Grades and The Random Factor

How Randomness Affects Assessment

For more info, try:
http://gameful-learning.com/

https://goo.gl/bFYqy_4

#4. May 9, Mount Allen (10:15 – 10:45)

Katrin Becker

Assessment vs. Evaluation

Assessment

- *G*athers information in order to make **decisions about improvements** in teaching and learning.

Evaluation

- Gathers information in order to make judgments about**learners' performance**.
- **Compares** a learner's performance
  - with other learners
  - with a set of standards

  to determine a grade or a decision regarding overall success.

Looks at the *Instructors* and *Teaching*

EVALUATION is a judgment by the instructor or educational researcher about whether the program or instruction has met its Intended Learning Outcomes (ILO).

According to Teaching and Learning Lab @ MIT (and others)

Evaluation

vs

Looks at the *Students* and *Learning*

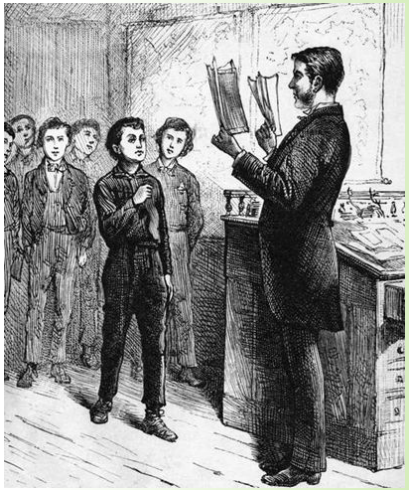
ASSESSMENT is the systematic collection of data to monitor the success of a program or course in achieving intended learning outcomes (ILOs)* for students.
Assessment is used to determine:

- What students have learned (outcome)
- The way they learned the material (process)
- Their approach to learning before, during, or after the program or course

Assessment

What is Random in My Course?

The Elephant in the Room

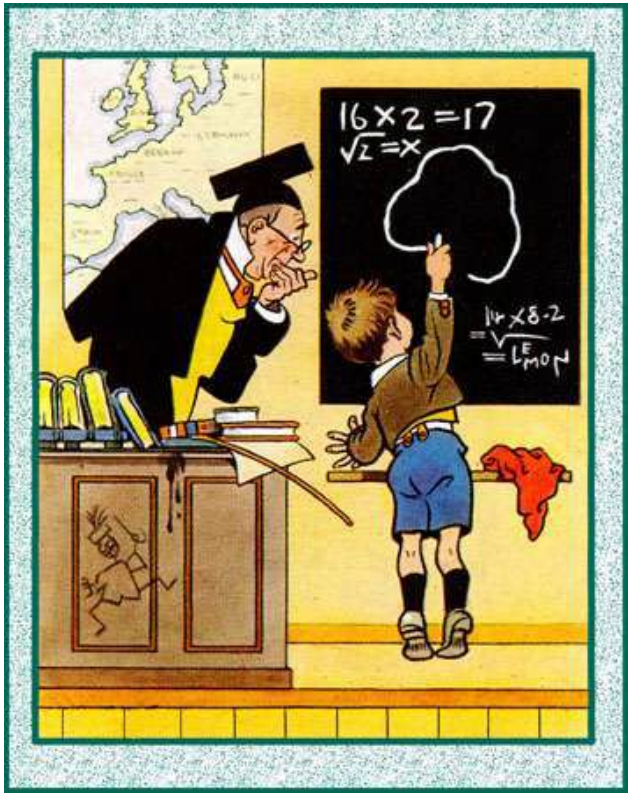


Let’s Look at Tests & Exams

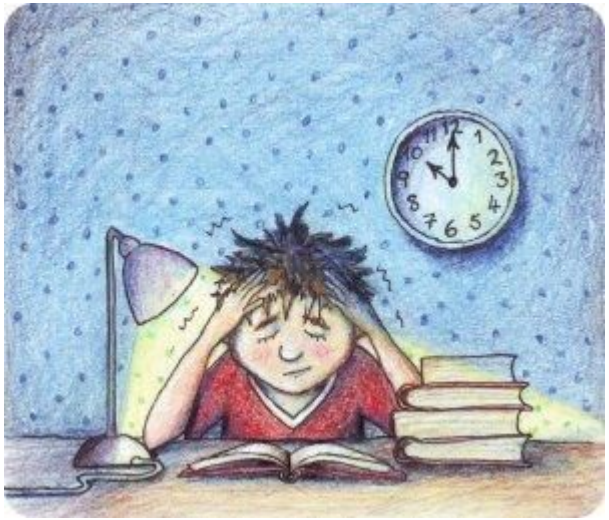
Tests and Exams are still VERY common in the Sciences.

