AN OVERVIEW OF THE PDSA PROTOCOL

The PDSA protocol is an improvement tool that encourages educators to approach inquiry as a scientist would. It is used iteratively to test and refine a change idea through regular and frequent cycles of inquiry. In each iteration, educators…

1. **Plan: Identify a change idea you would like to test and determine how you will implement it.** Write a detailed plan that discusses the logistics of how you will go about introducing, framing, supporting, and learning from your change. Once you have a plan in place, craft learning questions and make predictions about what you think will happen. You may decide to ask questions about:

   ▸ **Process:** e.g., *How long will it take me to prepare the activity? How many students will I get to conference with during the class?*

   ▸ **Design** (of the intervention/tool): e.g., *What percentage of target students will understand the question?*

   ▸ **Outcome**: e.g., *How many of the target students will submit a revision? How will students respond to the language?*

   Phrase learning questions in such a way that **the prediction** you make **answers the question**. When possible, be **specific** and **quantifiable**. For example, rather than *"Will the conferencing work?"* ask, *"How many of the students who I conference with will submit a revision?"* (Note that not all data has to be quantitative; impressions of how a test went and other qualitative data are also useful.)

   Identify **how you plan to collect this information** (e.g. observing students, exit tickets, tracking time on a post-it). It may take some time to generate metrics that are quick and easy to collect.

   You may find you need to **return to your change idea** and tweak the design to ensure that the learning questions can be answered or to address concerns you surfaced while making predictions.

2. **Do: Implement (test) the change idea, document your observations, and track your results.** If possible, record your impressions of what happened and data points immediately afterward, even if you think you will remember them later.

3. **Study: Compare the actual results from implementation to your predictions in order to uncover underlying assumptions.** Focus not on whether this test was a success or failure and instead on what you learned about how to solve your problem and about the systems and processes that create it. Undertaking this step with colleagues brings fresh perspective and ideas to the work.

4. **Act: Given what you've learned from this test, you may choose to…**

   ▸ **Adapt** – make adjustments to the change idea, based on your learnings

   ▸ **Adopt** – repeat the test to see if you can reproduce your results with more students

   ▸ **Abandon** – if after several iterations the change idea does not lead to change, you might: revisit your theory and/or study the problem further before trying something new

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A note on frequency:

We have most often used this protocol in weekly or biweekly cycles of inquiry over the course of 6–10 weeks, making small adjustments each week. However, frequency should depend on the change idea itself.

Improvement thought partners:

As with other inquiry work, it is highly recommended to run PDSA cycles together with other educators who are working on a similar challenge in order to cross-pollinate thinking and learning with outside perspective and support.

Additional resources:

The PDSA protocol is only one piece of a larger process for improvement grounded in the principles below, and articulated in Anthony Bryk's recent book *Learning to Improve: How America's Schools Can Get Better at Getting Better* (2015).

- ◥ **Principle 1:** Make the work problem-specific and user-centered.

- ◥ **Principle 2:** Focus on variation in performance.

- ◥ **Principle 3:** See the system that produces the current outcomes.

- ◥ **Principle 4:** We cannot improve at scale what we cannot measure.

- ◥ **Principle 5:** Use disciplined inquiry to drive improvement.

- ◥ **Principle 6:** Accelerate learning through networked communities.

SAMPLE PDSA FORM

Below is a sample of a PDSA protocol note-catcher that was filled out by a team of teachers who were testing out a growth mindset intervention and a challenge question opportunity in math class. Prior to the intervention, they made predictions in the Plan section. A week later, after trying the intervention in class, the team met again and filled out the Do, Study, and Act sections in a facilitated inquiry session.

Test Title:	Using Weight-lifting Metaphor to Build a Growth Mindset		Tester:		
What change idea is being tested?	Will drawing the comparison between building muscle and building knowledge (and reiterating the message through individual encouragement) help more students take on challenges?		Date:	Week of Dec 8	
What is the goal of the test?*	Try a new intervention		Cycle #: 4	Driver being tested:	Going beyond the minimum

*Identify your overall goal: To make something work better? Learn how a new innovation works? Learn how to test in a new context? Learn how to spread or implement?

