

# Using Technology to identify Students at Risk

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Centre for e-Learning  
2012

# Program for this workshop

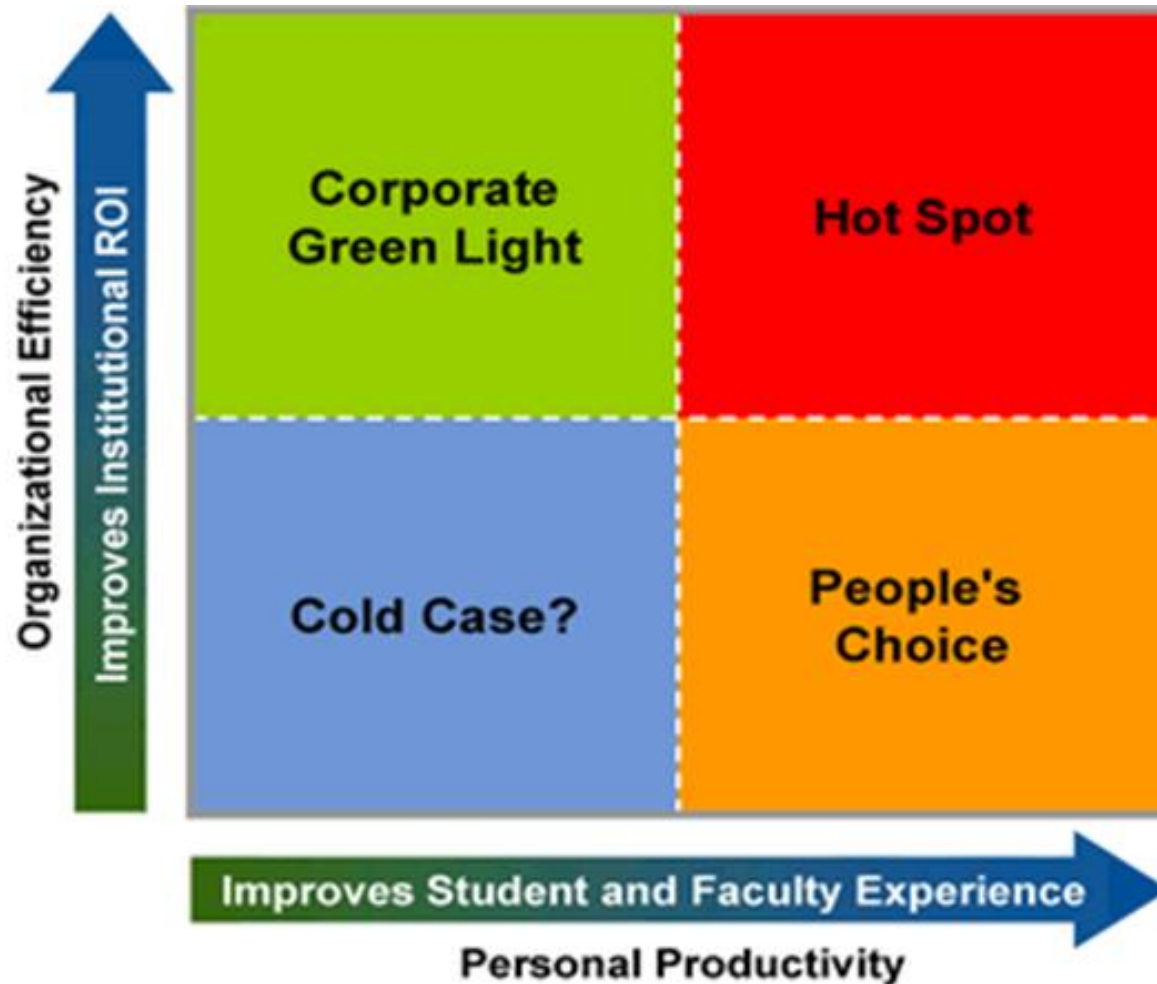
- ▶ Some theory
- ▶ Determining risk factors
- ▶ Designing the alerts/warnings
- ▶ Examples