Where are We Assessing?

- Classroom
  - Regular room
  - Strange room
  - Loud room
  - Quiet room
- Gym
  - All same course
  - Multiple courses
- Elsewhere?



- Is everyone focussed?
- Who has another exam the same day?
- What day of the week is it?
- Early morning vs. late afternoon.
- Is everyone healthy?
- Regularly scheduled vs. deferred vs accommodated?



When Are We Assessing?

- All Multiple Choice?
- Subjective Questions?
- Are questions JUST like what they'be been practising?
- Graded on a curve?
- Supplied by Textbook Author?
- Thoroughly analyzed?
- Your assumptions/Biases

How Are We Assessing?

- Measuring mastery?
- To have a grade to report?
- Student feedback?
- We always have?
- No choice?
- Gate-keeping?
- Because we've always done it this way?

WHY are We Assessing?

What are We Assessing?

Course Content

- Lectures
- Textbook
- Readings
- Activities
- Exercises

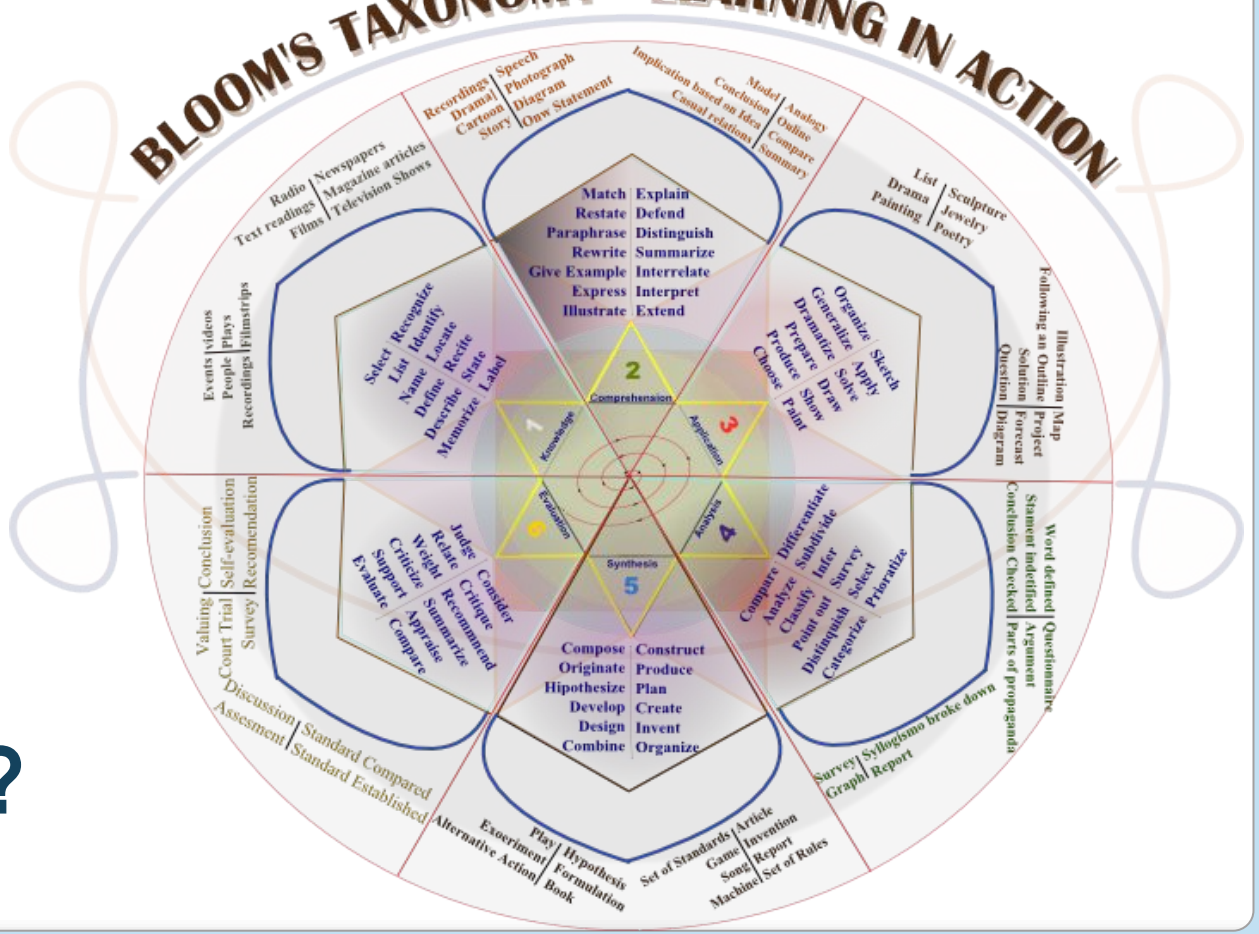
Assessment

- Writing
- Presentations
- Worksheets
- Portfolios
- Artifacts (programs, research papers, etc.)
- Quizzes
- Exams

- Participation
- Cooperation
- Attendance
- Effort
- Mastery of concepts, processes
- Recall of Facts

Is an A Always an A?

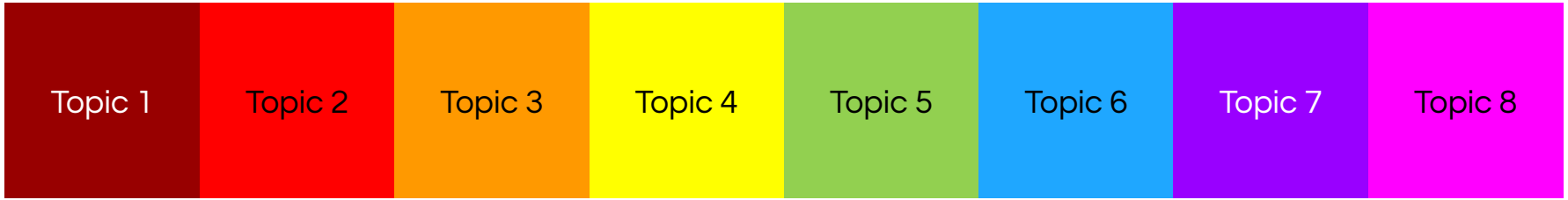
What Are You Measuring?



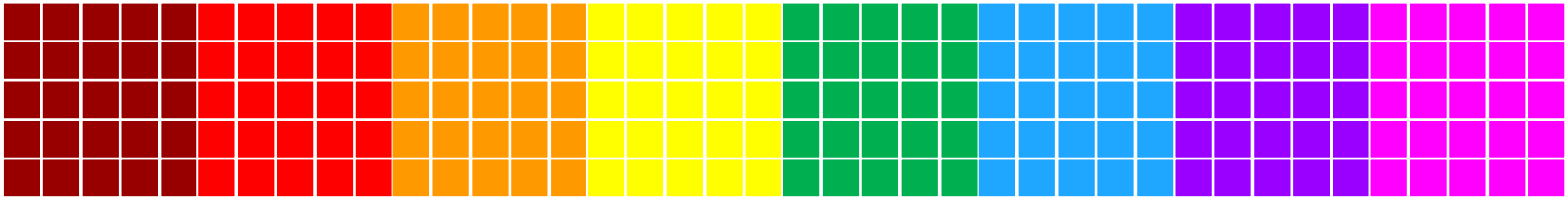
Randomness of MC Exams

Not even looking at the quality of the questions.
Exams as an example of similar issues with other course assets.

The Course Content



Multiple Choice Exam



What 100% looks like.