(1) P L A N

Questions. What questions do you have about what will happen?	Predictions. What do you think might happen as a result of this change?	Data. Data you'll collect to test predictions.
(Q1) How many will be able to personalize the example on the exit ticket? (Will give a specific example from their lives)	80%	Exit ticket
(Q2) How many will make the connection back to brain growth?	70%	Exit ticket
(Q3) What percent of students will attempt the challenge question?	40%	Challenge Question
(Q4) How many additional students will try the question? (those who didn't try previously)	3	Challenge Question
(Q5) Who do we think the additional students will be?	Target students: Alexis, Christina, Darwin, Khalid, Andy	Challenge Question
(Q6) How many target students will attempt the question?	3 out of 5	Challenge Question

Details. Describe the who/what/when/where of the test. Include your data collection plan.

The team will give a brief talk framing the idea that the learning process is like lifting weights to get stronger or practicing a sport to get better (potentially with a video). Students complete an exit ticket with prompt: "1. Think about a sport or activity that you want to be better in. This could be sports, running, acting, drawing, singing, etc. How do you get better at doing this? 2. Think back to the video on brain growth we watched. How is the approach to learning similar to what you said you would do to get better at a sport or activity? " The following day, students will be given a challenge question, and teachers will give special encouragement to target students, invoking the metaphor of lifting weights, and providing general support. Target students are Alexis, Christina, Darwin, Khalid and Andy.

(3) S T U D Y

Record results. Use measures based on your predictions. How do measures compare to your predictions?

11 of 16 (69%)
5 of 16 (31%)
15 of 21 (71%)
7 additional!
One target student was absent. After we talked with them, Alexis and Khalid tried. Alexis got as far as making a table outline, but didn't fill it out. She probably wanted to do something challenging/clever, but didn't come up with anything.
2 of 4 tried

Was the test successful? What did you learn?

Growth Mindset talk & exit ticket: Most students were able to talk about how they could get better at an activity they like but not all could make the connection to how you learn. It may just take more discussion of these ideas over time for this idea to catch hold. Challenge Question: Many more students attempted this week's challenge question. This one was low stakes (open-ended) and this may be why more students tried (usually with a word problem, students will shut down). There was not one "right answer." Students who have higher skills seemed to try to do something more challenging in the answers they produced. The extra encouragement to target students seems promising.

(2) D O

Briefly describe what happened during the test, surprises, difficulty getting data, obstacles, successes, etc.

Friday, we talked about the weightlifting metaphor and talked about how if you want to get stronger, you need to keep pushing yourself and if you stop, you will lose muscle. Students seemed outwardly receptive to this idea (though we can investigate this further). The challenge question was again printed on a separate sheet of paper that students could get from a pile or ask for. We mentioned it briefly one or two times and students seem to know it's not worth extra credit. The question this week was to come up with two functions and "In and Out" tables (open ended)--many more students tried it!

4) ACT

What will you do next? Describe modifications/decisions for the next cycle

Continue to reference the metaphor of practicing a sport/exercising when appropriate. Keep the challenge question open-ended so that students begin to see small successes (later can introduce long-answer questions that students traditionally avoid). Focus students will be Alexis, Darwin, and Khalid (Eloise, Mona, Christina - take 2 min to talk about why they are not trying the question)

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The PDSA Protocol—A Tool for Inquiry

Test Title:		Tester:	
What change idea is being tested?		Date:	
What is the goal of the test?*		Cycle #:	Driver being tested:

Identify your overall goal: To make something work better? Learn how a new innovation works? Learn how to test in a new context? Learn how to spread or implement?

(1) P L A N

Questions. What questions do you have about what will happen?	Predictions. What do you think might happen as a result of this change?	Data. Data you'll collect to test predictions.
Q1		
Q2		
Q3		
Q4		

Details. Describe the who/what/when/where of the test. Include your data collection plan.

(3) S T U D Y

Record results. Use measures based on your predictions. How do measures compare to your predictions?

Was the test successful? What did you learn?

(2) D O

Briefly describe what happened during the test, surprises, difficulty getting data, obstacles, successes, etc.

4) A C T

What will you do next? Describe modifications/decisions for the next cycle

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