

## **A Summary Profile of Mathematics and Science Education in the Bellevue School District**

The purpose of this report is to provide information to facilitate Bellevue's mission to achieve K-16 alignment for every student. This assessment of the current state of mathematics and science education in Bellevue is an essential benchmark against which future efforts towards the goal may be measured. This report examined content standards, achievement results, allocation of instruction time, and teacher preparedness. In so doing, it substantiates the relationship between content coverage and learning. What is being taught and to whom makes a difference. Such choices must not be arbitrary.

From the perspective of the staff at MSU's IPC-CS, Bellevue's story is revolutionary. Our vision is to see Bellevue's story unfold in every school district across the US. This initiative on Bellevue's part - to prepare every student to succeed at completing at least a four year college education - has the potential to move much beyond the local level. It carries with it significant state, national and international implications. This initiative may serve as a model for implementing mathematics and science curriculum reform at state and national levels. In its ongoing battle for curricula improvement, Bellevue is among those who lead the nation.

This study, and its capability to place student achievement in an international context, was undertaken at this time as one more assessment process in Bellevue's mission to establish a world class education. Bellevue's students are at the top in many of the content areas. More important is Bellevue's drive to establish standard, focused, coherent, rigorous curriculum standards that apply to every student in the school district. Bellevue's efforts to eliminate the splintered vision that exists in school districts across the US have paid off with generally higher achievement results than are seen in the US as a whole.

***Where to go from here.*** Echoing the goal first articulated by the National Education Goals Panel, Bellevue has established a plan for improving K-12 education not just for its high-performing students, but for every student in the district. A major overhaul of curriculum standards is not required. The mathematics and science achievement results in specific content areas can be examined more closely for areas within the curriculum that require consideration for revision. Bellevue's plan is in place and execution of it is ongoing. We can only emphasize the phases of it that we perceive to be most critical. We offer the following recommendations.

- The mathematics curriculum appears to be aligned somewhat with international standards in grades one through eight. Bellevue's mathematics standards are focused and reasonably coherent but opportunity exists to establish additional coherence and rigor. Eliminate over coverage of elementary topics such as whole number operations and estimating computations. Cover more thoroughly advanced topics such as geometric constructions, proportionality, and rational numbers and their properties.
- The science curriculum, especially for the middle school grades, does not appear to be aligned with international standards. During these grades, Bellevue intends to cover less than half the topics that are intended by a majority of the top achieving countries. Develop a focused curriculum for the middle school grades that covers many more topics than the present curriculum. Prepare your students for more rigorous high school courses by replacing coverage of life science topics with topics related to chemistry and physics during the middle school grades. Include topics in the curriculum such as the chemical changes of matter, and explanations for physical changes.
- The science curriculum also needs greater coherence and a unifying theme. Otherwise it appears to be a somewhat arbitrary collection of topics.
- The variability in teacher coverage that exists in many topics across most grades offers to students a wide diversity of experiences in opportunity to learn that must be eliminated if you are to leave no child behind.
- Finally, and closely related to the above recommendations, Bellevue's goal of preparing ALL students equally, though admirable, is at risk if these issues are not resolved. It appears that unless changes are implemented across the district, at least a quarter of Bellevue's students may be left behind upon graduation from high school.

There are many positives about the educational system in the Bellevue School District.

Continue to review your curricular materials across all grades to ensure there is progression from simple concepts to more advanced concepts. Continue to ensure that content areas are presented in sufficient depth to allow students to apply concepts to more advanced mathematics and science in the higher grades. Continue to hire teachers who are highly qualified to teach mathematics and science. At the higher grade levels, strive to assign science teachers to classes so that they are instructing in their area of expertise. Continue staff development efforts. Continue the drive toward preparing preparing a majority of your students to take and succeed in AP and IB level courses. Continue to support your students using whatever approach succeeds. Continue your efforts to test various approaches. Continue frequent assessments followed by adjustments to curriculum as necessary. You have taken on the challenge, and you are winning.

We enthusiastically support you. We applaud you.

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