The Course Content:

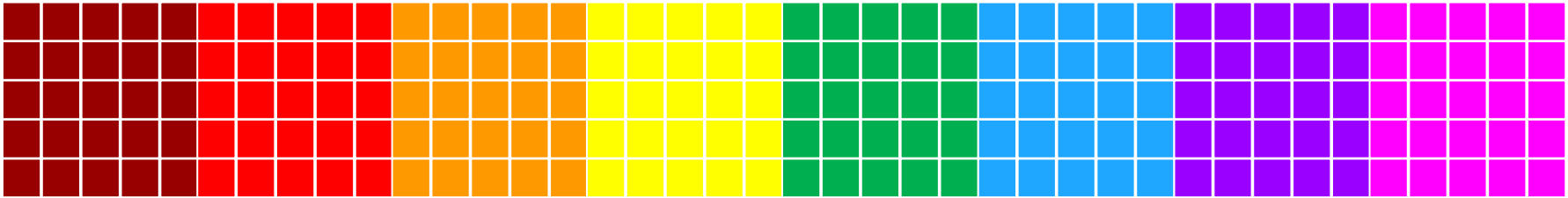
39 Lecture hours

13 Tutorial Hours

450 pg. Text Book

Topic 1 | Topic 2 | Topic 3 | Topic 4 | Topic 5 | Topic 6 | Topic 7 | Topic 8

Multiple Choice Exam, 200 Questions



What our Exams look like.

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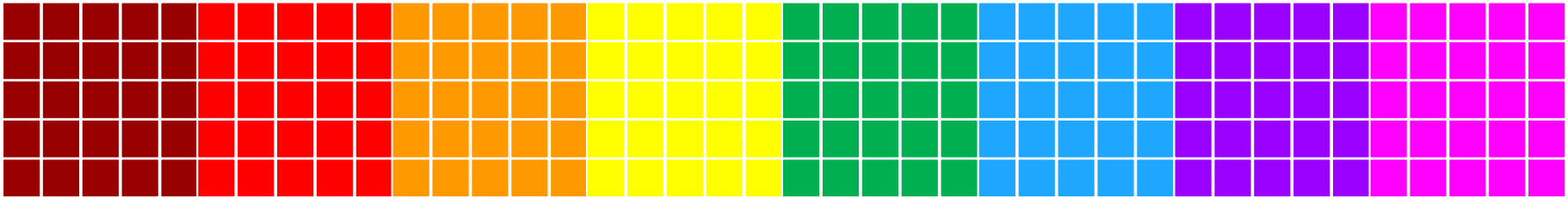

like.

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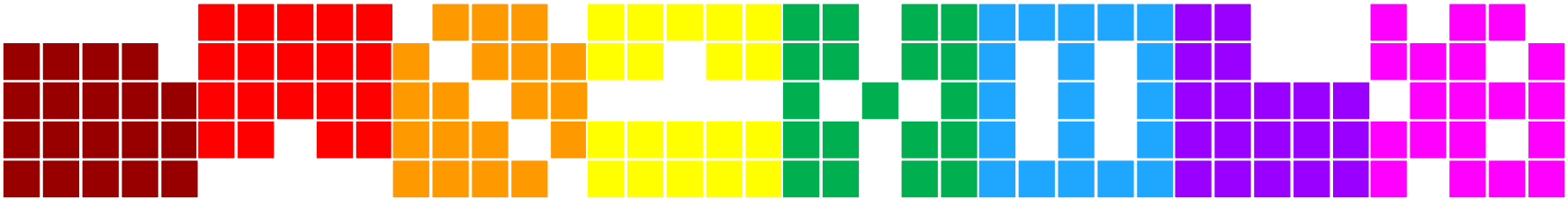

What 75% looks like. [75% = B]

