

DMISRS Project: Relevance of AL to students of Mathematics: Patterns in performance

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Overview

- National performance on NBT AL
- Focus on one institution
- Cohort enrolled for a specific course
- Groups within the cohort
- What do we do next?

AL Skills assessed in NBTs

Skill Assessed	Explanation of Skill Area
Cohesion	Identify links (anaphoric and cataphoric) and other mechanisms that connect parts of text.
Communicative function	Identify and understand function of parts of sentences / discourse : define; exemplify; support/endorse; contradict; or persuade etc.
Discourse relations	Understand the structure and organisation of discourse and argument: 1) transitions in argument, logical development; 2) how main idea, supporting ideas / 'evidence' are presented; 3) introductions / conclusions.
Essential / non-essential (Distinction making)	Make distinctions, classify / categorise and compare: identify main ideas and supporting detail; cause and effect; statements and examples; facts and opinions; propositions and their arguments; being able to 'label'
Grammar / syntax	Understand and analyse the grammatical and sentence structures in academic language, and how that affects / can change meaning
Extrapolation, application & inferencing	Draw conclusions and apply insights , either on the basis of what is stated in texts or is implied by these texts.
Metaphorical expression	Understand and work with metaphor in language. This includes the capacity to perceive language connotation, word play, ambiguity, idiomatic expressions, and so on.
Text genre	Can perceive ' audience ' in text, purpose in writing and understand register and tone : includes an ability to understand text register (formality / informality) and tone (didactic / informative / persuasive / etc.)
Vocabulary	Derive/work out the meaning of words/terms from the context

AL Skills assessed in NBTs

Skill Assessed	Explanation of Skill Area
Cohesion	Identify links (metaphoric and catorgorial) and other mechanisms that connect parts of text.
Communicative function	Identify and understand functions defining exemplify, approve/disorse, contrast, compare, generalise, summarise, evaluate, argue, etc.
Discourse relations	Understand the structure and organisation of texts and how they relate to each other.
Essential / non-essential (Distinction making)	Make distinctions, classify, categorise and compare information provided
Extrapolation, application & inferencing	Make inferences and identify implications, extrapolate facts, apply insights to procedure
Metaphorical expression	Become familiar with typical phrases used in the subject, connotations and jargon
Understanding vocabulary	Understand subject-specific terminology, general academic terms

AL Skills assessed in NBTs

Skill Area	Definition
Cohesion	Identify how words and functions define exemplify, support/endorse, contradict or qualify other words and functions; being able to use this knowledge to predict what might happen in a situation or sequence of events.
Communicative function	Identify and understand function of language, e.g. giving information, expressing opinion, persuading, convincing, negotiating, arguing, etc.; being able to identify and analyse the grammatical structures that affect / change the meaning of a sentence or a text.
Discourse relation	Identify multi-levels and representing detail, cause and effect, proportions and their arguments; being able to analyse the grammatical structures that affect / change the meaning of a sentence or a text.
Extra	Understand and work with metapragmatic language conventions: word play, ambiguity, irony, etc. Can perceive 'audience' in text, pitch, tone, etc. Includes an ability to understand text in context (e.g. political, social, cultural, etc.)
& inferencing	Understand and work with metapragmatic language conventions: word play, ambiguity, irony, etc. Can perceive 'audience' in text, pitch, tone, etc. Includes an ability to understand text in context (e.g. political, social, cultural, etc.)
Metaphorical expression	Derive/work out the meaning of figurative language, e.g. metaphor, simile, personification, etc.
Text genre	Understand and work with metapragmatic language conventions: word play, ambiguity, irony, etc. Can perceive 'audience' in text, pitch, tone, etc. Includes an ability to understand text in context (e.g. political, social, cultural, etc.)
Vocabulary	Derive/work out the meaning of figurative language, e.g. metaphor, simile, personification, etc.

AL Skills related to understanding structure, sequence and function

Similar to understanding of sequence, procedure and function in mathematics

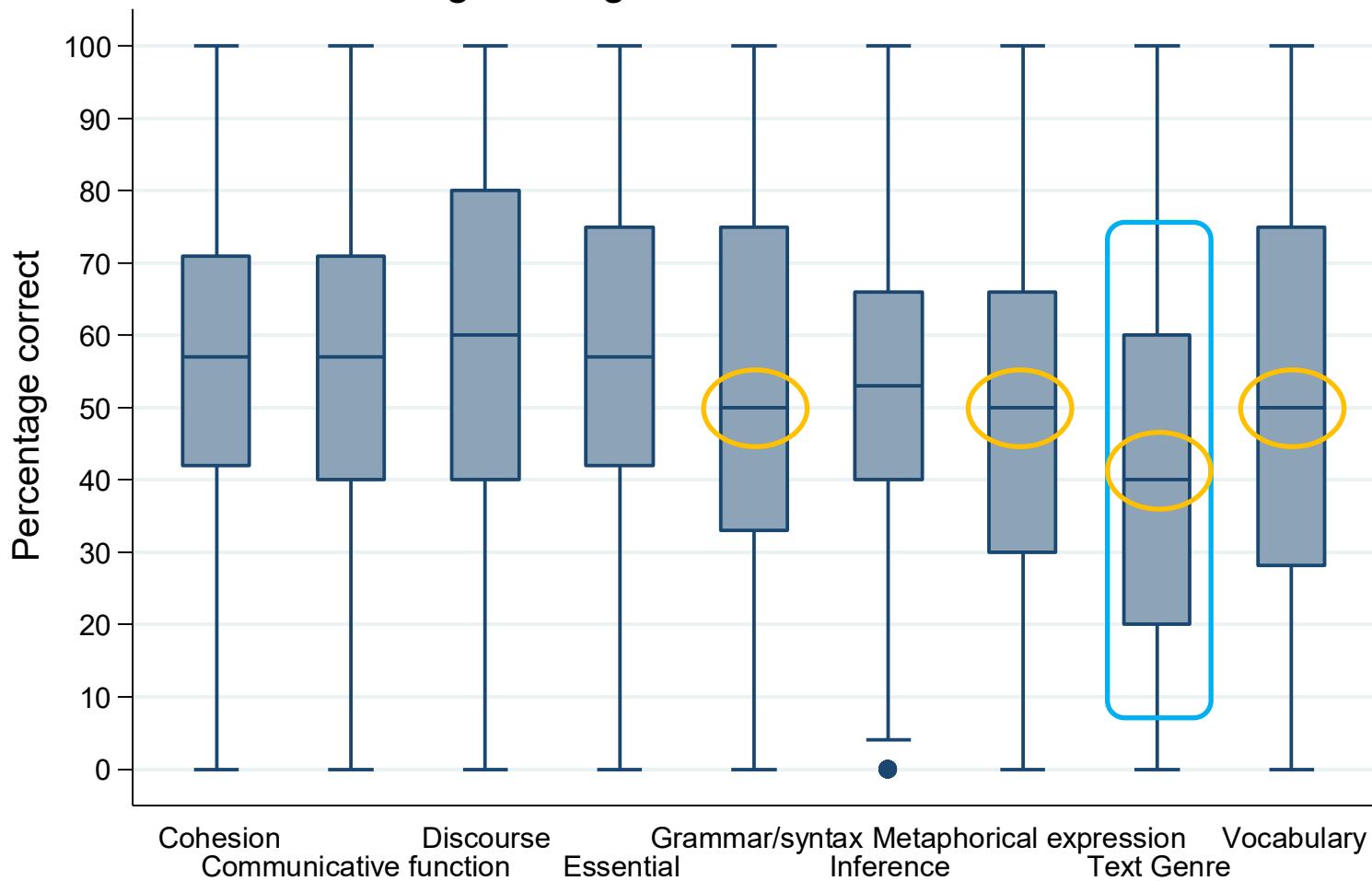
There may be links between these skills, though the specific application of these skills will be limited to tasks requiring written or oral production of texts

Constructing a basic argument is relevant to all disciplines and perhaps most clearly in mathematics – e.g. knowing what counts as evidence for a claim