# Contribute to the discussion plse

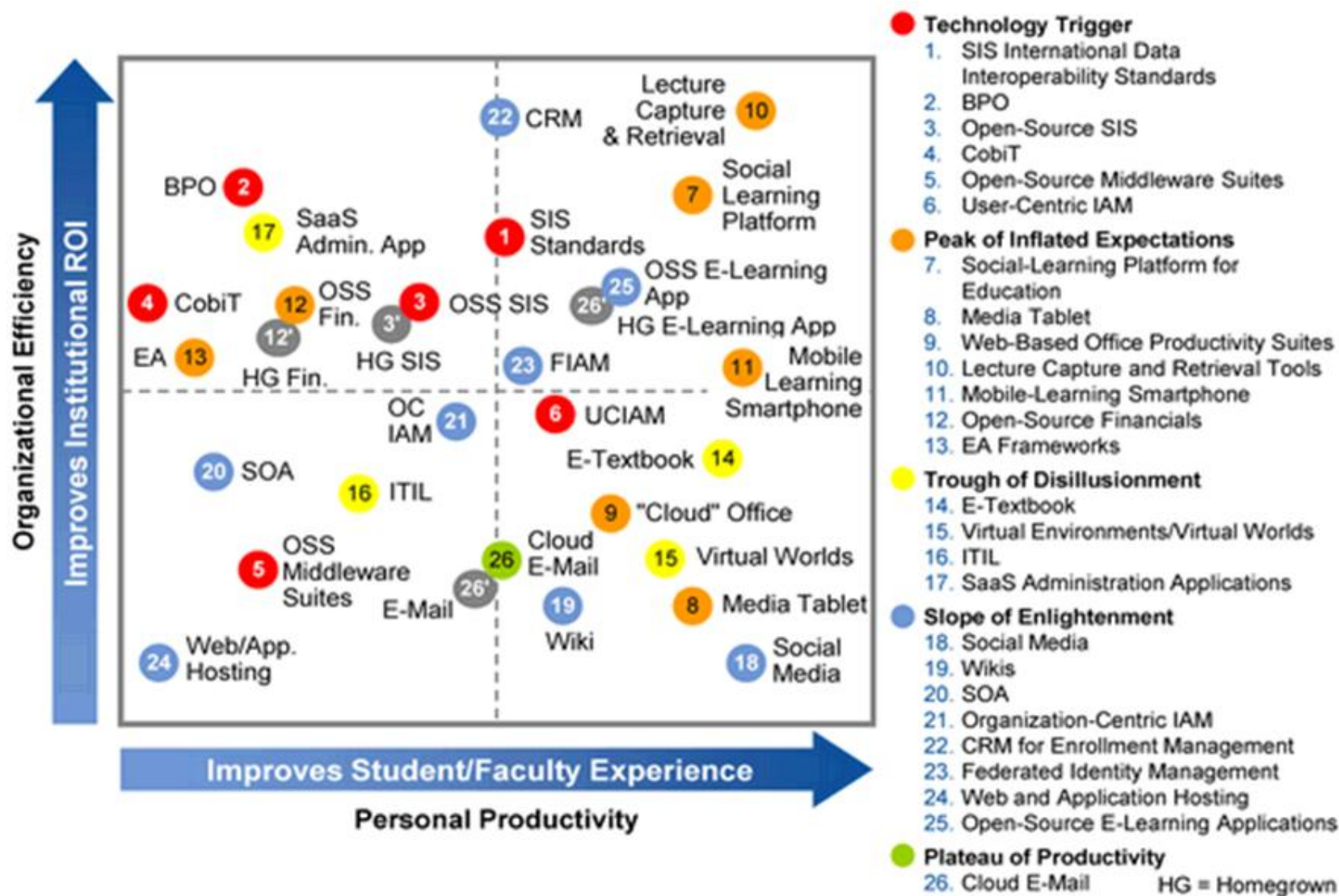
- ▶ **Twitter: @sakkiesmit**
- ▶ **Blogging:**  
[http://smitte.co.za/blog/?page\\_id=14](http://smitte.co.za/blog/?page_id=14)
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## Lecturing environment – lecture-centred approach.





## Gartner's Priority Matrix legend for Education



## Priority Matrix for Education

# Different learning styles

- ▶ Literate visionary
  - *Wants* to explore beyond classroom boundaries
- ▶ Conformist
  - *Happy?* with talk and chalk
- ▶ (Blocked) potential
  - A *challenging* situation needs to be un-blocked

# 2012 Horizon report

## ▶ 1 year or less

- **Cloud Computing** (especially storage)
- Mobile Applications
- **Social Reading** (OCW for HE)
- Tablet Computing

## ▶ 2 to 3 years

- Adaptive Learning Environments
- (*Augmented Reality*)
- Learning analytics
- **Digital Identity**

# Historical Arguments to Placement (or implementing interventions)

- ▶ Neo-conservatives (Ball, 1990)
  - *“It is those students who can demonstrate in advance of entering that they have the capacity to benefit who should be admitted”*

# Current Arguments

- ▶ Liberal meritocrats (Williams, 1997)
  - *“who should be admitted to higher education, and how, revolves around the notions of ‘qualified’, ‘accessibility’ and ‘under-representation’, focusing upon the individual within the framework of these three factors”*

# New Thinking?

- ▶ Robbertson, 1994
  - “*Credit systems* may be usefully judged against the proposition that they may help to improve the efficiency of higher education by attracting a wider range of students with previously untapped potential.”