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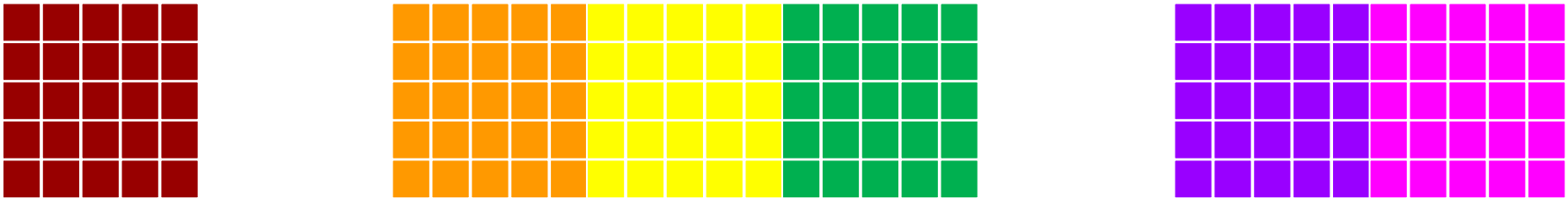

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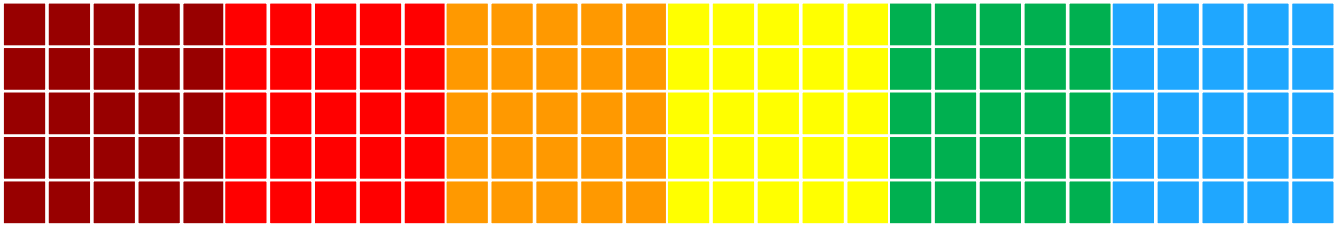

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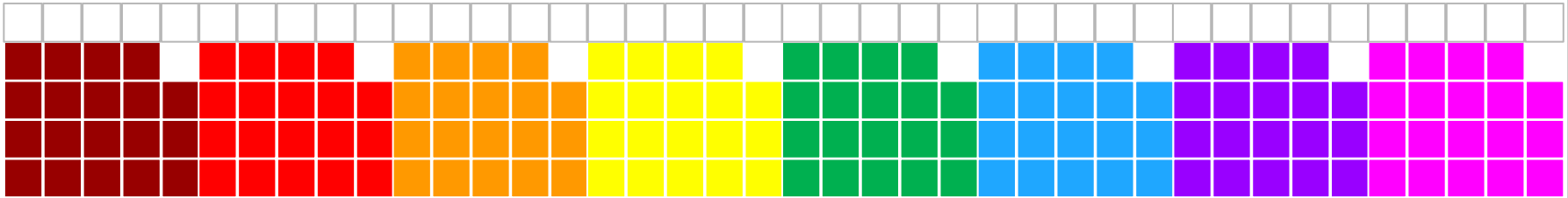

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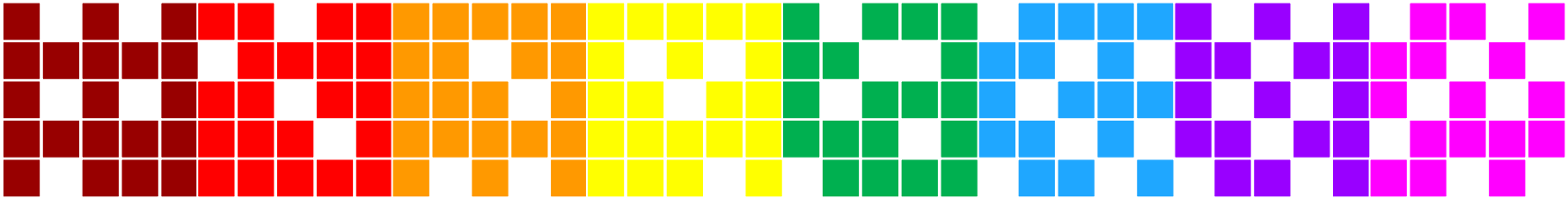