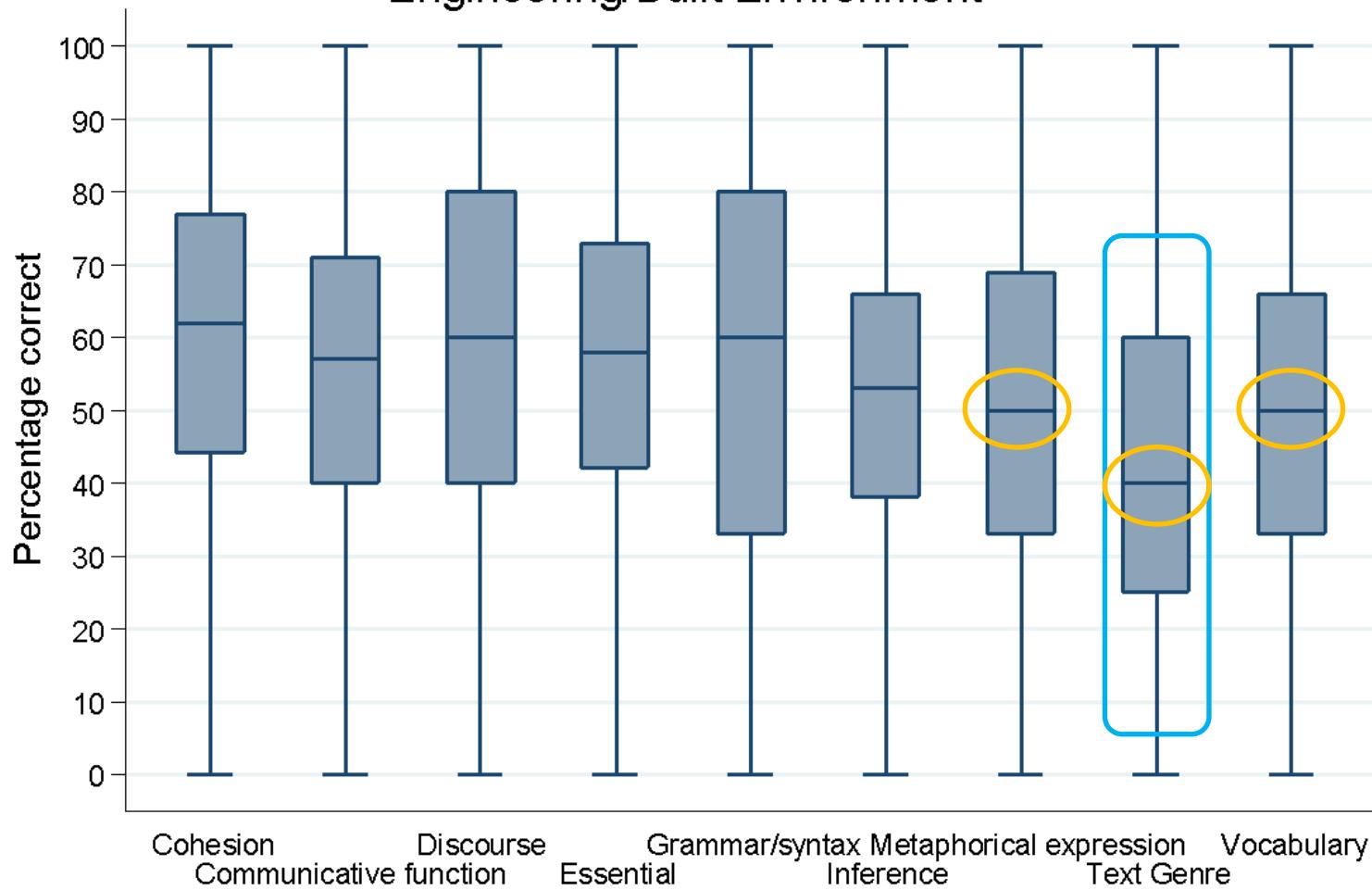
AL Skills assessed in NBTs

Skill Assessed	Explanation of Skill Area	
Cohesion Grammar / syntax	Understand the structure and organisation of texts in argument, logical development, introductions / conclusions. Make distinctions, classify / categorise and regrouping detail, cause / effect, proportions and their arguments; being able to understand and analyse the grammar, language, and how that affects / influences meaning.	Ability to understand scenarios that rely on noticing grammatical or syntactical elements that influence the meaning of a text may affect the ability to complete a task
Discourse relations Essential / non-essential (Distinction making)	Draw conclusions and apply insights from one text to another, or from texts or is implied by those texts.	Understanding of text purpose and audience, appropriate language usage, register and tone
Grammar / syntax Extrapolation, application & inferencing	Work with meta-textual features in text, p... NOTE: This subdomain is not concerned with the ability to work within a particular text genre but rather an awareness of different genres and their characteristics	Impact mostly limited to tasks requiring written or oral production of texts
Text genre Vocabulary	but the meaning of words, and the ability to understand text.	Ability to understand scenarios that rely on noticing like an author's bias may affect the ability to complete a task

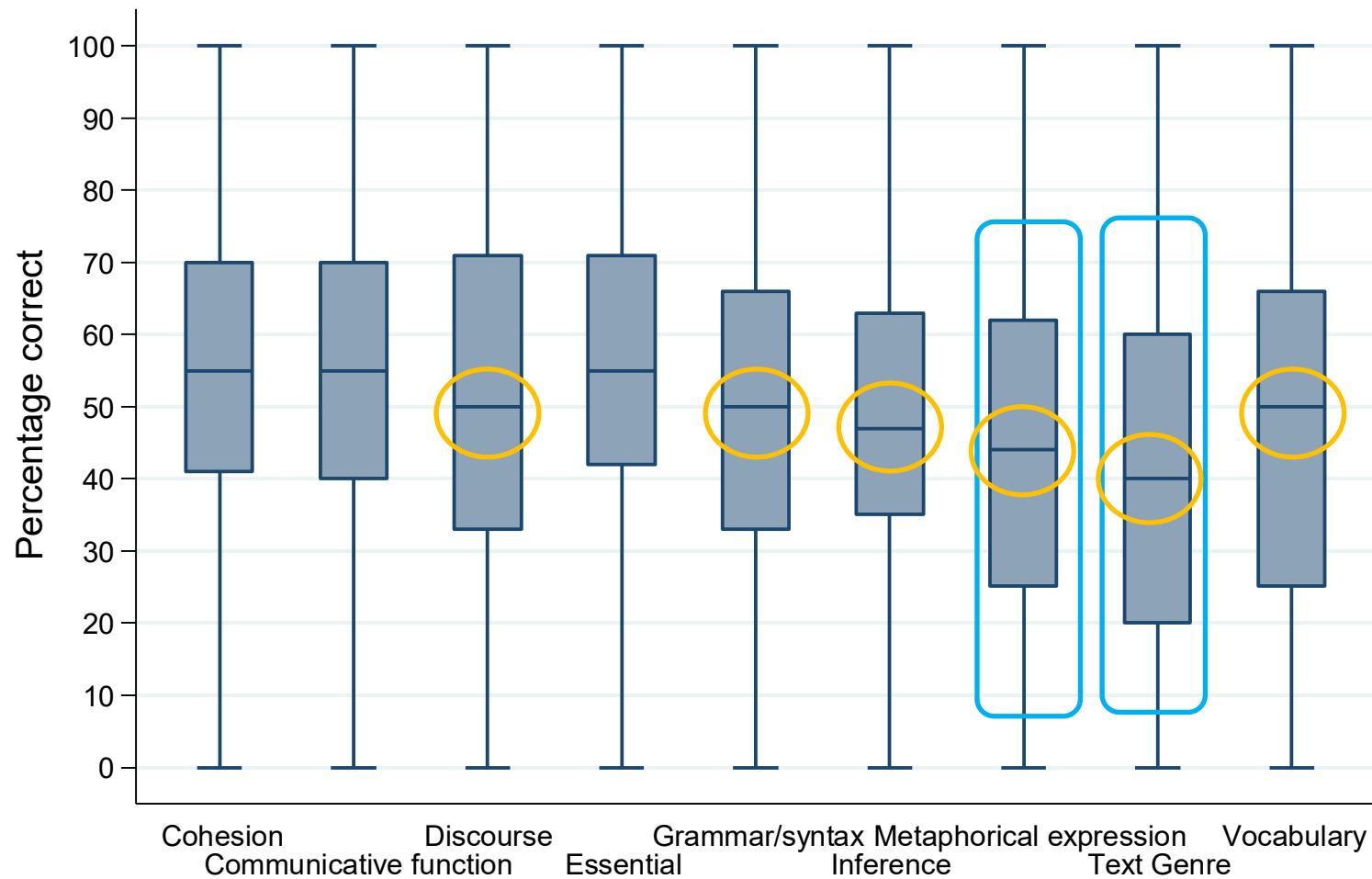
NBT 2018 AL Subdomain Scores for Engineering/Built Environment