## ACADEMIC & PROFESSIONAL EFFECTIVENESS

# CRITICAL THINKING: Assessing Argument Critical Evaluation Further Argumentation

## PROBELM SOLVING:

- Relevant Selection
- Identifying Similarity
- Finding Procedures

## COMMUNICATION: Discrimination Re-representation of Material

# UNDERSTANDING ARGUMENT:

- Recognising arguments
- Identifying Reasons
- Identifying Conclusions

# **NUMERICAL & SPATIAL OPERATIONS:**

- Number Concepts**
- Numerical Operations**
- Quantities**
- Space & Spatial Reasoning**
- Generalisation**
- Tables & Graphs**

**LITERACY:**  
**Reading, Discrimination, Quality of Writing**  
**Mechanics of Writing**

# Types of analytical evaluations

- ▶ Bottom up – *educators drive analysis*
- ▶ Top down – *institutional evaluations (NBT)*
- ▶ Integrated systems – *All evaluations done (centrally by administrators?) with minimal disruption, results **readily** available to educators in a secure environment*

# Background for JAOD

- ▶ NSC results inadequate – NBT inconclusive?
- ▶ Other placement testing slow to implement, results buried in the back-end databases  
\*(Watermeyer & Darries 2004)
- ▶ Identification of students at risk happens too late
- ▶ Transparent, fair, easy, fast result interpretation and analysis required
- ▶ Correct planning of interventions or special attention sooner than later

# Example – (using mathematics)

Analysis done on an electronic LMS –  
testing/analysis done by lecturers,  
statistical results available  
immediately

# In-house Design

- ▶ What makes this design different?
  - HCC (USA) pre-college Mathematics placement tests
    - 3 levels
  - Basic, Intermediate, Advanced
  - Converted for SA, designed on LMS
  - Mathematics competence test added
  - One more diagnostic test added 2004 – career specific

1	2	3	4
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16	17	18	19
21	22	23	24
26	27	28	29

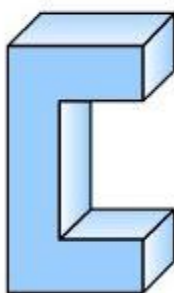
To tar a rectangle 4 m by 3 m a builder needs 9 wheelbarrow loads of tar. How many wheelbarrow loads will he need to tar a rectangle 8 m by 6 m?

- ☐ a. 27
- ☐ b. 13,5
- ☐ c. 18
- ☐ d. 36

Save answer

**Question 5** (1.0 points)

A cube has six faces (facets). How many faces does this three-dimensional letter C have?



- ☐ a. 7
- ☐ b. 14
- ☐ c. 10
- ☐ d. 9

Save answer

**Question 6** (1.0 points)

If ★ is an odd number, which one of the following is also an odd number?

- ☐ a. ★ × 2
- ☐ b. ★ + 2
- ☐ c. ★ + 3

**Question 7** (1.0 points)

**Simplify:**  $54 \div 3$

- ☐ a. 19
- ☐ b. 17
- ☐ c. 28
- ☐ d. 18
- ☐ e. answer not given

Save answer

**Question 8** (1.0 points)

**Simplify:**  $238 \div 17$

- ☐ a. 15
- ☐ b. 24
- ☐ c. 16
- ☐ d. 18
- ☐ e. answer not given

Save answer

**Question 9** (1.0 points)

**Perform the indicated operation. Leave your answer in decimal form:**  
 $2,085 + 0,65 + 15$

- ☐ a. 17,735
- ☐ b. 17,150
- ☐ c. 16,50
- ☐ d. 17,635
- ☐ e. answer not given

Save answer

**Question 10** (1.0 points)

**Perform the indicated operation. Leave your answer in decimal form:**  
 $33,04 - 5,28$

**Time Remaining**

39 : 37 (min:sec)

**Question Status**

☐ Unanswered

☒ Answered

☒ Answer not saved

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26				
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**Question 14** (1.0 points)

**Simplify the algebraic expression:**  $2 + 3 \times 4 =$

- ☐ a. 16
- ☐ b. 14
- ☐ c. 20
- ☐ d. 24
- ☐ e. answer not given

Save answer

**Question 15** (1.0 points)

**Simplify the algebraic expression:**  $5 - 2 + 3 =$

- ☐ a. -1
- ☐ b. 0
- ☐ c. -6
- ☐ d. -7
- ☐ e. answer not given

Save answer

**Question 16** (1.0 points)

**Simplify the algebraic expression:**  $12 \div 2 \times 3 =$

- ☐ a. 9
- ☐ b. 2
- ☐ c. 8
- ☐ d. 18
- ☐ e. answer not given

Save answer

**Question 17** (1.0 points)

**Simplify the algebraic expression:**  $15 - 2(4 + 2) =$

- ☐ a. -78

Time Remaining

39 : 20 (min:sec)

Question Status

☐ Unanswered

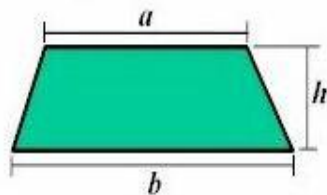
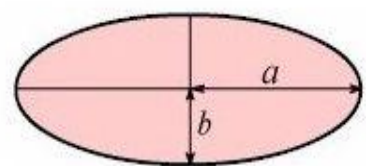
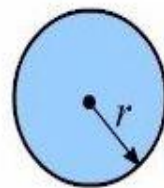
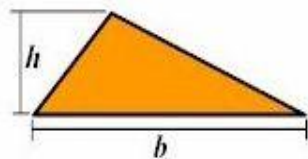
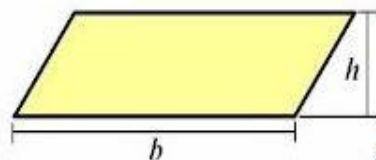
☒ Answered

☐ Answer not saved

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11	12	13	14	15
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31				

**Question 2** (5.0 points)

Link the areas of the geometrical figures (on the left) to an equation (on the right).



