Focus in High School Mathematics: Technology to Support Reasoning and Sense Making
Dick, Thomas P. and Hollebrands, Karen F.

DESCRIPTION

Focus in High School Mathematics: Technology to Support Reasoning and Sense Making, by Thomas P. Dick and Karen F. Hollebrands and published by the National Council of Teachers of Mathematics, describes an instructional mantra of “push or probe” to guide decisions involving the use of technology in mathematics classrooms. Teachers should make instructional choices that push students’ mathematical thinking forward or that probe how students are thinking mathematically.

Types of technology for mathematics teaching include:

- Conveyance technologies that are not mathematics specific including those used for presentation, communication, sharing/collaboration, and assessment/monitoring/distribution
- Mathematical action technologies including computational/representational tool kits, dynamic geometry environments, micro-worlds, and computer simulations

For technology to be an effective tool, good questions demanding sense making and reasoning from students are needed. Questions should support students as they:

- Predict consequences (what would happen if...?)
- Consider action (what would make ...happen?)
- Conjecture/test/generalize (When?)
- Justify (Why?)

The book includes many figures of interactive, dynamic technology via screenshots. Also included is an access code that allows the reader to try out many of the technologies live at More4U, NCTM’s online resource center. More4U includes interactive applets, animations, and movies.

STAGE 3 LEADERSHIP DEVELOPMENT

Focus in High School Mathematics: Technology to Support Reasoning and Sense Making, by Thomas P. Dick and Karen F. Hollebrands, supports stage 3 leadership development of those working to advocate and systematize to meet the teaching and learning principle indicators. Stage 3 leaders
work to ensure the ongoing use of technology as a systemic part of the mathematics curriculum and instruction at the district, regional, or provincial level.

Leaders will find the guidelines for choosing and using interactive technology in the introduction of the book. Working with mathematics coaches and leaders in individual schools and across the district, the ten questions in the guide can be used to determine the inclusion of technology and scenarios using technology in mathematics classrooms. The questions in the guide, which provide examples and probes, are a good starting place for the collaborative development of protocols for including technology in mathematics lessons. These questions help to answer the bottom line question: *Can the technology be used to ask questions demanding reflection, sense making, and reasoning from the students?*

The seventh chapter, “Technology Tools to Support Mathematics Teaching,” focuses on conveyance technologies that aide in communication and collaboration. The descriptions and suggestions provide a good starting place for developing protocols for using technology in mathematics classrooms. Teaching practices that can be supported using conveyance technologies include:

- Encouraging student collaboration
- Sequencing and sharing student work on mathematical tasks
- Orchestrating mathematical discourse
- Monitoring and assessing students’ mathematical learning
Teachers can make reasoning and sense making a focus in any mathematics class. A crucial step is to determine how reasoning and sense making serve as integral components of the material that they teach. Even with topics traditionally transmitted through procedural approaches, teachers can present the material in ways that allow students to reason about what they are doing. Although procedural fluency is important in high school mathematics, it should not be sought in the absence—or at the expense—of reasoning and sense making.

12. What can families do to support the mathematics learning of their high school students? Families need to be involved in the mathematical preparation of their high school students. School Abraham Lincoln High School. Course Title OTHER other. Type.

Technology

This is a lesson on using the TI-83 calculator to find normal distribution and standard deviation of a set of data. Khan Academy contains useful video lessons and also a galaxy of practice modules that enable students to check answers online. This is the site to access the book and extra resources online. This site has a bank of different lessons published by NCTM.

Give an example of an event in which probabilities are used to make a decision, and explain how the probability is used.

You've reached the end of your free preview. Want to read all 84 pages? TERM Fall '14. PROFESSOR other. TAGS high school algebra. Share this link with a friend: Copied! Reasoning about and making sense of algebra are essential to students' future success. This volume is one of a series of books that support NCTM's Focus in High School Mathematics: Reasoning and Sense Making by providing additional guidance for making reasoning and sense making part of the mathematics experiences of all high school students every day.

Karen Graham, Albert A. Cuoco, Gwendolyn Zimmermann.