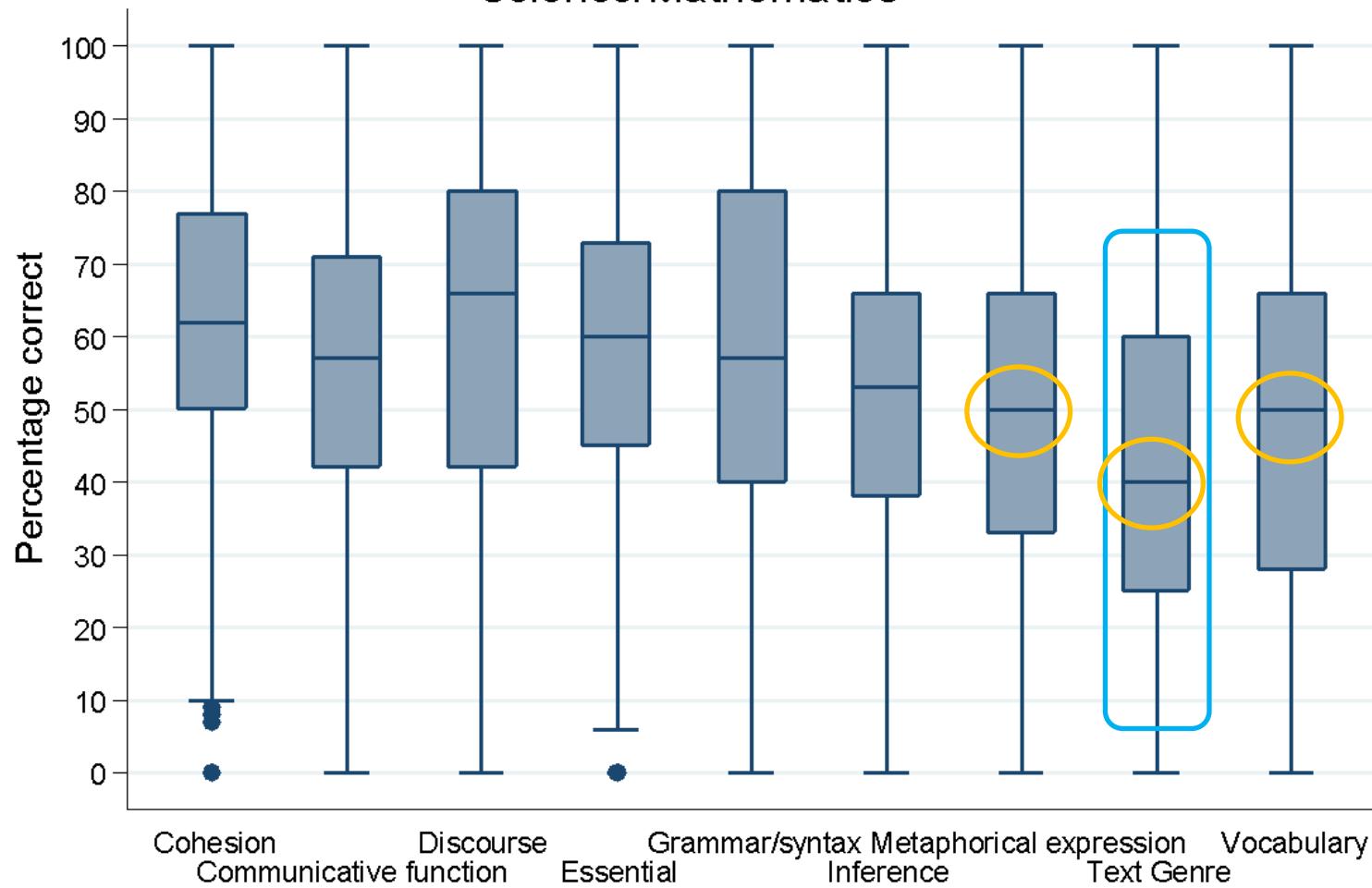
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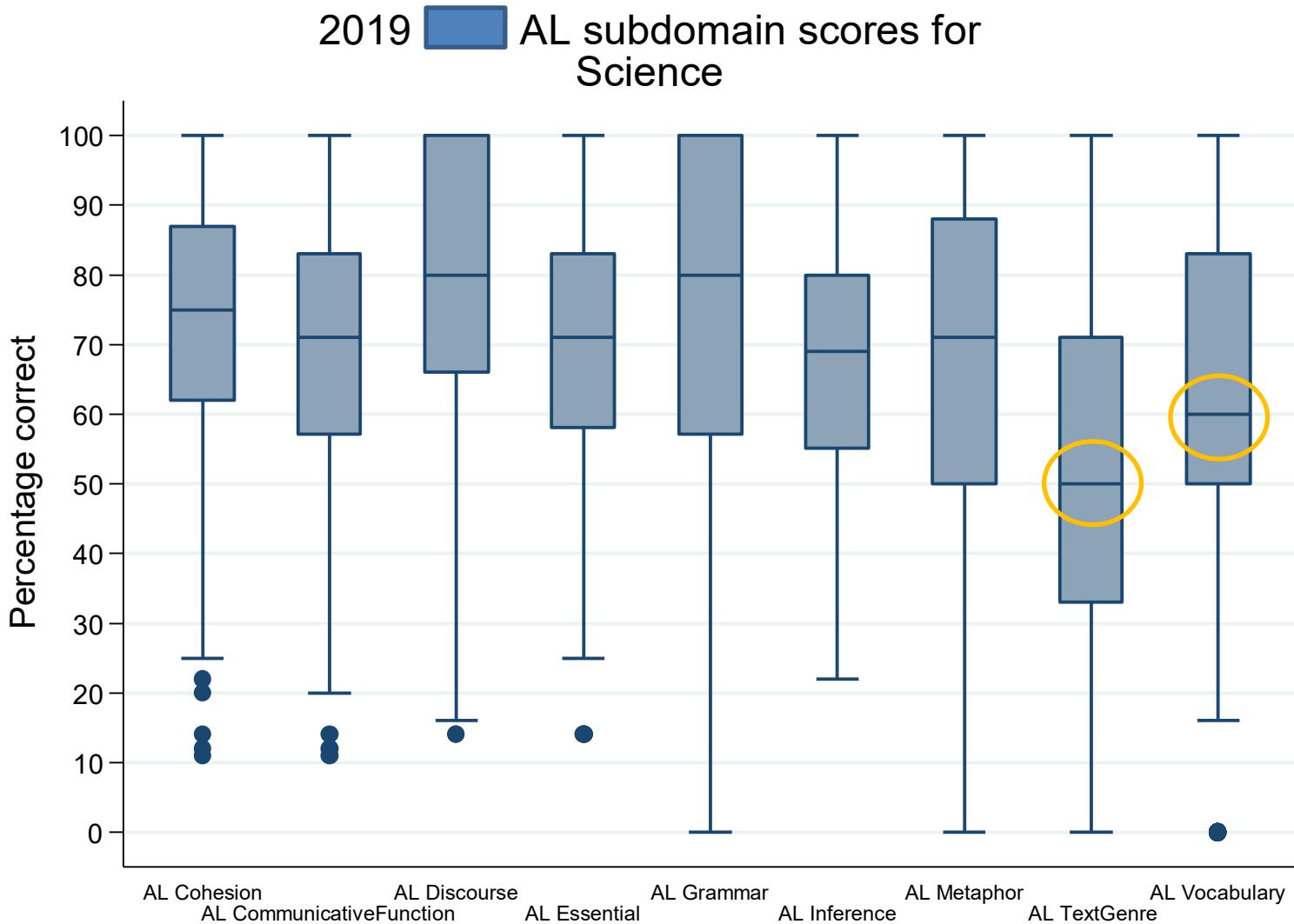


