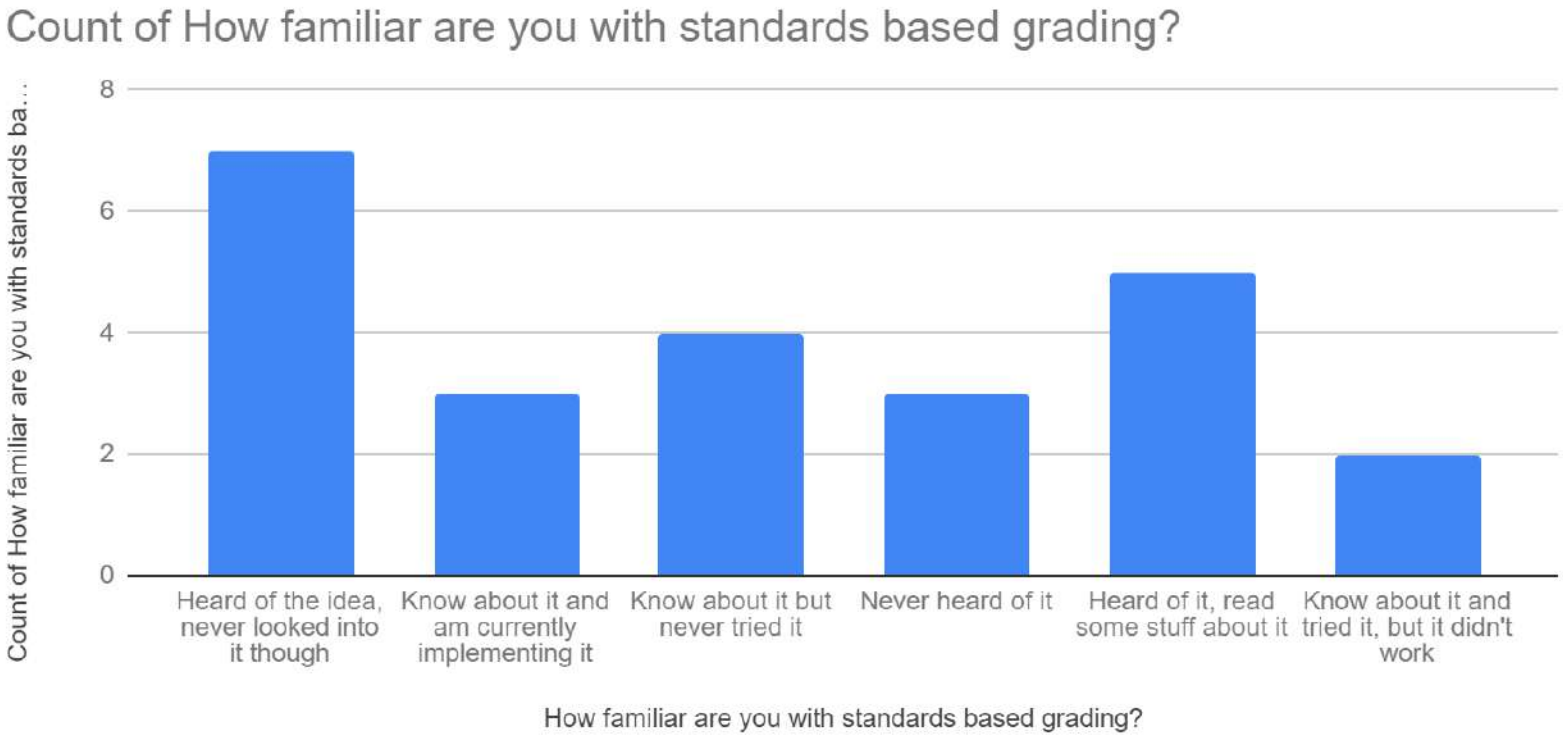
Standards in the Regular Physics Classroom

Implemented during the 2018-19 school year in a regular (cp) and ICRP physics class



Responses to the Survey (Thanks!)