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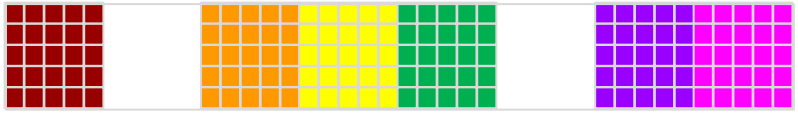
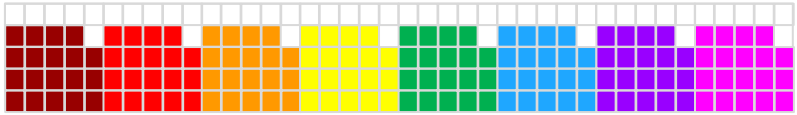
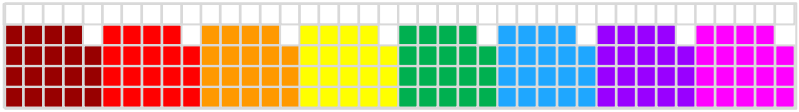
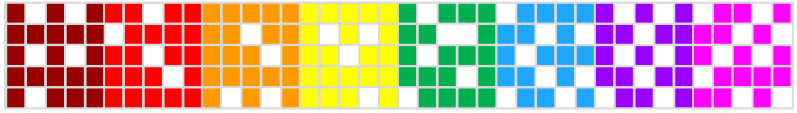
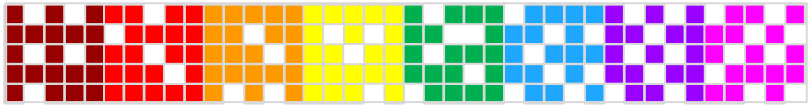
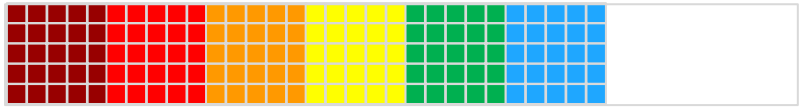










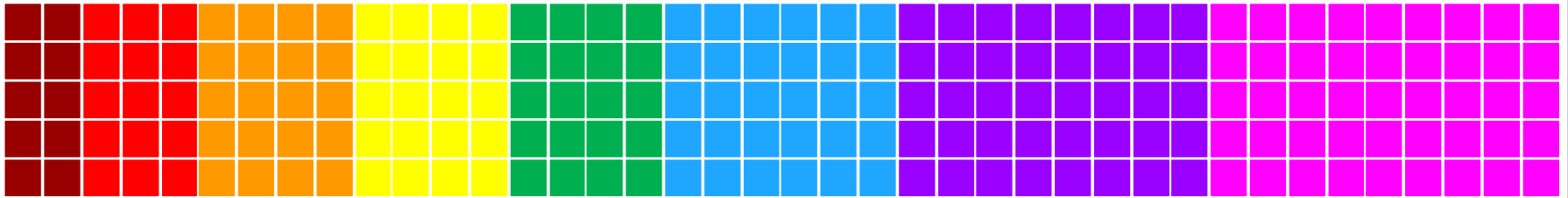


6 ‘B’ Students

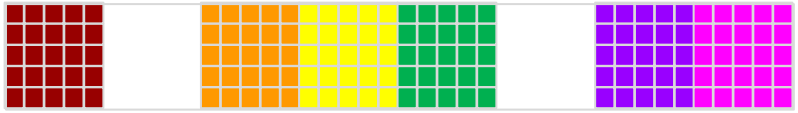
The Course Content

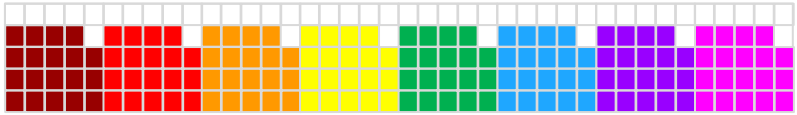
Topic 1 | Topic 2 | Topic 3 | Topic 4 | Topic 5 | Topic 6 | Topic 7 | Topic 8