NBT 2018 AL Subdomain Scores for Science/Mathematics

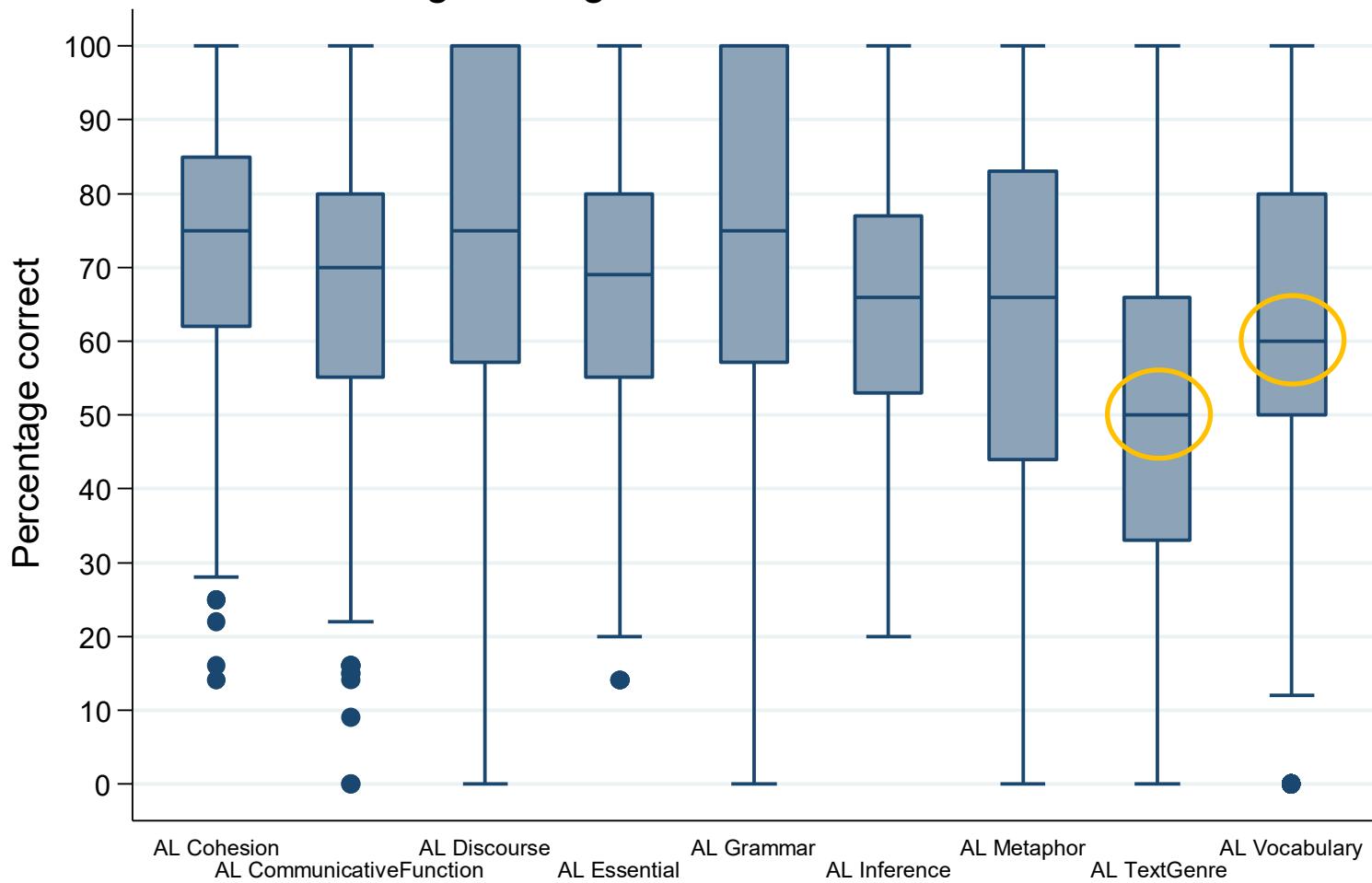