Course Scoring Methods

- Points-based
  - Tradition scoring method
- Standards-based (aka Mastery)
  - Traditional points are replaced by content and skill standards
  - Traditional progression is replaced with student paced progression
  - assessments/assignments are assessed based on student's performance on the standards
  - Each standard is given a score and these scores ***are not added up as points***
  - Scores on standards used to see if the student has ***mastered enough to move on to more challenging topics***.
  - The grade can be based on final measurement of a standards' mastery, the average score of a standard, or holistically by looking at trends in assessments throughout the grading period.
- Standards-Referenced
  - Similar outline as standards based
  - Rather than the being student paced based on standard mastery, course is teacher paced
  - Students are NOT REQUIRED to master a standards before moving on
  - Standards are addressed as needed throughout the course.
  - Final score calculated similar to Standards Based

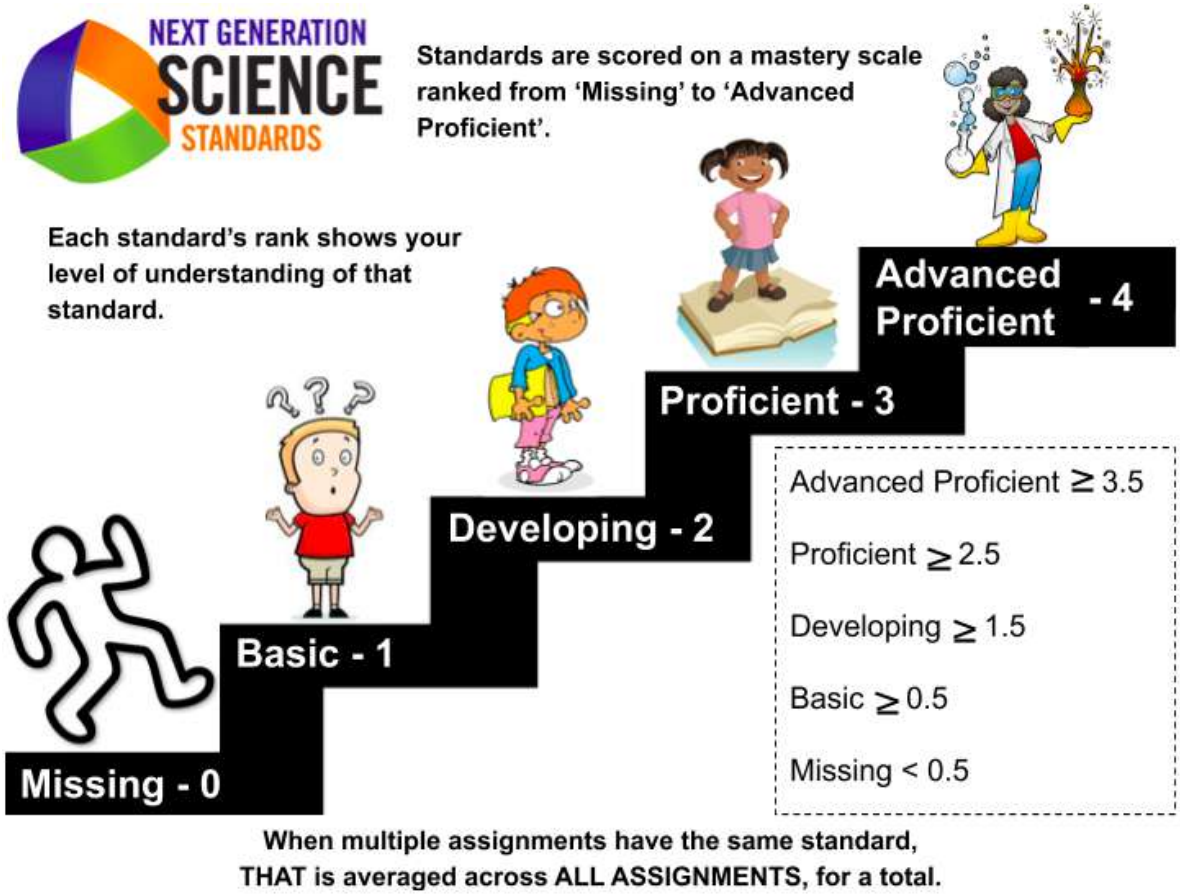
What are Standards?