- a)  $\text{Area} = \pi ab$
- b)  $\text{Area} = 2\pi r$
- c)  $\text{Area} = h \times b$
- d)  $\text{Area} = \frac{1}{2}(b+h)$
- e)  $\text{Area} = \pi r^2$
- f)  $\text{Area} = \frac{1}{2}h(b-a)$
- g)  $\text{Area} = \frac{1}{2}bh$
- h)  $\text{Area} = \frac{1}{2}h(a+b)$
- i)  $\text{Area} = a \times b \times h$

Matching pairs:

Parallelogram	—	<input type="text" value="Choose match"/>
Triangle	—	<input type="text" value="Choose match"/>
Circle	—	<input type="text" value="Choose match"/>
Trapezium	—	<input type="text" value="Choose match"/>
Ellipse	—	<input type="text" value="Choose match"/>

**Question 3** (1.0 points)

The figure below represents two circles. The shaded area between the two circles is ....cm<sup>2</sup>?

☐ Unanswered

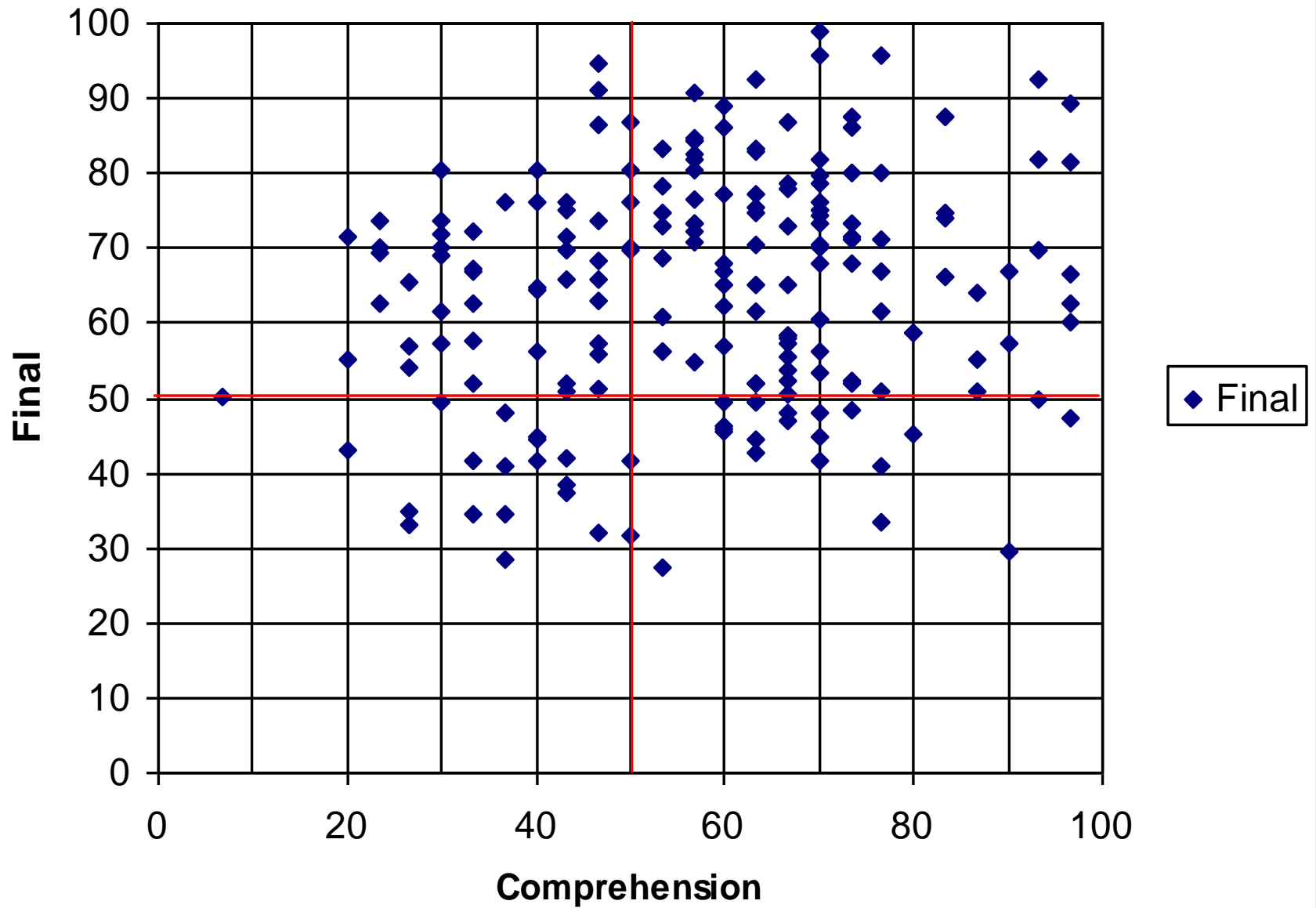
☒ Answered

☐ Answer not saved

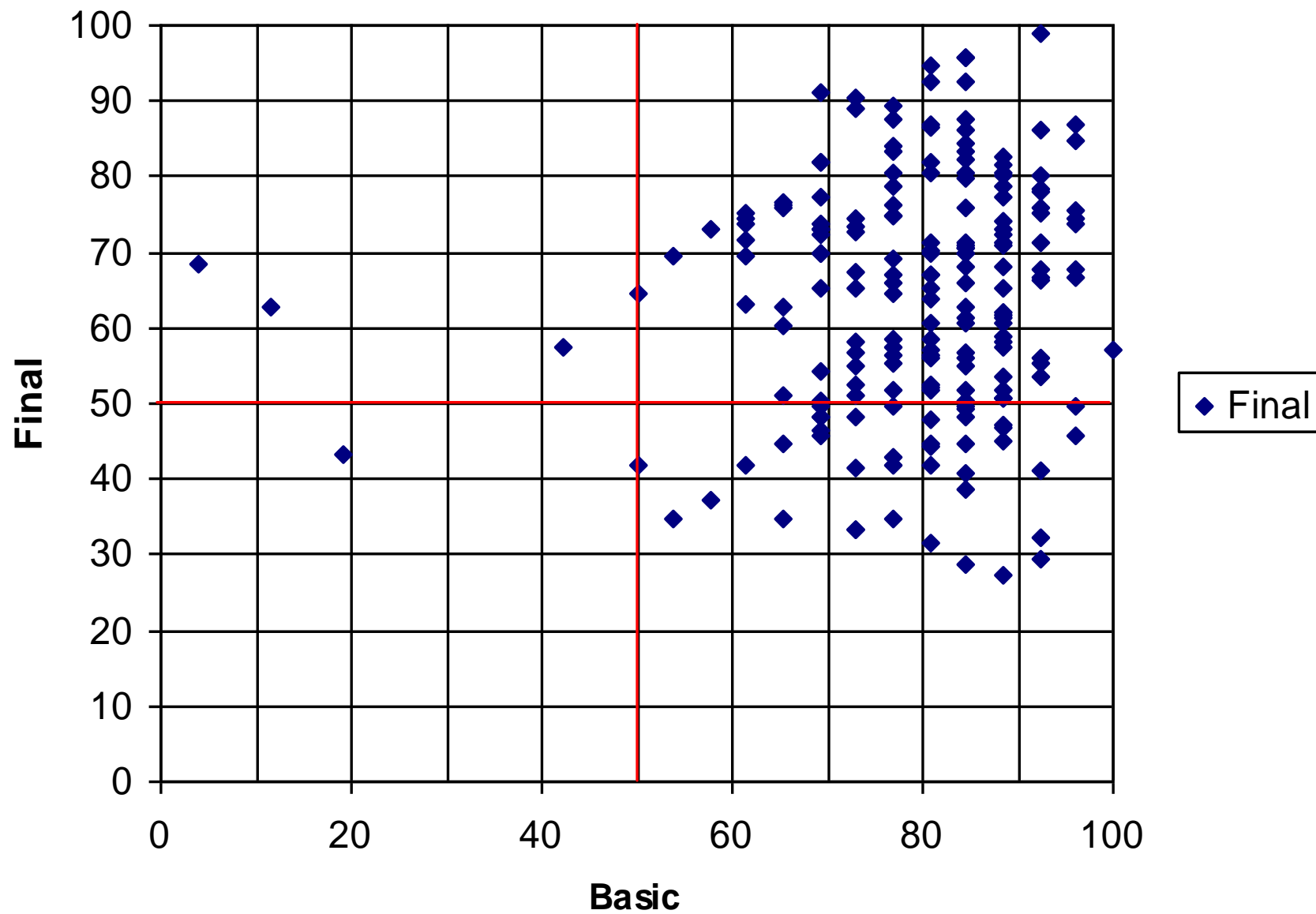
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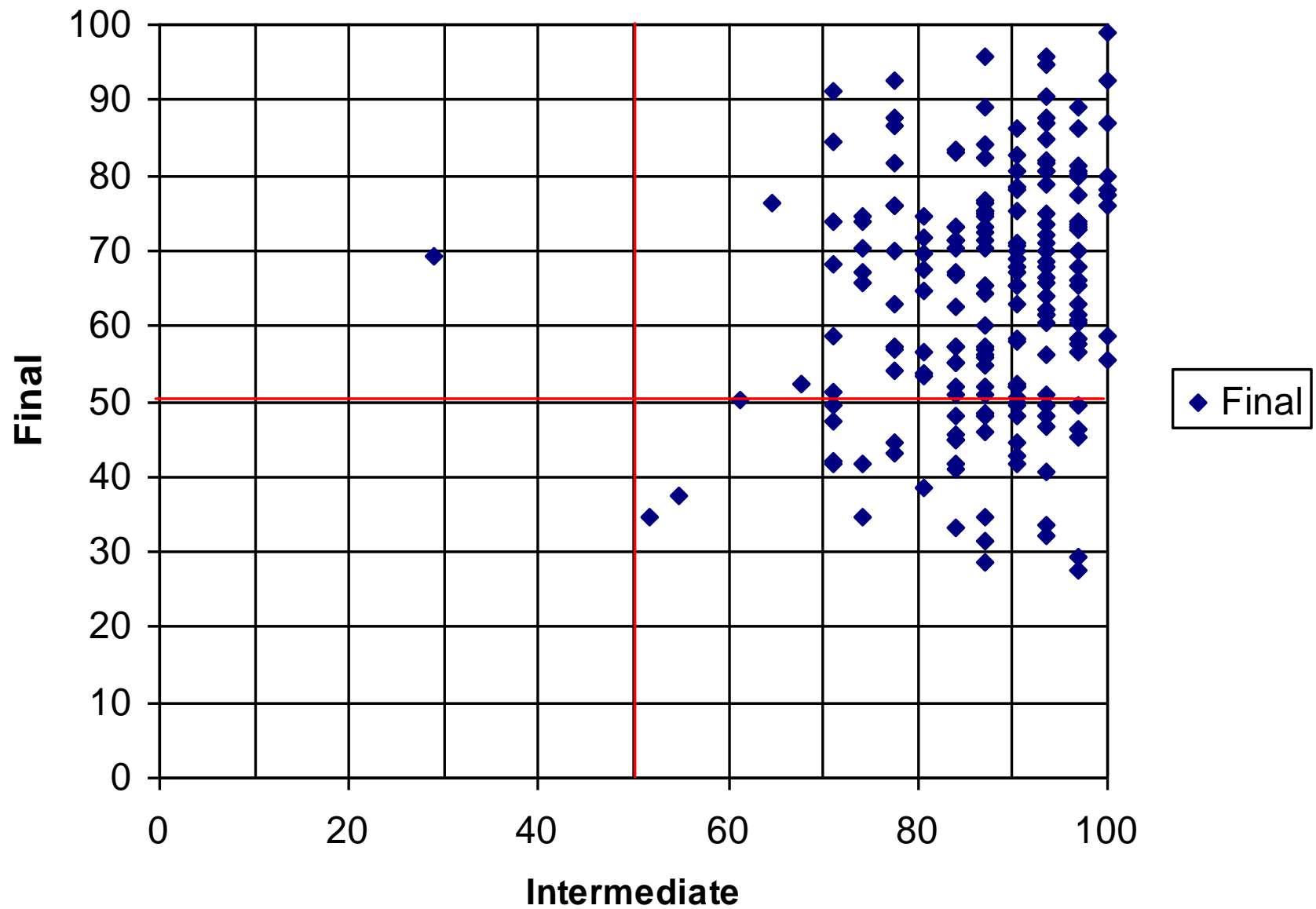
# Comprehension & Final