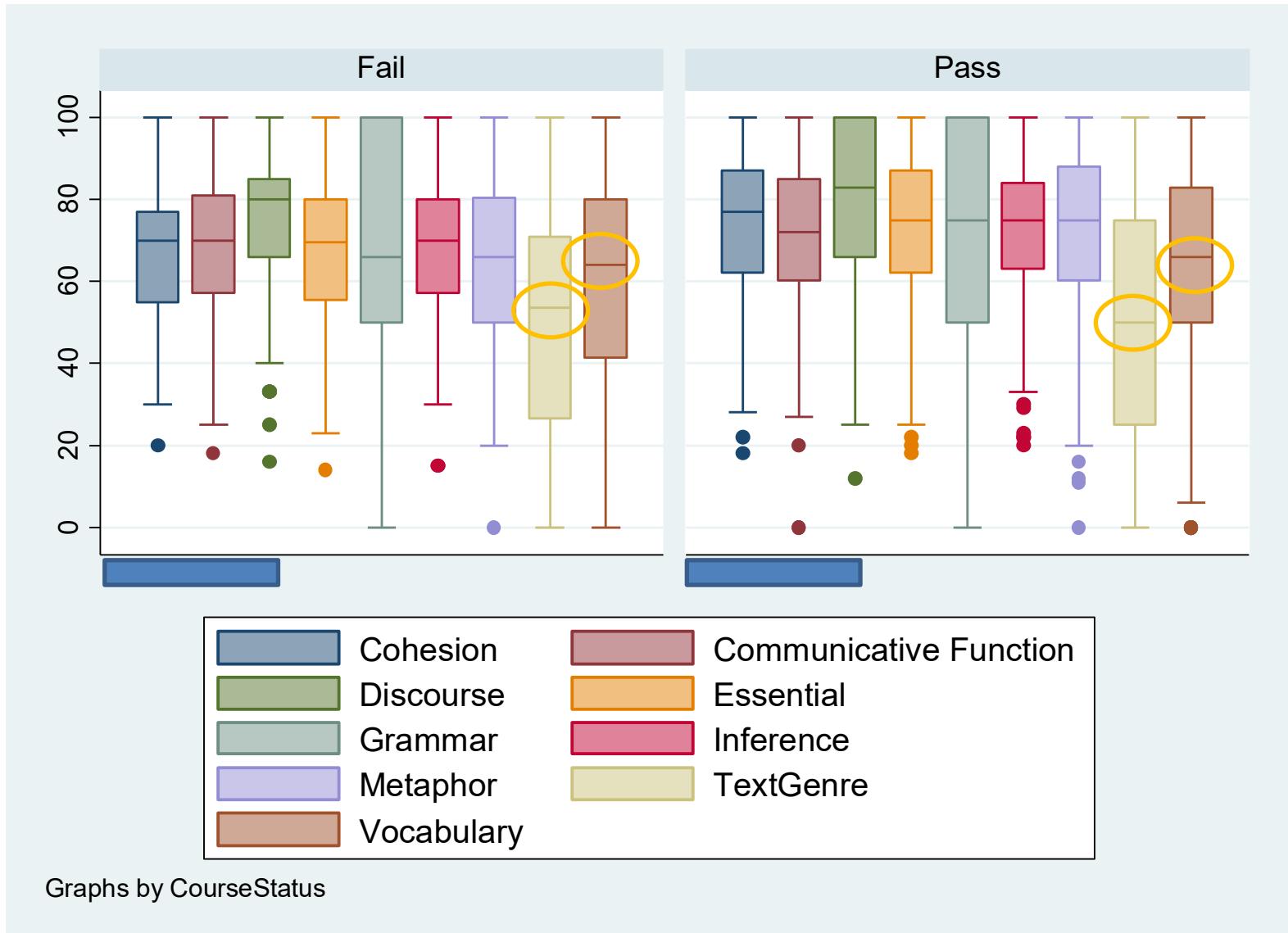
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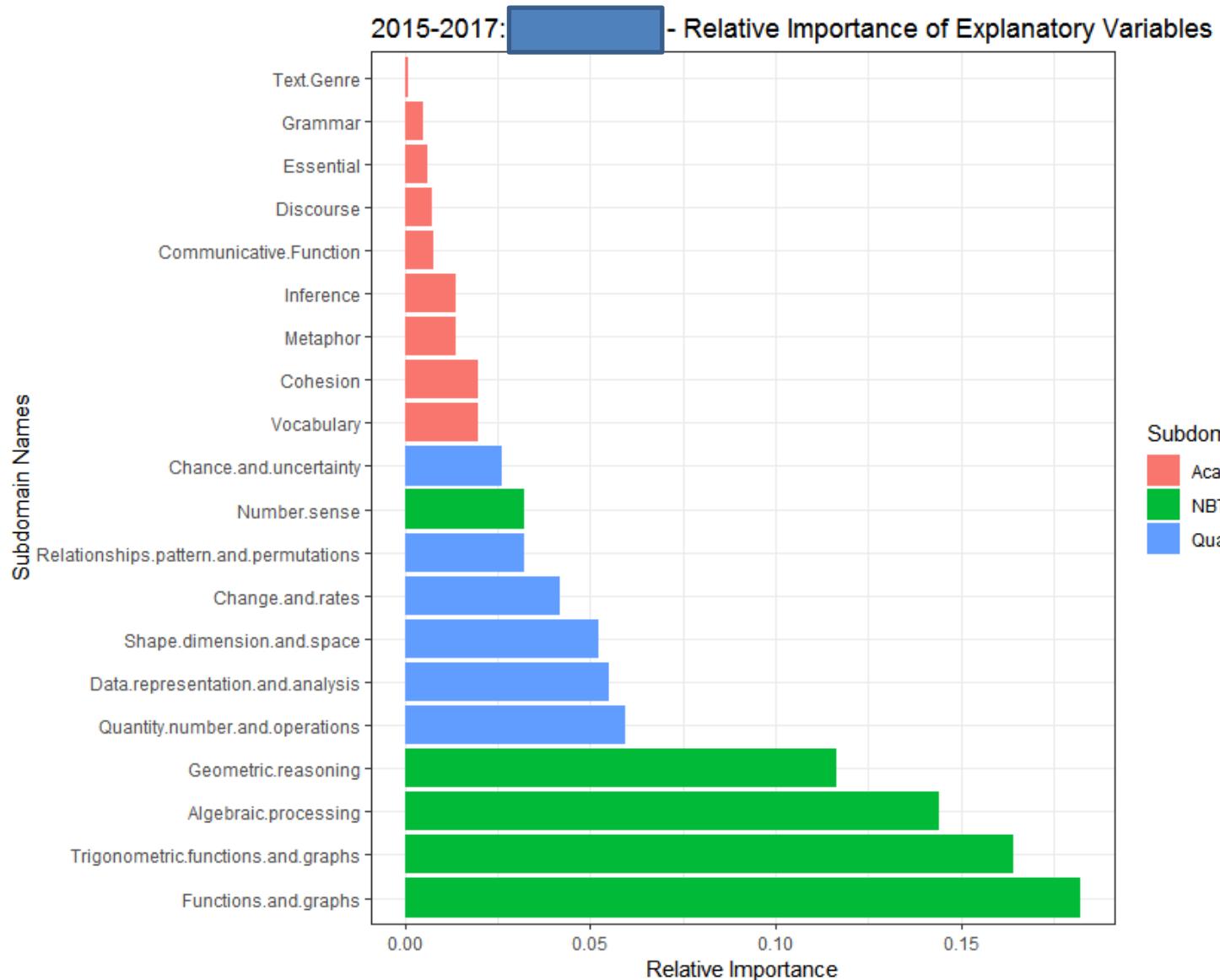