- Standards represent learning goals for the course.
- Can be derived from already established standards (Like the NGSS or LO's for AP)
- Should represent skills as well as content

Std. Code Standard	Statement of Mastery
ScM Scientific Modeling	I can develop explanations about natural phenomena through use of a model. I can use models to make predictions of the results of investigations that seek to test hypothetical explanations.
Mth.A Algebra	I can algebraically manipulate relevant equations to determine an unknown quantity or to relate variable quantities.
EnC Energy Conservation	I can identify the energies of a system and use the model of energy conservation to calculate or explain the behavior of the system. *This extends to reasoning about thermodynamics, fluid dynamics, circuits, and other topics in physics when appropriate.*
Thk.M Metacognitive Thinker	I think critically about my own work, conduct, and that of my peers. I am accurate in my self-evaluations and use these to better my understanding of the content of the course and how to best approach my personal learning.

How are standards “Graded”?

- Each assignment is assigned a set amount of standards that are the focus of that assignment
- Each Standard is given a “Ranking” or “Score” that portrays the students current level of mastery of that standard on the assignment.



Sample Documents with standards

Dynamics Quiz

SHM Lab

Course Scoring Methods

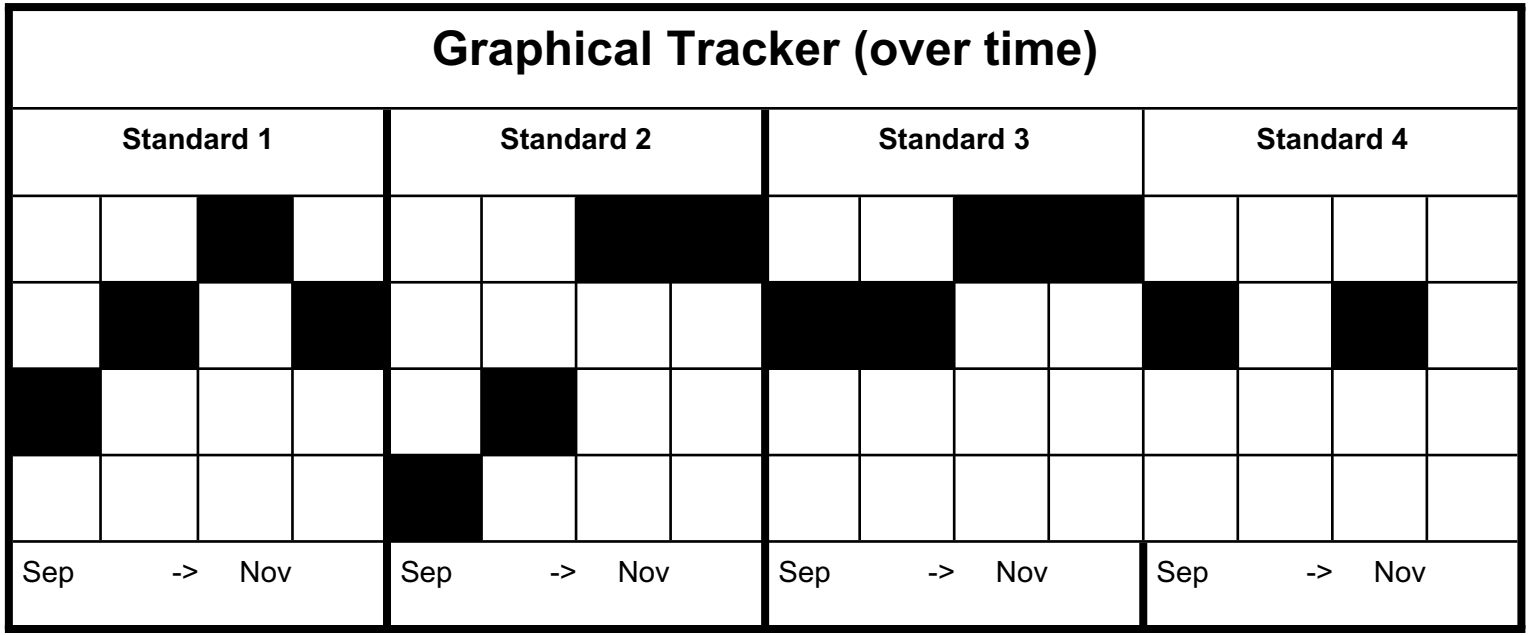
The data used for calculating the grade ultimately comes from how many standards have achieved: basic, developing, proficient, or advanced proficient mastery by the end of the grading period.

