

This document proposed points for discussion for improving the current math placement process and options available to *above-grade-level* 6th grade students at Jordan (Greene) Middle School in Palo Alto, CA. This note summarizes issues of concern (detailed and substantiated elsewhere) and proposes some solutions, focusing on those that can be implemented in the very short time frame. The goal is to move towards **fairness**, **transparency**, and **choice**, hopefully with some improvements effective by August 2018.

The note was originally composed in preparation for a May 23, 2018 meeting of 6th grade students and parents with Karen Hendricks (acting superintendent), Sharon Ofek (academic officer), and Suz Antink (math TOSA).

By above-grade-level math students we refer to those that start 6th grade with mastery of the Sixth-grade California Common Core State Standards (CCSS M6) or those that have near mastery and can reach mastery with very little effort. A conservative estimate based on extrapolation from the in-house Geo H enrollment is that at least 8% of the 6th grade class are above-grade-level. An extrapolation from Cupertino USD (a higher performing district) suggests that the number might be closer to 30%.

The middle school years are ideal time to focus on learning without worrying about optimizing college application portfolio (aka grades). There are many more students that can gain from a substantial revision to the PAUSD 6th grade program. (See [here](#) for discussion and pointers to school districts with similar demographics). In particular, the top 60% that eventually take 8th grade Algebra (necessary for HS calculus) can benefit from a more balanced pathway that will allow the Algebra 8 class to focus on CCSS Algebra 1 rather than also pack half of CCSS M8. A common pattern is that students are not challenged in Math 6 but then Algebra 8 becomes a tipping point where they struggle, putting them in a weaker position for high school. The balanced pathway that starts in 6th grade will allow more students to have strong Algebra preparation at the end of middle school. Another more ambitious pathway that can benefit the top 25% of pausd students is an organic pathway to 8th grade Geometry (rather than private after school learning and “skip” testing). Organic pathways are more equitable and allow more students to realize their potential. For example, fast math learners that start 6th grade with mastery of half of CCSS M6 may benefit from a compacted accelerated pathway to 8th grade Geometry. Such a pathway is implemented in Cupertino unified with reportedly 46% enrollment. Creating these pathways (in addition to CCSS M6 only 6th grade option), however, is somewhat longer term as they require substantial changes. In this document we focus on the very short-term.

Summary of concerns

The math placement options and process are outlined in district [publication \(see also\)](#). The actual process, however, as implemented at Jordan middle school in 2017/2018 and [documented here](#) deviated significantly in key aspects from the outline. It also departs significantly in philosophy and spirit from [The California Mathematics Placement Act of 2015 \(SB359\)](#) and also departs from the process and options for the grade-level cohort at the district. In summary, grade-level students are provided with class placement designed to support their growth during their time at school. They are evaluated continuously on what they are learning and provided with continuous feedback. Ultimately, the district recognizes the limitation even of elaborate rubric based on a year in class and only makes a non-binding recommendation for lane placement for the following year. In contrast (see details in [document](#)) above-grade-level students were placed, for the full duration of the school year, in rigid-curriculum mathematics classes that in their maximum stretch provide no opportunity for math growth or challenge during school hours (explicitly contradicting [publication](#)). The students are only evaluated during the year on mathematics topics which they mastered year start, thus provided with no meaningful feedback on growth. Their only available path for math growth is through private means and must take place in their after school time, with no support provided by the school. Eventually, at the end of the school year, the students that seek correct placement in their 7th grade year must take an unusually harsh uncalibrated and limited one-shot high-stake test. Furthermore, even the access to taking the test is conditioned on irrelevant factors.

The process applied to above-grade-level 6th graders in 2017/2018 resulted in adverse responses and outcomes that included (see [document](#)):

- Many families and students faced with a school program that offers their student no path for growth in math responded by enrolling their student in structured after school math program of ~5 weekly hours. Conservative estimate is that 25 Jordan 6th graders are enrolled. This cuts into the students' important time to play and pursue enrichments.
- The students that did not take an adequate after school math program experienced stunted academic growth and saw themselves falling behind peers that did take on such opportunities. Anecdotal evidence of students attitude towards their own math ability shifting downward.
- The very high-stake one-shot placement tests, some time-pressured, some severely mis-administered, in August and in May induced stress and anxiety in students well beyond acceptable for that young age. Anecdotal evidence of anxiety symptoms directly related to testing.
- The forced mis-placement for a full year in rigid math classes that require their full engagement but offered the students no path for growth caused adverse social emotional response that included: disengagement, behaviour issues towards peers and teacher, complacency with math, and frustration.
- The requirement of full 9 point rubric as a prerequisite to getting access in May to placement tests that are on material a year or more advanced than current

class unnecessarily filters out well-qualified students and exacerbated anxiety or disengagement (anecdotal evidence).