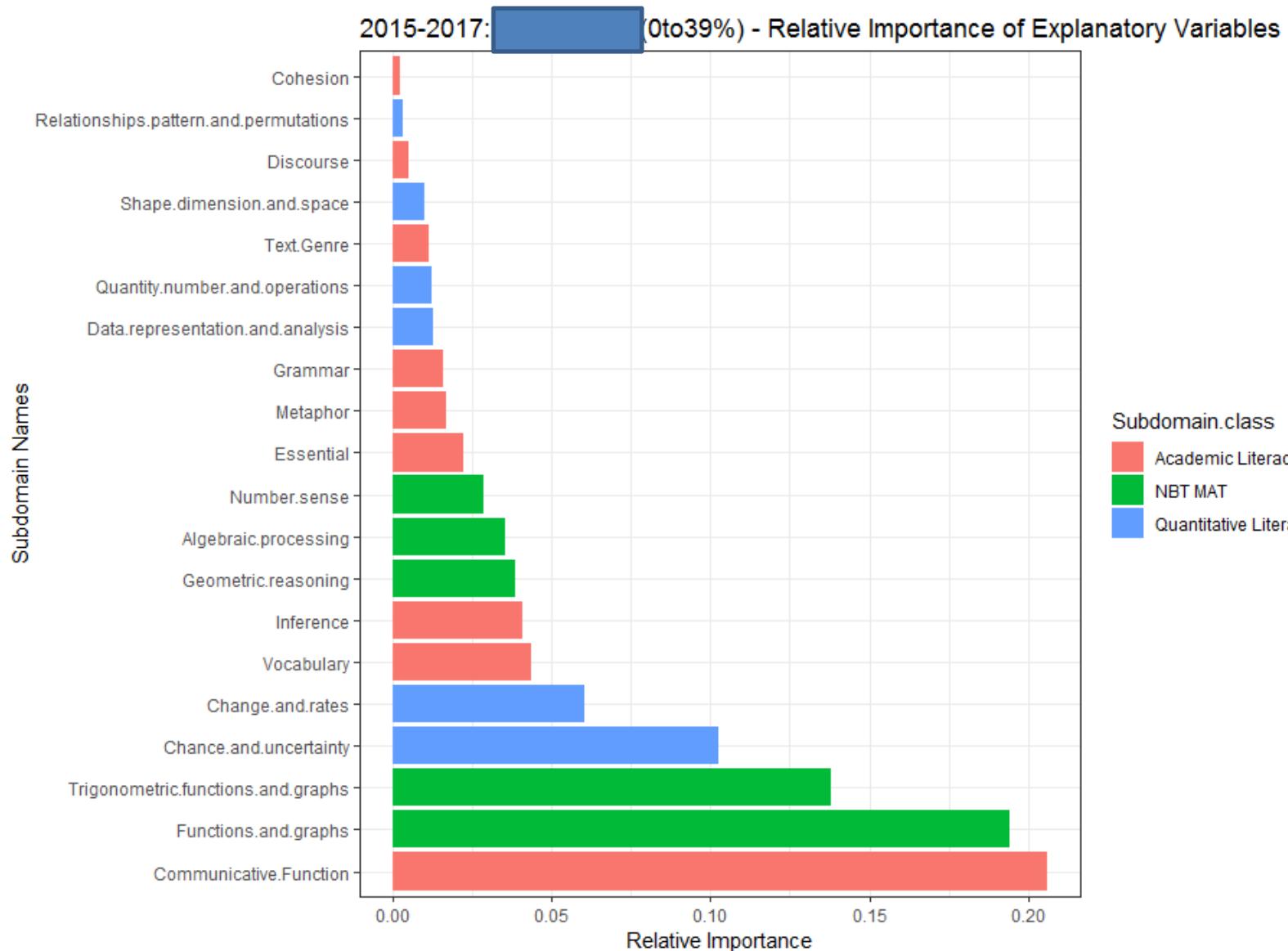


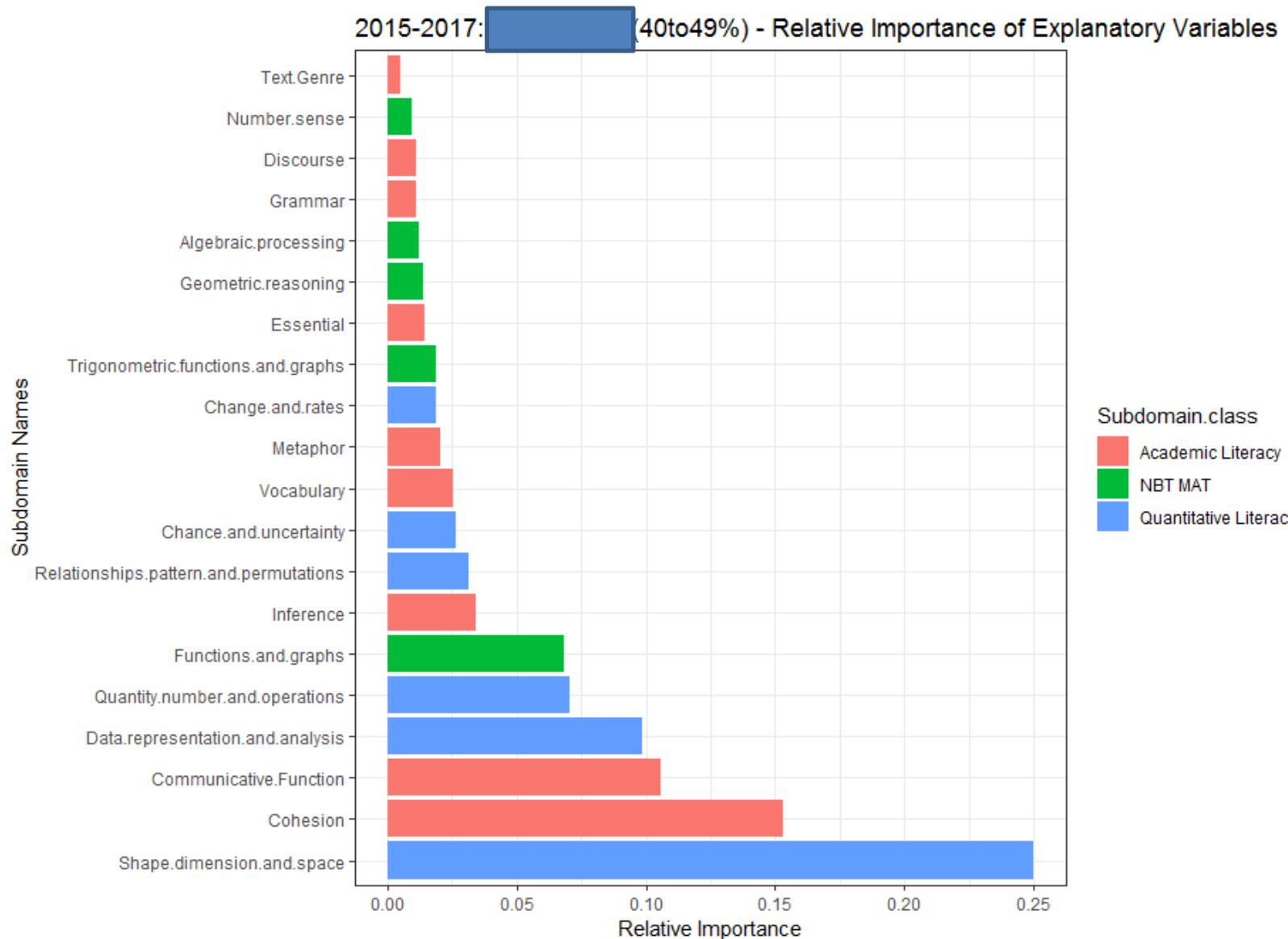
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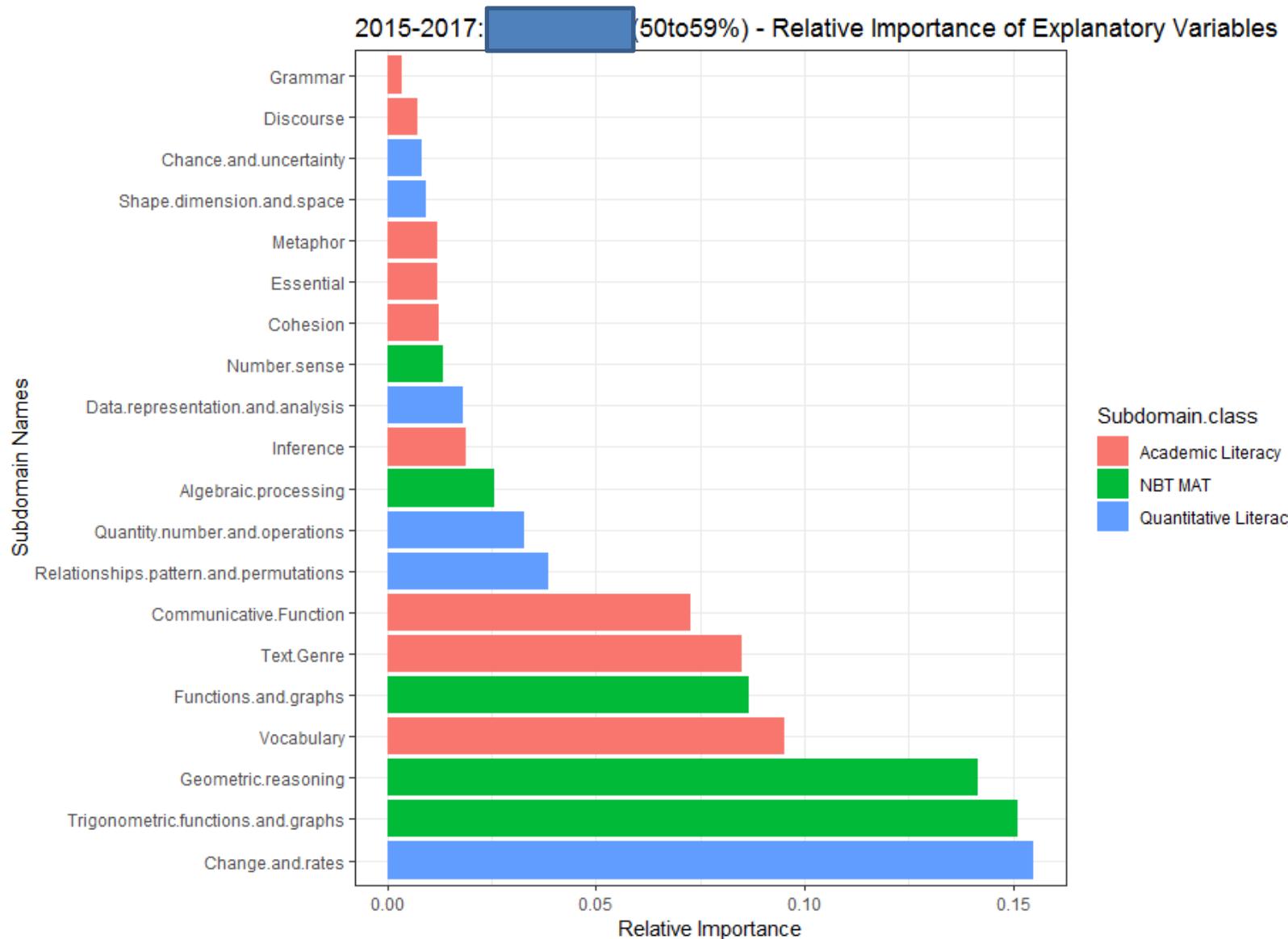