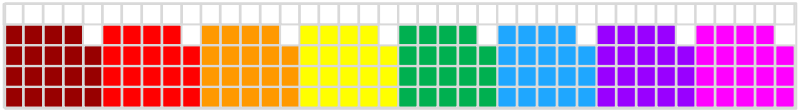
Multiple Choice Exam, 200 Questions

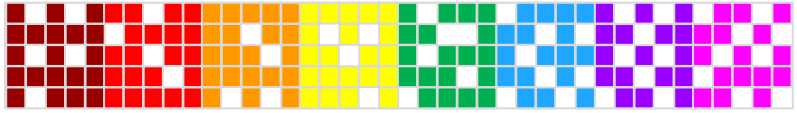


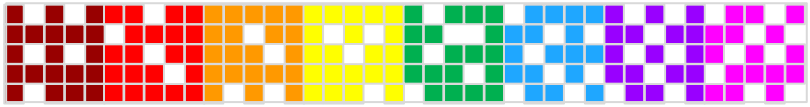
What if it's NOT balanced?

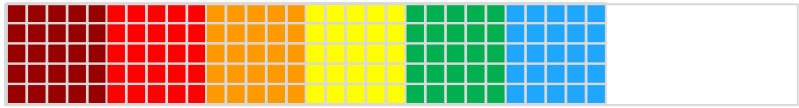


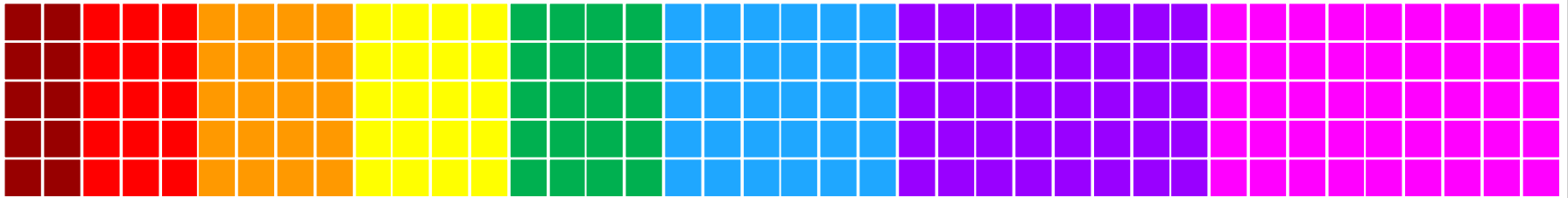




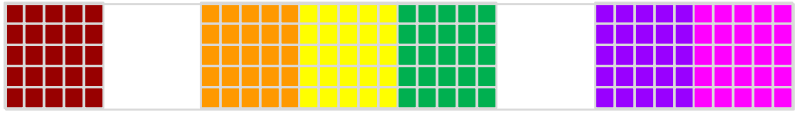


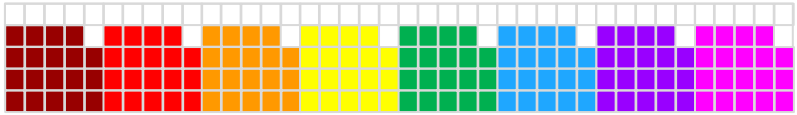


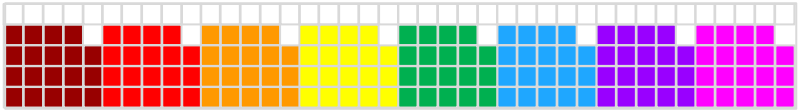


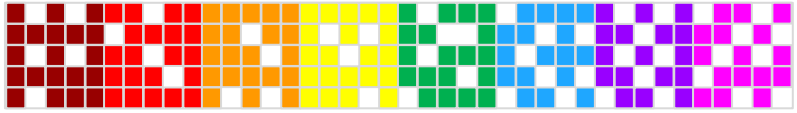


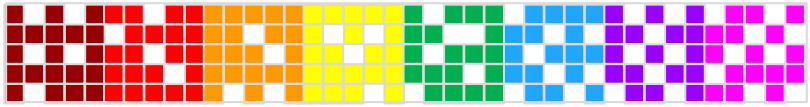
Still 6 ‘B’ Students?

