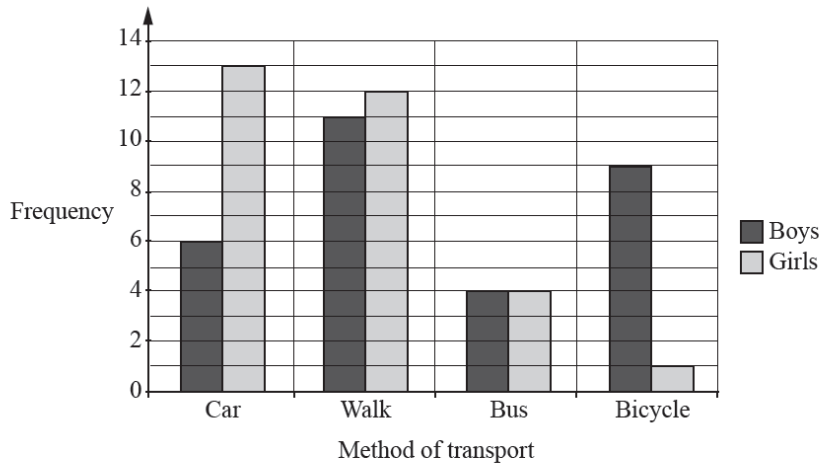
This scenario constitutes one in which the imperative to improve *accuracy* does not require a change in language across formats.
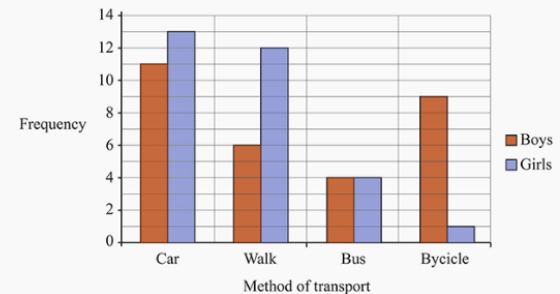
This leads to the second reason for introducing technical instruction: the perceived requirement for greater *clarity*.

1 Safia asks 30 boys and 30 girls how they travel to school.
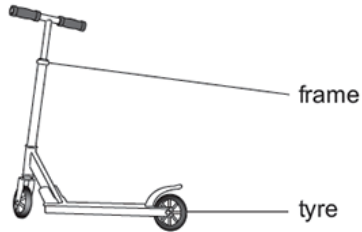
The bar chart shows her results.

(a) Type in the modal method of transport for boys.

[1]

Scenario Two: the paper-based language is perceived to lack accuracy and clarity in the new medium but a suggested solution involving medium-dependent language may not be ideal.

2 Mia has a new scooter.

frame

tyre

(a) For each **part of the scooter**, write down the **material** it is made from.

Choose words from this list.

clay   foam   rubber   steel   wood

frame   ....

tyre   ....

Style of response has changed across paper & screen formats.

Screen version removes risk that a word might be incorrectly copied over.

Instruction not only been modified for *accuracy* but augmented with technical instruction "from the drop-down list".

Intention is to introduce *clarity* to question by explaining correct mode of interaction. Is this really necessary?

It may be <u>sufficient to use medium-independent language</u> such as "Choose the correct materials" to maintain same level of demand.

2 Mia has a new scooter.
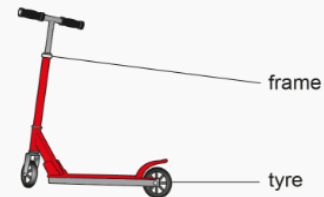
frame

tyre

(a) For each **part of the scooter** select the **material** it is made of from the drop-down list.

part of scooter	material
frame	▼
tyre	clay foam rubber steel wood

[2]

11 Look at the diagram of the inside of a flower.

(a) Complete the labelling on the diagram.

Choose words from this list.

leaf   **ovary**   **pollen**   **stamen**   **stigma**   **style**
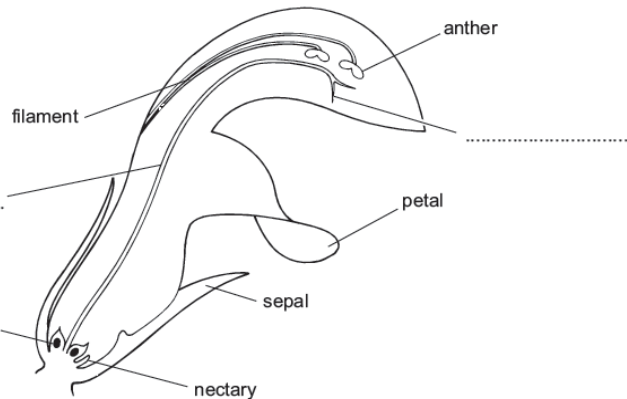
[3]

Proponents of medium-dependent approach may argue that without showing learners technical mode for answering, learners may not know what is expected of them - assumption about technical literacy that neglects the notion that the visual cue of a dropdown may be sufficient, and more powerful

Notion of using medium-dependent language such as "Drag the correct words" might be counterproductive, as instruction "Complete the labelling on the diagram using the words below" may be clear enough in both mediums while also being more succinct

11 Look at the diagram of the inside of a flower.

(a) Drag the correct words to the spaces to complete the diagram.