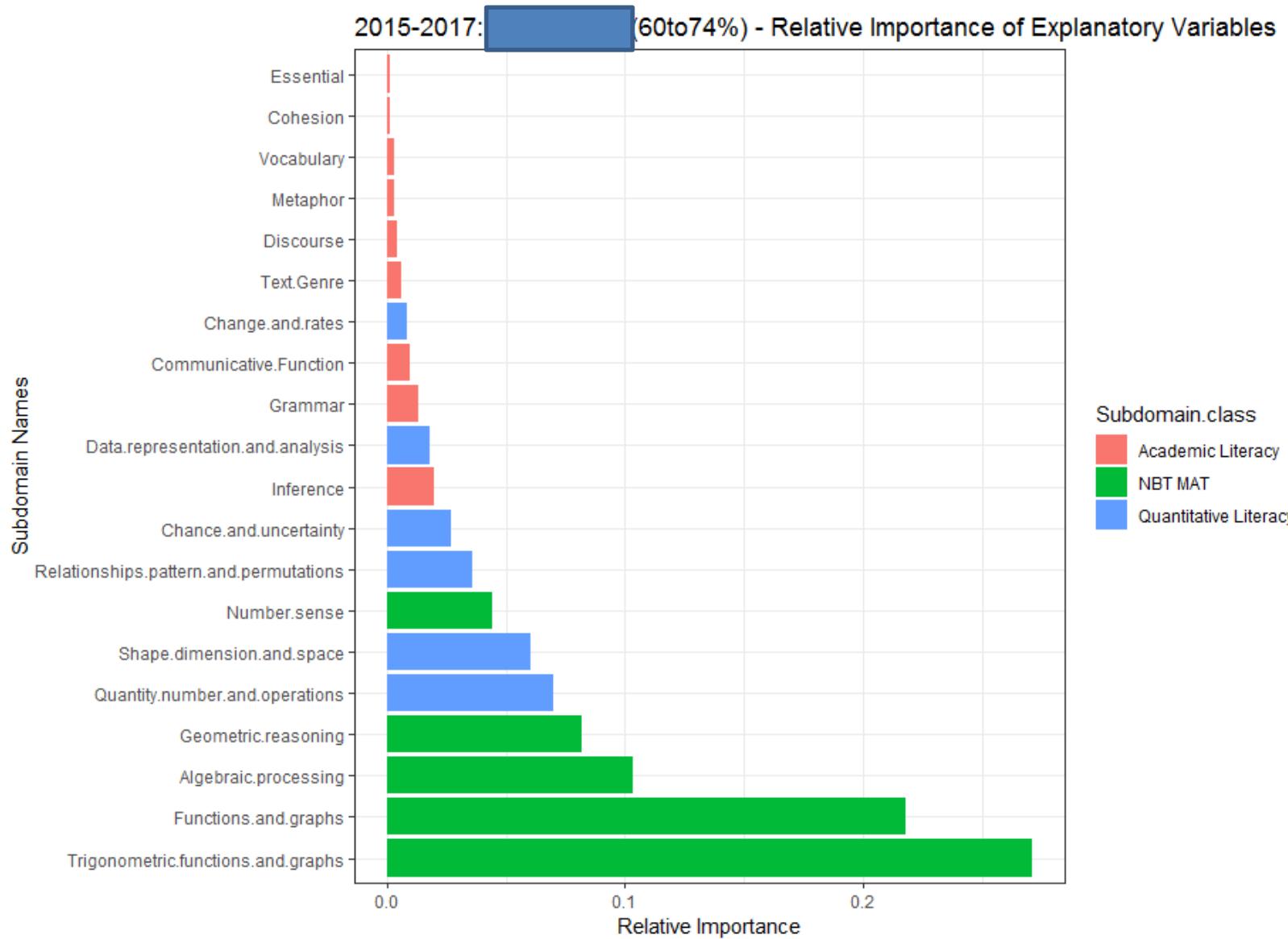


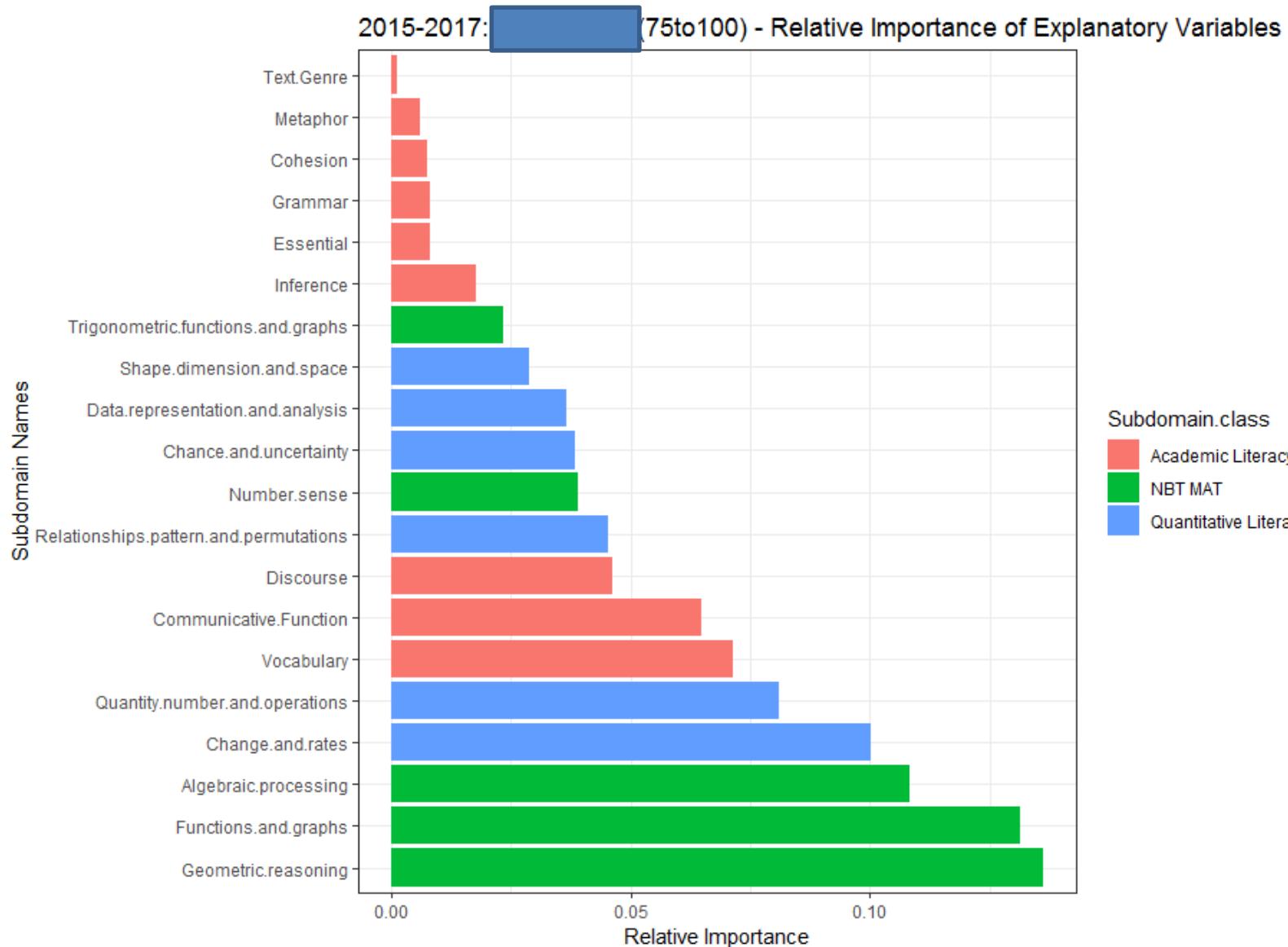












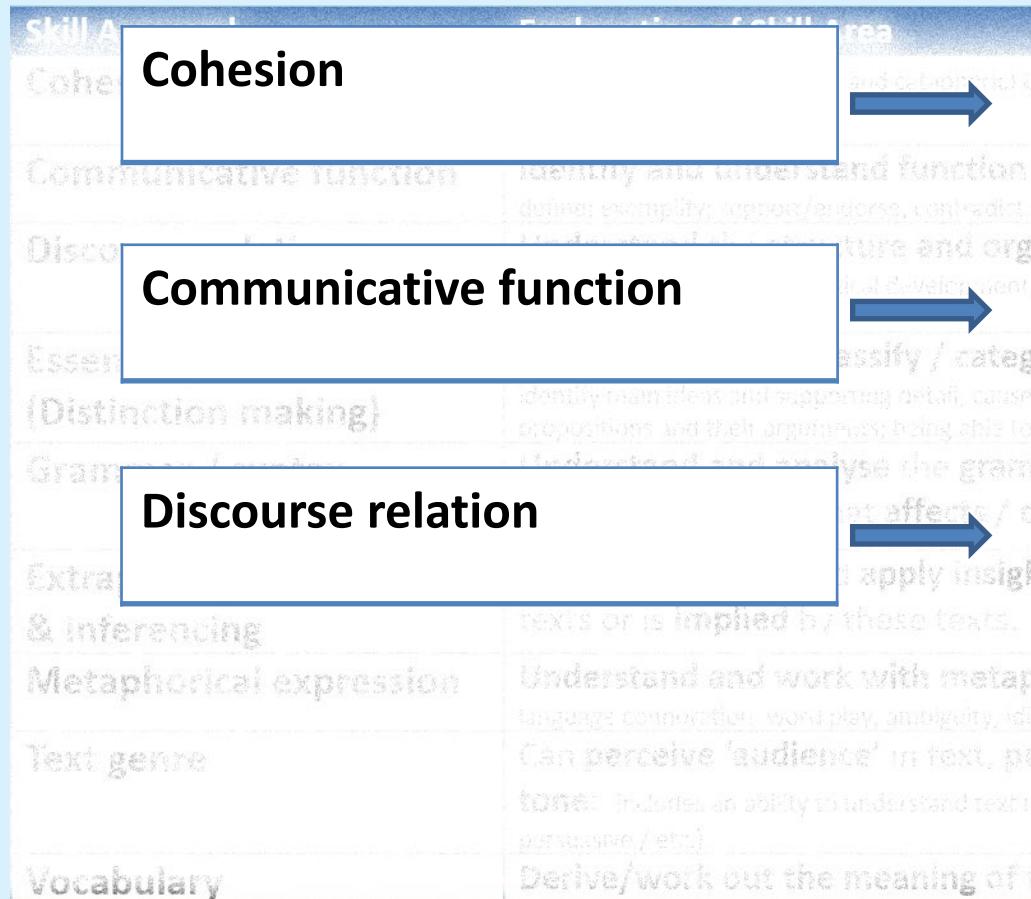
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Communicative function	Identify and understand functions defining exemplify, approve/disorse, contrast, compare, generalise, summarise, evaluate, develop, etc.
Discourse relations	Understand the structure and organisation of texts; being able to identify relations between different parts of text; being able to identify relations between different utterances; being able to identify relations between different speakers.
Essential / non-essential (Distinction making)	Identify and understand the structure and organisation of texts; being able to identify relations between different parts of text; being able to identify relations between different utterances; being able to identify relations between different speakers.
Extrapolation, application & inferencing	Use the given information to apply insights to new situations; apply insights to new situations; apply insights to new situations.
Metaphorical expression	Identify and understand the meaning of key concepts and terms used in text.
Understanding vocabulary	Understand subject-specific terminology, general academic terms.

