2101(c)(4)(B)(ix): Integrating technology into curricula and instruction

Background

Integrating technology into curricula and instruction offers the tantalizing promise of increasing personalized instruction and student engagement. When implemented with purpose and meaning, technology can indeed support and enhance effective teaching and learning practices for mathematics. However viewing digital platforms as equivalent to the real classroom teacher is inaccurate and detracts from student opportunities to learn.

Many technological tools, including those often used in blended learning settings, repackage analog instructional practices without communicating inherent limitations. For example, the limited assessment mechanisms of many technologies result in structured data that may lead the teacher to ascribe mastery too soon or to assume lack of understanding when students may simply not have access to the specific representation allowed by the technology. In contrast, effective teachers in non-digital classrooms assess student understanding through rich, socially negotiated student productions, such as discourse, doodles, and verbal arguments.

To integrate technology in a more purposeful way, we must first recognize how technology is utilized in the student's everyday experience: It serves as a tool for creating, sharing socially, and learning from peer feedback. We believe that to whatever extent possible, the technology used in the school day should leverage these uses.

Regarding blended learning specifically, we believe that mathematical sense-making is social and is supported in meaningful ways by the teacher who orchestrates productive discourse, poses purposeful questions, and utilizes various representations of student thinking that arise as students engage in rich, high-cognitive demand tasks. In whatever manner technology is utilized, we believe it should enhance, rather than interfere with or detract from, effective non-digital classrooms. In essence: "do no harm."

Look Fors

State plans should ensure that technology and blended learning models enhance effective non-digital learning environments by describing how SEAs will–

1. develop an analytical tool to support the evaluation of technology and digital resources;
2. develop guidance tools and documentation that is both accessible to teachers and research-based;
3. communicate the expectation for the role of the classroom educator beyond mere accountancy in a blended environment;
4. ensure that all professional learning experiences (digital and non-digital) center around effective teaching practices; and
5. support school leaders to make informed decisions around the use of technology to enhance effective non-digital mathematics classrooms.

States with Promising Features

The following states were identified as a result of the Promising Features Survey in which 13 state plans were reviewed by mathematics leaders across the country. Related text from the full state plans mentioned below can be found in Tool #12 at http://nctm.org/essatoolkit.

- Among **Utah's** potential professional development offerings for principals is a Leadership in Blended and Digital Learning Program, which builds experience and expertise in digital and personalized learning, including evaluation and instructional best practices related to 21st century classrooms.
- **Wisconsin** will provide regional and statewide training opportunities focused on moving traditional classroom experiences to a blended environment, and will also provide preparation, technical assistance, and capacity building to LEAs regarding technology-enabled learning environments and data use.

http://nctm.org/essatoolkit