leaf   **ovary**   **pollen**   **stamen**   **stigma**   **style**

If basic technical literacy is a requirement of on-screen assessment then it follows that visual cues provide an affordance that is an adequate substitution for a linguistic instruction
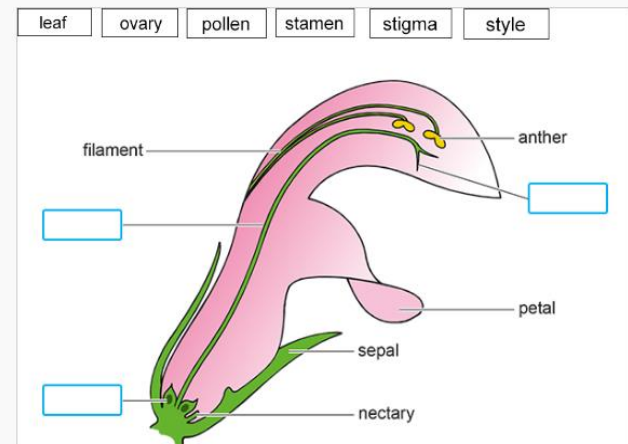
Scenario Two: the paper-based language is perceived to lack accuracy and clarity in the new medium but a suggested solution involving medium-dependent language may not be ideal.

▸ In summary

▸ if the learner's expected technical behaviour to produce a response is unclear

▸ it is preferable to improve the test using a technical solution - such as [modifying the design](#)

▸ rather than an assessment solution - [modifying the instruction](#)

▸ The reason for a lack of *clarity* in a technical context is not necessarily

▸ due to poor assessment language

▸ but poor technical affordances

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9   The diagram shows a shape drawn on a square grid.
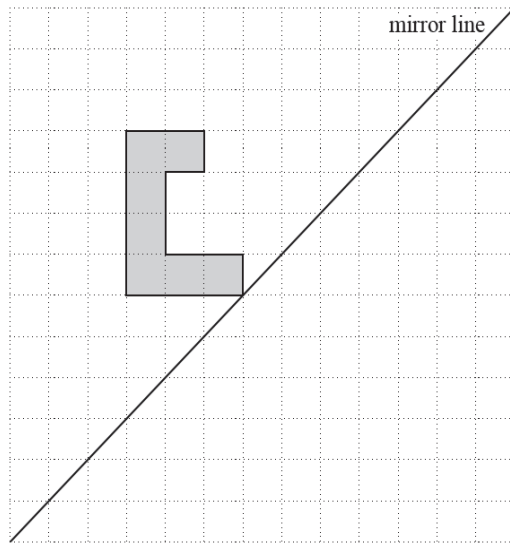
Draw the reflection of the shape in the mirror line.   [1]

We have looked at examples where learner can answer a question – by filling in a text box or choosing a single word from a drop-down.

Another question type - learner may <u>choose technical steps</u> with which they will produce their response. The o/s version reproduces the P/B grid but, as is common with O/S questions, a palette of tools is provided in order for the learner to complete the question

9   The diagram shows a shape drawn on a square grid.

Draw the reflection of the shape in the mirror line.

Undesirable to spell out all different technical tools in the question itself.

If desired approach is to train learner how to use tools - take up a significant part of test session to explain each tool.

Even then learner would probably like to practise first before committing a response.

▶ Thus

▶ introducing multiple potential response techniques makes the argument for including technical commands in the instructions more <u>problematic</u>

▶ as simply signposting them may be unhelpful

▶ explaining them in detail may be unnecessary

▶ detract from the cognitive demand of the question

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The criterion of "technological literacy"

▶ Learners either "baseline technically literate" or not

▶ Baseline technically literate test-takers: sufficiently technically literate to use technology/familiar with its conventions

  ▶ guidance on how to sit an on-screen exam unnecessary

  ▶ provided quality of experience sufficient to follow good digital usability conventions

  ▶ mirror other digital experiences already accustomed to

▶ Learners not baseline technically literate - benefit most from technical instruction

  ▶ test-taker not familiar with or confident to use computers

  ▶ unhelpful to introduce specific commands to highlight visual cues on questions - may create inconsistency

▶ Augmenting questions with technical instructions has a direct impact on fairness in a timed exam

  ▶ time that should be spent on responding to questions is instead spent on learning how to use technology

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The criterion of "technological literacy"

▸ **All digital learners need to meet criterion of technical literacy -** through prior digital experience

▸ Also need to set boundaries on what counts as familiarisation (outside test) and what is permitted to take up valuable test question estate

▸ <u>Caveat</u> - recommended approach increases burden on interface developer to ensure that correct conventions are employed in order to maximise usability

▸ <u>For argument to hold</u>: Drop-down box should look like a drop-down box; clicking on single multiple choice option should show one option clicked (not two)

▸ Also requires interface to provide adequate technical feedback for a learner's actions:

   ▸ a state change on hover, the highlighting of a word, and displaying the word in situ when it is clicked

▸ If an interaction is <u>not</u> intuitive due to bad design - likely that more familiarisation activities/training required even for "baseline technically literate" learners

   ▸ make prior familiarisation time consuming, and frustrating for learners if they have to "unlearn" good digital practice

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