Options for determining the final grade based on level of mastery for a standard range from:

- Final score based on individual standards
  - graphing performance in standards over time and looking for a trend
  - using the most recent score
- Final grade based on ALL Standards
  - averaging scores over the grading period (or using a weighted average)

- Combinations of different methods.
- Suggestions (For later)

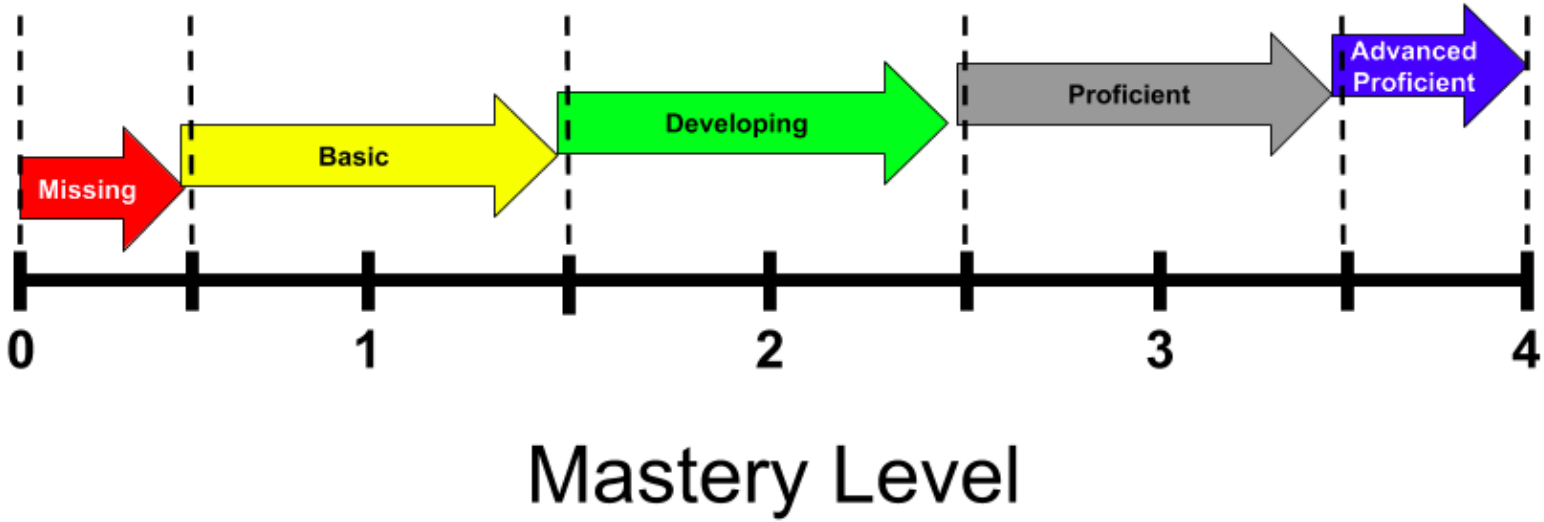
Course Scoring Methods:Graphical



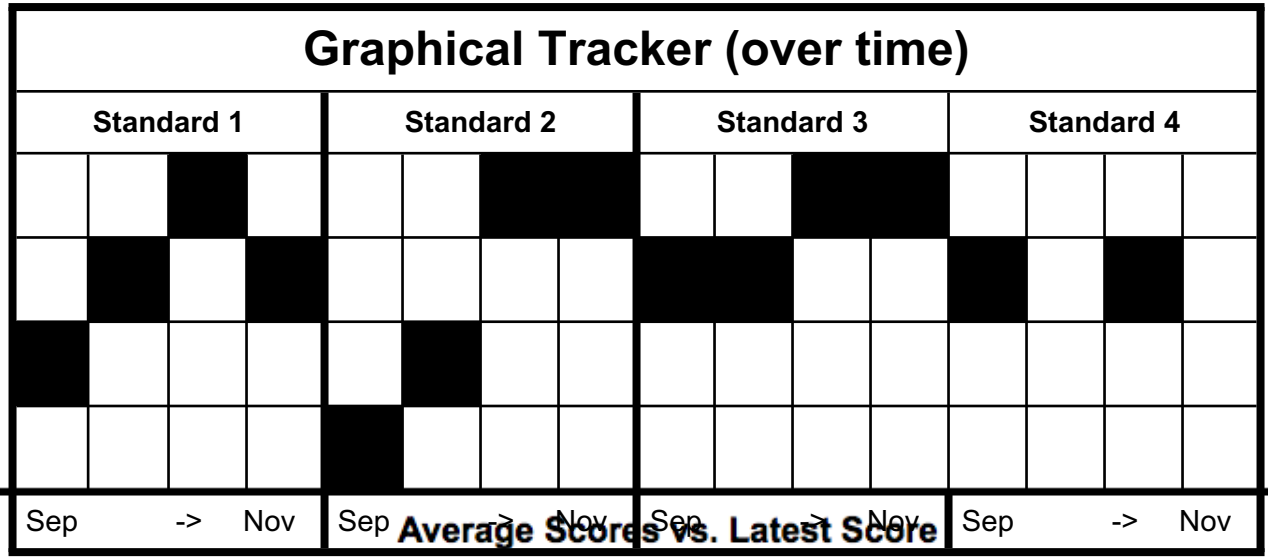
Course Scoring Methods: Avg/most recent

Average Scores

Each standard is assessed multiple times and all scores for each standard are averaged (per grading period). Standards are then identified as being:



Course Scoring Methods: Avg/most recent (Cont)



Average Scores vs. Latest Score

Standard 1		Standard 2		Standard 3		Standard 4	
Avg - 3 Proficient	Latest - 3 Proficient	Avg - 2.75 Developing	Latest - 4 Adv Prof	Avg - 3.5 Adv Prof	Latest - 4 Adv Prof	Avg - 3 Proficient	Latest - 3 Proficient

Course Scoring Methods: Combination of all standards

Tallying of Number of Standards (for each Mastery Level) by avg.			
Basic	**Developing**	**Proficient**	**Adv Proficient**
0 standards	1 standard	2 standards	1 standard

Grading Period Average			