- The adverse effects were magnified by the refusal of the school and district for the entire school year to acknowledge and discuss concerns with the program and responses of individual students as they were becoming evident. For example, after the principal confirmed in November that despite [publication](#) there is no differentiated instruction that is suitable for above-grade-level students, the school principal and district refused to address the issue or even meet with parents. For example, after severe mis-administration of August tests was understood by corroborating experience of many students, there was no attempt by the school to acknowledge the issue, except that access to the follow up test (that had other issues) was opened individually to students whose parents pointed on the problem.

Discussion of solutions that can be implemented in the short term.

Multiple school districts with similar demographics implement middle school math pathways suitable for their large cohort of above-grade-level students. We believe that a revision is due here in Palo Alto, but recognize that it may require research and some time to implement.

The remaining part of this document focuses entirely on the very short term: Steps that can be implemented before school resumes in August 2018. The proposals assume only currently available assessment tools at PAUSD and require no changes to current class structure or even class enrollment numbers. The short-term goal focuses on providing improvement over the current baseline: Provide above-grade-level students with some paths to achieve meaningful math growth during their school hours, decrease their exposure to adverse outcomes, and achieve better alignment with the CA math placement act and current process for grade-level students. The proposed steps can also help gather experimental data for longer-term solutions.

1. Access to above-grade-level assessment

Proposal:

Allow all students access to acceleration placement assessment (*opt-in* or even *opt-out* instead of *invite-only*).

Current Baseline: Access to both August and May “7A mastery” and “Algebra 8 mastery” tests includes “eligibility” requirements that filter out students that are ready to succeed in the target class. For example, eligibility of 6th graders to attempt the “7A mastery test” in August was conditioned in getting to the last two problems in a mis-administered timed-pressured test given the previous days (to students that were not made aware the test is time limited and never experiences such tests). For example, the eligibility to take the “7A mastery test” in May necessitates full 9 point rubric on math 6 class. Four of these points are measures of *engagement* rather than *math level*. Thus, are not directly relevant to success in a class 1.5 years of curriculum above. Disengagement is a common response of students that are forced to engage in a class that offers no challenge, so this is a concern. Only 4/9 points are from summative tests that measure 6th grade mastery but do not suffice to eligibility. Blocking qualified student from placement path can only exacerbate disengagement.

Further justification: An opt-out rather than invite-only assessment can also provide meaningful feedback to families and valuable calibration/correlation and growth data to the school that may facilitate more accurate recommendations and planning.

2. Adequate assessment/diagnostics to support informed placement

Current baseline: A single one-shot high-stake 2 hour tests developed in-house are used as a singular data point to determine full year placement (85% to “pass”). Moreover, there is no evidence of proper calibration of that test and there is plenty of anecdotal evidence of mis-placements. There is no customary preparation and meaningful syllabus provided for preparation (syllabus for test is 1.5 year of curriculum above the maximum stretch of school math class). And even access to testing is unreasonably filtered. Furthermore, August and May tests in 2017/2018 were broadly mis-administered.

Proposal:

Math level and ability can be better assessed using *multiple data points* and a *variety of methods* (see below). The data points for a student can be processed against calibrated, correlated, and normed data of a large group. This can provide meaningful data to parents, students, and counselor to support an informed decision.

- A valuable data point on “level” is to consider level year start with respect to that of students that completed the class at school. The most effective available way to do this is to use the same assessments or final exams administered at the school. Since these are administered to all students, calibrated data is available. A caveat for calibration is a bias against students that take

school-designed assessment without taking the particular program. This can be partially corrected by providing access to the same textbooks, precise syllabus, and review material that was provided to the students that actually took the class. In any case, the bias is one way, there are no advantages to students that did not take the school class. Thus only result in underestimating "level." This bias should be compensated for.

In particular, incoming 6th grade students can be provided with access to the Big Ideas 6th grade textbook and online resources at the start of summer (or 5th grade year). They can then take the two summative tests that are administered at end of 6th grade to all 6th graders.

Students that are already at the school (6th grade and above) and seek to place into a higher level math class can be provided with access to class material or even audit and take the final exam either with the class or in August. For example, 6th graders that seek to place into Algebra or Geometry in their 7th grade year can be provided access to the curriculum of these classes, opportunity to review the material with the class, and an option to take the final with the class.

An example of meaningful data point is to provide families with a percentile of the student score with respect to that of students that took the class and received an "A" grade. For example, a student that year start already scores in the summative tests in the 20%+ percentile of 6th graders that completed the class with an "A" grade might be a good candidate for considering alternative to math 6 engagement.

- Another valuable and unbiased data point on level is performance on nationally/regionally normed tests. For example NWEA MAP or Smarter Balanced. These tests have a "summative" option that provides a nationally normed percentile score. They also have an "interim" option that can be taken at multiple points during the school year and provide specific feedback. PAUSD has access to the full Smarter Balanced suit and also experimented already with the NWEA MAP suits. The NWEA MAP test are adaptive and provide percentile scores of the student with respect to its current and higher grade levels.