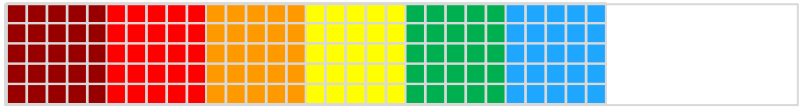


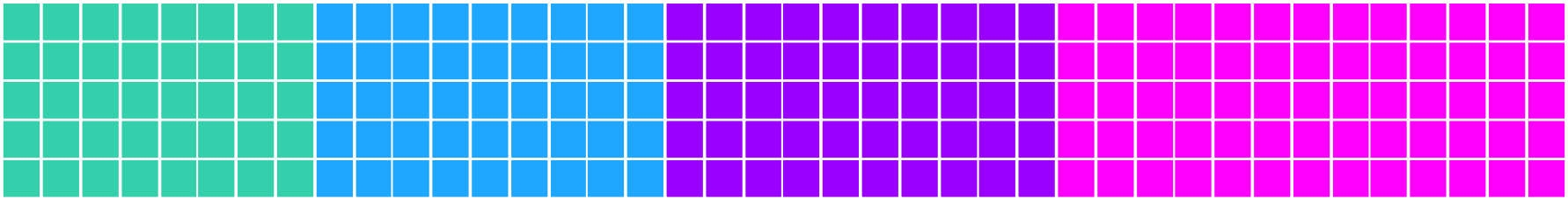






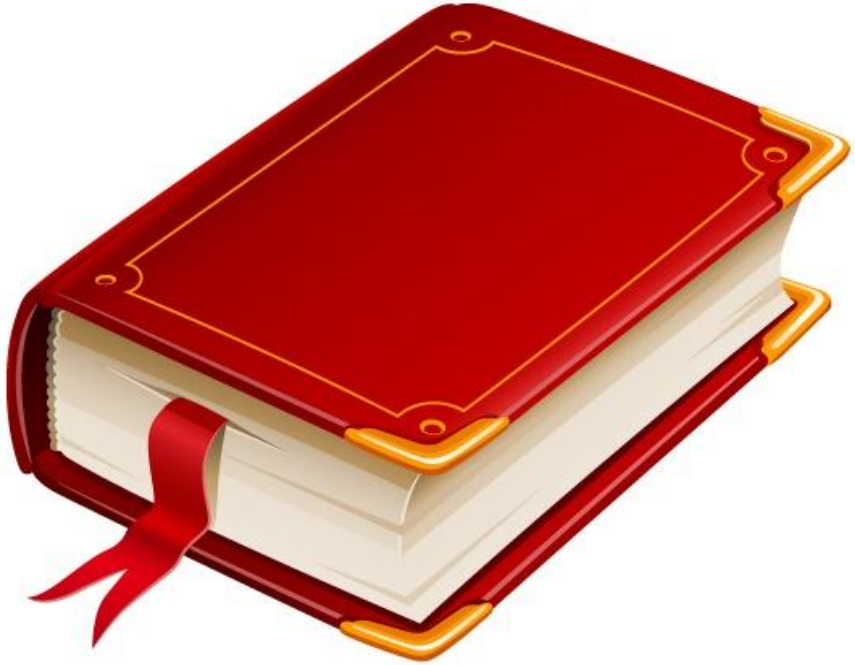






What about now?

[A non-cumulative exam.]



What About the Textbook?

End

Thanks!

This presentation will take a look at elements of our schedules, assignments, and tests that have a random factor, and the effect that could have on how students are assessed. While exams are becoming less popular in many fields, they are still commonplace in many science fields and other disciplines that have large class sizes. We have long felt confident that our “comprehensive” final exams provide a pedagogically sound assessment of student learning throughout the term, but is that really the case? For example, suppose we “cover” a 400-page textbook by assigning it as reading and then provide 30-odd lecture hours talking about the same topics. Our final exam consists of a 100-question multiple-choice exam. That means we have chosen 100 topics, likely addressing varying levels of granularity to use as our questions. Just how comprehensive is that? This talk will look at some visual representations of this approach and consider the implications that has for the ultimate grade a student gets.