AL Skills assessed in NBTs



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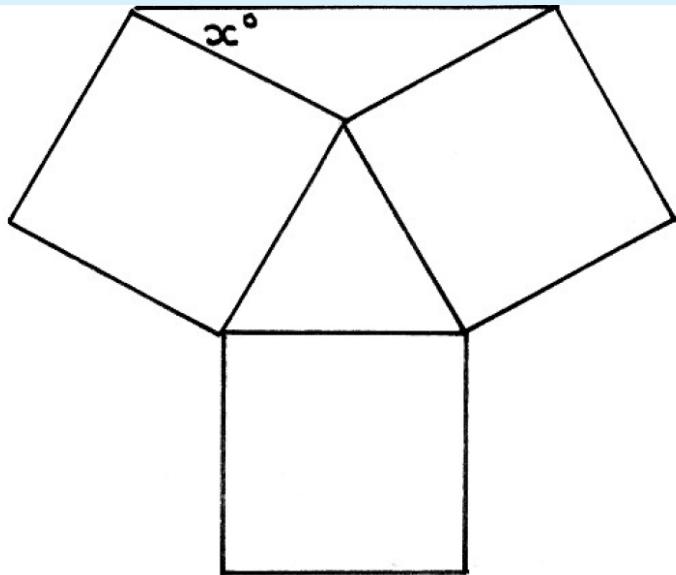
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Text genre Text type	but the meaning of ...	<p>Ability to understand scenarios that rely on noticing like an author's bias may affect the ability to complete a task</p>
Vocabulary		

Example 1

6. In the figure, an equilateral triangle is surrounded by three squares. What is the value of x ?

In die diagram is daar 'n vierkant op elkeen van die drie sye van 'n gelyksydige driehoek. Wat is die waarde van x ?



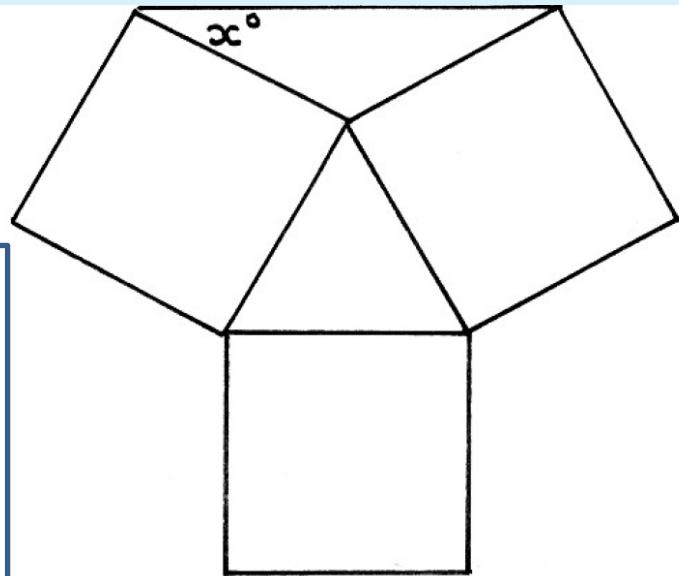
- (1) 15 (2) 18 (3) 24 (4) 30 (5) 36

Example 1

6. In the figure, an equilateral triangle is surrounded by three squares. What is the value of x ?

1. Recognise and understand important vocabulary items
 - equilateral triangle
 - squares (surrounded by)
 2. Recognise typical expression in mathematics
 - ‘What is the value of x ?’ – What is x equal to? What is the size of the angle x° ? etc.

This problem may be presented with or without an illustration. Careful reading is therefore of paramount importance.



(4) 30

(5) 36

Related AL Subdomains: Vocabulary, Metaphorical expression

Example 1

6. In the figure, an equilateral triangle is surrounded by three squares. What is the value of x ?

3. What do we know?

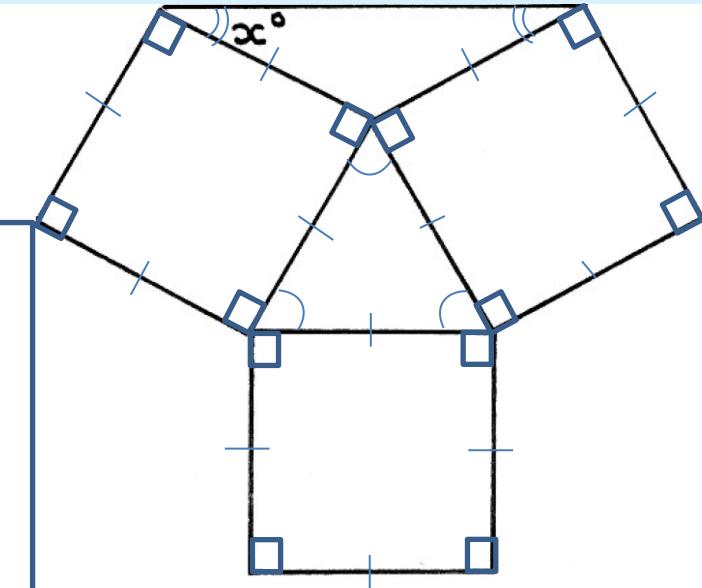
Equilateral triangle:

- Three sides are the same length
- Three angles inside the triangle are equal
- Sum of angles within a triangle is always 180°

Squares:

- One on each side of triangle, share one side
- Four sides are the same length
- Angles are all 90°

Also, triangle with x is an isosceles triangle – two of the three sides share a side with one of the squares.
etc.



(4) 30

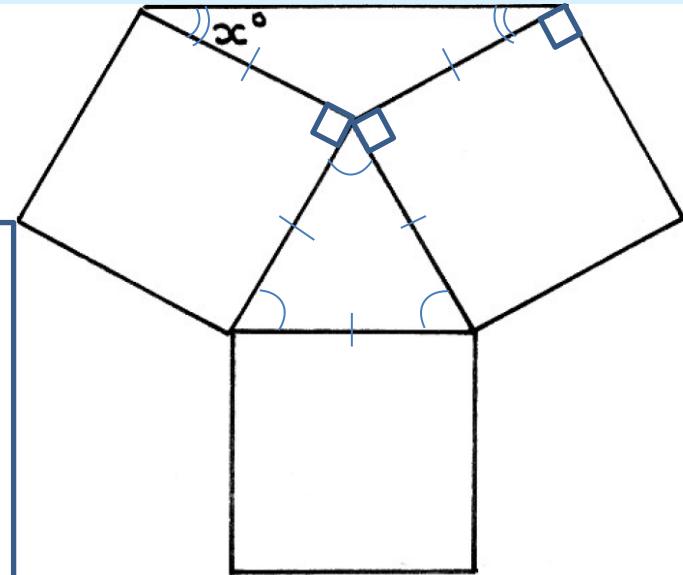
(5) 36

Related AL Subdomains:
Inferencing and extrapolation

Example 1

6. In the figure, an equilateral triangle is surrounded by three squares. What is the value of x ?

4. Focus only on relevant information – eliminate unnecessary detail. (See illustration) For example, the fact that the base angles are acute when the vertex/apex angle is obtuse in an isosceles triangle, may not be important to the calculations. What is important, though, is that the base angles (x being one) are the same size and that one could calculate x if you knew the size of the vertex angle.
5. Depending on the task, you may need to show your calculations as a type of “narrative” that presents the various steps in your thinking process. There is a particular structure to this. (Link with discourse relations – argument structure.) If you are asked to motivate an answer, then your assumptions and calculations need to be presented in a particular order and format. (Another link with structural awareness.)



(4) 30

(5) 36

Related AL Subdomains:
Essential / non-essential, (Discourse relations)

References

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