These scores can be used for example as follows: A student that scores in the 50% percentile of the students that completed a higher math class at school might be a good candidate for acceleration. Performance that is in the 90% national percentile might be indicative on aptitude and the student's raw abilities to learn. Again, this information, processed and explained, can be provided to families as a component in making an informed decision. One example where these tests are used is the Cupertino school district, which uses the NWEA MAP tests 90% mark as one component that allows students to accelerate in their highest lane (above PAUSD highest lane).

- Ultimately, the school is required to demonstrate grade-level common core proficiency for students. Currently 60% of Jordan students “exceed standard” when tested in May. The smarter balanced suit can also be used to determine common core mastery *year start*. Thus, 6th grade students that are already in the “exceeding standard” category in the beginning of the school year can be provided with more flexibility to opt out of rigid math 6 classes and choose a suitably challenging learning path. Similarly, the 8th grade smarter balanced tests exceed the 7A curriculum (CCSS M7 and part of CCSS M8). So 6th grade students that are meeting or exceeding standard might be ready for Algebra.
- Additional data that can assist in placement is input from external math programs and teachers, input from elementary teachers (for incoming 6th graders), input from student (motivation), and input from parents

The current process results in a large group of students, 6th graders in particular, that are academically mis-placed at school and have their primary math education outside of school. Currently, these students are assessed on what they actually learned in the full year in a single one-shot very high-stake 2 hour exam in May. We propose that this is replaced with

- Continuous input from external math program
- NWEA MAP (also interim tests that provide optional mid year feedback)
- Smarter balanced interim tests (with feedback)
- Summative NWEA MAP or smarter balanced end of year
- Summative assessments (final exams) of courses at school after providing student with textbooks
- Input from student and parents
- Allow student to audit final weeks of class they intend to “skip,” have full access to class material, and take final with the class.
- Current “mastery” tests but as one of multiple input points. The tests need to be calibrated over students that took the school class (while accounting for bias) and students taking the test for placement should have full access to syllabus

3. Adequate placement options

Current baseline: All above-grade-level 6th grade students (that are not deemed to be at Algebra 8 level) are placed for the full year in a math class that is entirely focused on CCSS M6 and offers them no suitable differentiation or a path for growth. We propose that the following options are offered in 2018/2019.

Proposal:

- Open 7A enrollment to above-grade-level 6th graders 2018 on. We recognize that this requires planning, as it is possible that 30-50 students would qualify. For 2018/2019 this can be subjected to availability (perhaps lottery based as in high school science classes).
- Above-grade-level 2018/2019 6th graders that can not be placed in a suitable class due to availability (or choose not to) may have the following options for the school “math” time:
 - Engage in math 6
 - “Club”: Open at school math class time a multi-level “club” format space where student can work independently or collaboratively on different tasks with some coaching (e.g. parents, volunteers, or staff). Students will have the option of “following” an appropriate school class: Provide full access to textbook and online material for 7A and Algebra 8 classes. This is possible now because the current “big ideas” program has a large online component. In particular, most homework is done entirely online. “Follow” students can be provided with access to unit tests and finals for feedback purposes and also final qualification of “passing” the class (7A class at school has no final exam). “Club” time can also be used to work on external math program or do other independent math work. Currently PIE money pays for the in-house Geometry classes and it can also be used to support club time.
 - Contract with external providers (AoPS, CTY, classic math) to provide accelerated and deeper structured math programs for above-grade-level students (to work on in “club” time). This can be done using “independent study” pathway (regulation AR 6158)
 - Home-based independent study as substitute to math period (via AR 6158) ([CDE code](#)).

All students (6th grade or above) that are accelerated (a year or more above the highest grade-level math lane) should be provided with the option to substitute the school math program with accredited external program. PAUSD currently offers no organic path to acceleration above the current high lane (Algebra 1 in 8th grade), so the only way to accelerate is through strong external math program. Thus, students that are accelerated (geometry before 9th grade) already demonstrated their ability and available means to learn effectively outside of school and should be provided with the option to continue to do so when the available placement at school is less suitable or not suitable or may require commute to high school. Some external programs (CTY, AoPS, classic math) are better suited for high aptitude students than the honors classes offered at school: They have a faster pace (or self-paced), go much deeper into material and cover material that is outside or beyond common core, and offer more challenge. These external providers can provide continuous progress reports to the school and the school may periodically assess progress using nationally normed tests.

The most appropriate option depends holistically on the student:

The suitability of a particular math program for a particular student depends on multiple factors that include current math level, aptitude (effectiveness and pace in which the student can learn), motivation (desire to learn), maturity, ability to learn independently, need for less/more structure, preference for collaborative/independent learning, and more. Some of these factors can balance others and some can not be measured in one or two sittings. Therefore ultimately, the purpose of assessments is to collect and synthesize data that can support informed decisions.

For example. A student that needs more structure and support may benefit more from a math class at school even when starting the year with mastery of half of the curriculum. A student that is independent and has high aptitude may prefer deeper exploration with challenge components provided by an AoPS math classes. Collaborative learning is desirable when available but the balance may be different for different students. A students that works well independently but not interested in extra challenge may use the “big ideas” program and online components in a self paced manner.