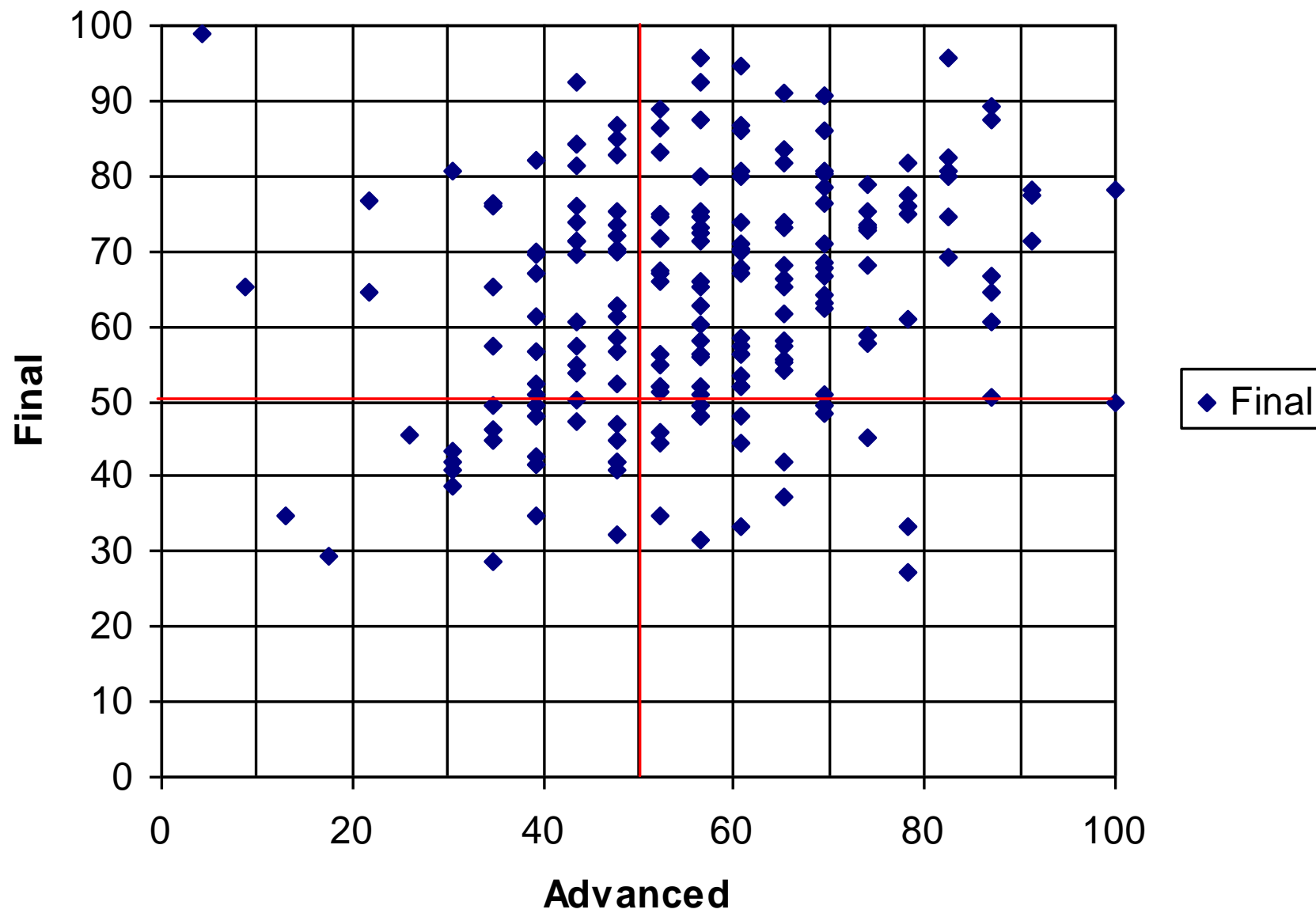
## Basic & Final



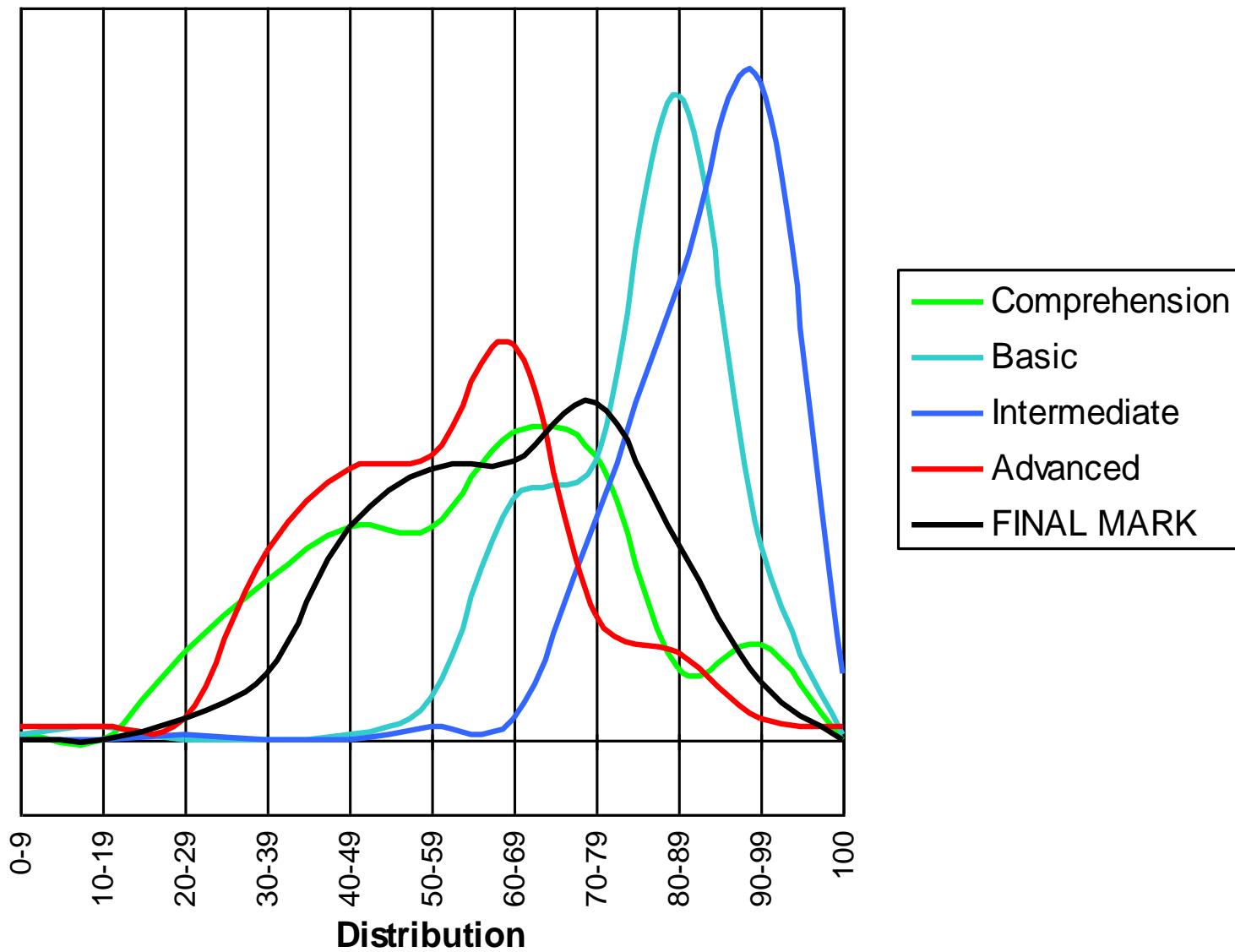
## Intermediate & Final



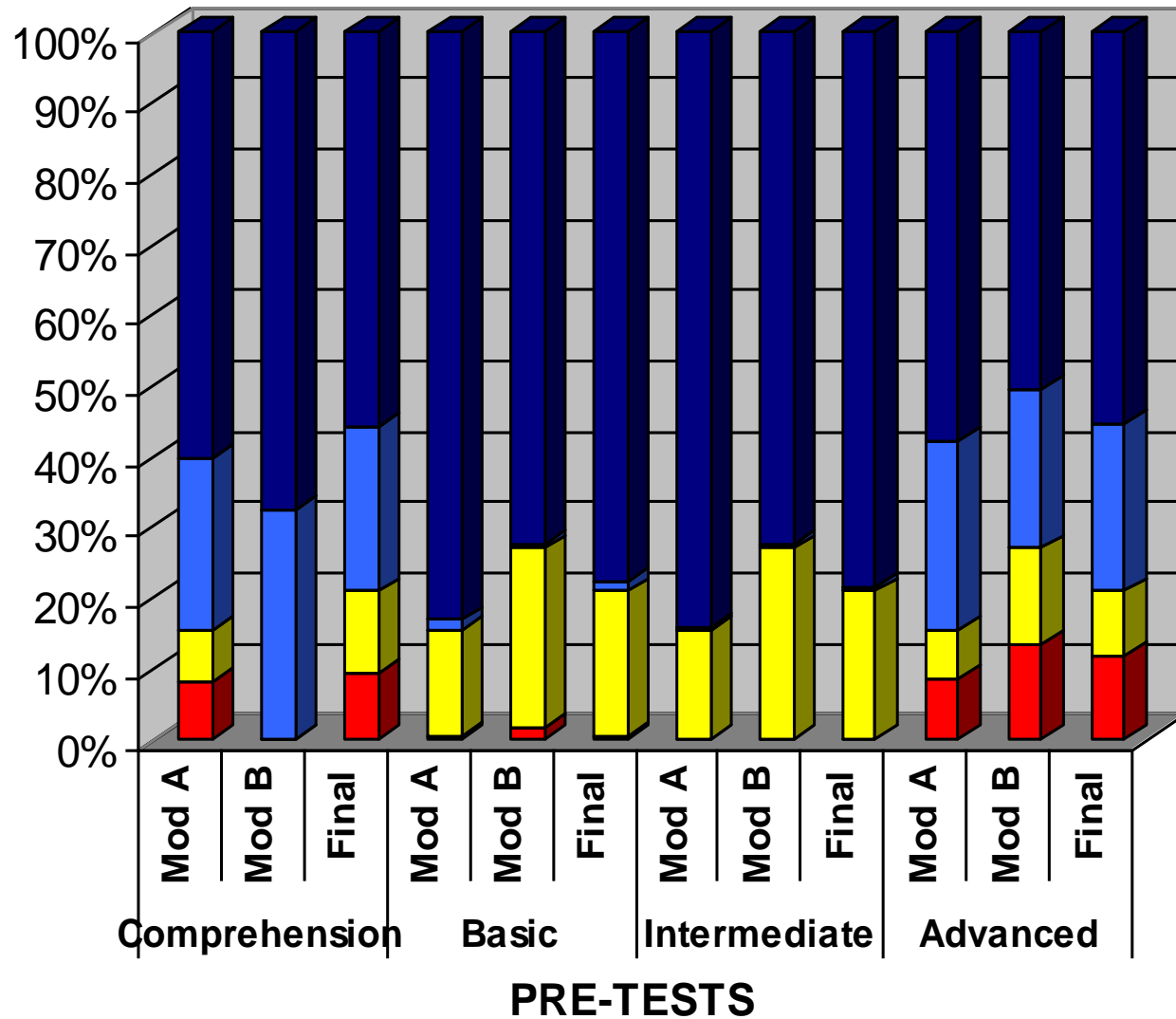
## Advanced & Final



## Tests / FINAL MARK



## PRE-TEST RESULTS / FINAL RESULTS



■ FAIL/FAIL 
 ■ PASS/FAIL 
 ■ FAIL/PASS 
 ■ PASS/PASS

# Contribute to the discussion plse

- ▶ **Twitter: @sakkiesmit**
- ▶ **Blogging:**  
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