

Pedagogical System for Teaching & Learning Mathematics

To what degree do you think (that)...?

Worthwhile Mathematical Tasks

...builds conceptual understanding and computational and procedural fluency?

...poses appropriate levels of mathematical challenge?

...allows for students to demonstrate original thinking about important concepts and relationships?

Tools & Representations

...tools and representations were used as thinking spaces, enabling students to communicate ideas that would otherwise be difficult to do?

...students had access to multiple representations to develop conceptual understanding and computational flexibility?

...students were assisted to make connections through carefully sequenced examples, including examples of students' own solution strategies?

...students developed a fuller conceptual understanding by exploring different representations of mathematical content?

Classroom Discourse

...the learning experience was planned to enable students to build on their existing proficiencies and experiences?

...there was a focus on the mathematical thinking that students were engaged in, with teacher questions posed to challenge and extend thinking?

...students' misconceptions and errors were treated as a necessary part of learning and opportunities were provided for students to learn from these?

...classroom discussions were facilitated with a focus on mathematical argumentation?

...modelling of the process of explaining and justifying was done?

..."re-voicing" was used to highlight ideas that came directly from students to help them in the development of their emerging understandings?

...different mathematical interpretations were allowed and the community was encouraged to discuss them and resolve them by addressing misconceptions as necessary?

...the use, as well as understanding, of appropriate mathematical terms, expressions, and symbols was fostered?

...modelling took into account students' informal understandings of the mathematical language in use?

Non-Threatening Classroom Environment

...time was provided for students to think for themselves, to ask questions, and to take intellectual risks?

...there was high yet realistic expectations?

...opportunities exist for students to make sense of mathematical ideas through independent working/thinking time as well as collaboratively (partner and small group)?

...during whole-class discussions, the teacher listened to students' ideas and monitored how often students contributed, and kept the discussion focused on mathematical learning?

...discussions (whole and small group) are organized to address alternative interpretations or misconceptions of mathematics?