Teacher #1 (lowest 0%)	Teacher #2 (binary, lowest 0%)	Teacher #3 (lowest 25%)	Teacher #4 (lowest 50%)
Adv Proficient - 1.0 Proficient - 0.85 Developing - 0.0 Basic - 0.0	Adv Proficient - 1.0 Proficient - 1.0 Developing - 0.0 Basic - 0.0	Adv Proficient - 1.0 Proficient - 0.85 Developing - 0.50 Basic - 0.25	Adv Proficient - 1.0 Proficient - 0.85 Developing - 0.65 Basic - 0.50
67.50%	**75.00%**	**80.00%**	**83.75%**

How to keep track of grades/assignments

- Online resources:
  - https://www.teacherease.com/standards-based-gradebook.aspx
  - https://otus.com/standards-based-grading-and-reporting/
  - Power school Has these capabilities, however does not create a metric for converting standards to percentage grades
  - **Most of these are not free**
- **Clever Spreadsheets**
- **https://docs.google.com/spreadsheets/d/1DN0PZYY9s0ZJwVAd2lVtwCVk-z_rDLK0oYKsEcSTRyA/edit?usp=sharing**

Benefits:

- Differentiation
- Equity
- Faster grading
- Encourages resubmission of work
- De-emphasizes “Scores” and “Grades” (Hypothetically)

Drawbacks:

- LOTS of front end work
- Organization to assure equal emphasis on all standards
- Takes time for students to acclimate
- ATTEMPTS to de-emphasize grades, mostly unsuccessfully.
- Lots of work on resubmissions

Questions/ Comments/ Discussion

Thanks!