



# Staff Development For School-Wide Implementation

School districts that are serious about the implementation of MEBA™ need to formulate long-term professional development plans for changing the recurring pattern of rote instruction. Education leaders need to design programs that do not rely on the “text” as the major component of their math program or consider one-time “hands-on” workshops as “fast fixes” for conceptual understanding. The deep-rooted problem of **how** teachers teach mathematics concepts must be addressed. We make the following recommendations based on our staff development work with teachers, administrators, and parents in implementing experience-based mathematics instruction.

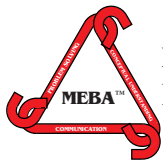
## **Long-Term Inservice Involving Workshops, Classroom Demonstrations/ Observations, And Small-Group Discussions**

A school faculty interacts with the same MEBA staff development leader for at least three years on at least a once-a-month basis. Not only is applied content knowledge addressed within this time frame but attitudes and beliefs are also being restructured. Difficulties, frustrations, setbacks, and anxieties are to be expected for this type of change to occur. Formulating how to make experience-based instruction work for each participating teacher in a manner that is sensitive to various teaching styles and backgrounds takes a great deal of time and effort. Thus the school climate needs to support peer cooperation, collegiality, and collaboration.

Staff development commences with a workshop orientation which provides an overview of the critical components of MEBA. Subsequent staff development is scheduled on a once a month basis. This time is divided among workshops, classroom demonstrations, classroom observations, and consultations with the staff development leader as well as collaboration with peers. Consultation/debriefing time is critical. Teachers meet with their peers by grade level and share their questions, concerns, and feelings with the staff development leader.

The long-term and incremental nature of staff development is a critical feature of the program’s success. Each month teachers learn something new related to content and delivery in the workshop sessions, see how this is actually implemented with students in a classroom, and then have a few weeks to internalize and incorporate these ideas into their own teaching style. In the subsequent staff development session, teachers ask questions and receive feedback regarding the prior month’s session and are thus ready to take on new information. Such significant time is necessary since teachers are learning how to reteach content and use a variety of resources to integrate computational, spatial, and logical reasoning. These efforts must also be coordinated with classroom management and organization strategies including cooperative learning and questioning skills.

While there is general agreement that students need to develop a positive mathematical disposition, we must also promote such an attitude in our teachers. Yet, this can



present a formidable challenge when teachers are frequently anxious about learning new approaches that are substantively different from how they learned mathematics. Since such feelings about teaching mathematics are not unique, teachers need an atmosphere that promotes teacher investment and creativity. A critical feature of the MEBA™ staff development plan is that once teachers understand the basic SIMs™ framework of how modalities are sequenced, they should be encouraged to design their own lessons as well as integrate appropriate ideas from a wide range of resources. Such teacher investment secures prolonged usage over time.

## **Parental Involvement**

Parental support and involvement is an essential component of any successful experience-based mathematics program. As mentioned earlier, most adults have had little basis in their own personal academic experiences to understand anything other than rote mathematics. Therefore, parents need to be provided with periodic workshops that provide them with a basic understanding of MEBA™ as well as at-home activities to support their childrens' learning. The **Mathematics Pentathlon®** games have proven to be most effective and stimulating for parent-child interaction.

## **Content & Modality Curricular Mapping**

After the first year of staff development work, the MEBA™ consultant works with the faculty to create an annual plan for integrating the mathematics content at each grade level with the Sequenced Instructional Modes (SIMs™) of Concrete, Concrete-Pictorial, Pictorial, Concrete-Symbolic, Pictorial-Symbolic, and Symbolic. At each grade level teachers meet to determine the content they are responsible for teaching. This content is then arranged to integrate arithmetic/computational, geometric/spatial, and scientific/logical reasoning. Next, the MEBA™ consultant guides the teachers to determine the extent to which each concept will be taught from a modality viewpoint and how the content will be spiraled. Teachers then meet with the prior and succeeding grade level teachers to connect what they teach with the other two grade levels. For example, a first grade teacher may provide instruction through the pictorial mode of a particular concept and the second grade teacher may commence instruction at the pictorial mode for this same concept.

## **Monitoring And Program Evaluation**

In order to evaluate the system-wide use of MEBA™ a performance-based monitoring device needs to be constructed by teachers and administrators under the guidance of the staff development consultant. Each major content strand is assessed in concert with what the teachers have taught. In addition to paper/pencil item tasks, students mathematics literacy should be assessed on the blending of concrete, pictorial and symbolic modalities. This enables teachers and administrators to determine how effectively and to what degree the program is operating. The use of this monitoring device and program evaluation procedures should in no way be linked to teacher evaluation. On the next page is a visual summary of the various evaluation components for MEBA™.