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An Exploratory Analysis of Current Pedagogical Practices In Primary Mathematics Classrooms

Agnes Chang Shook Cheong, Berinderjeet Kaur, Koay Phong Lee and Lee Ngan Hoe

With the promotion of infusing thinking skills and IT into lessons in the Ability Driven Approach to Education, this research study attempted to investigate the current pedagogical practices in primary Mathematic classrooms. The study spanned over two years from 1998 to 1999.

The study involved the video-taping of five one-hour Primary 5 mathematics lessons of four teachers, two from a premier school and two from a neighbourhood school. The four team members undertook the video-taping of lessons and the interviewing of teachers in the two sample schools.

Methodology

Classroom observation and videotaping were completed within two months. The videotapes were viewed by members of the research team and the time spent on each type of classroom interaction was noted. The classroom interactions were broadly classified under the following categories.

Table 1: Categories of Classroom Categories

Category	Description of how instructional time is spent: By teacher (T) By pupils (P)
Preparation for Activity	Preparing pupils for their activity and lesson delivery e.g. giving out materials, reorganising the seating of the pupils, etc.
Teacher Talk	Giving instructions, explaining concepts, giving examples, assigning homework, giving information, etc.
Pupil at Work	Doing seatwork, working in front of the classroom on OHP or chalkboard.
Pupil Talk	Making comments, asking questions, clarifying any doubt, etc.
Pupil Response	Responding to teacher initiated questions or prompts either in chorus or individually, etc.
Teacher Question	Asking the class or individuals questions. This included reading out to pupils the questions of a class quiz (mental sums).

The four teachers under observation had varying experience and were chosen by the principals of their schools. The lesson plans were examined closely and compared with the lessons observed. The lesson plans prepared were highly

structured with higher order thinking skills infused at appropriate junctions in the lessons.

Results

Though the two schools were attended by pupils of different abilities, analyses of the videotapes from the two schools revealed that classroom activities in both schools were mainly teacher-directed. Two thirds of the time in each lesson was spent in Teacher Talk and Pupil at Work (Group and individual). Pupils were allowed to discuss during group work, but interaction with the teacher was purely restricted to answering teacher-initiated questions or seeking classification from the teacher. Some thinking questions were attempted but little follow-up was evident to develop deeper thinking.

The nature of mathematics encouraged comprehension and application questions being asked and we were not disappointed. However, good opportunities were often overlooked for the applications of error analysis and inductive thinking. Error analysis was still an uncommon activity in these mathematics lessons.

The OHP, whiteboard, published worksheets, teacher or school produced resources were materials used during lessons. Radio/television programme, CD ROM's and other computer software were rarely used. The textbook used in both schools was the Primary Mathematics P5 by CDIS. Teachers from the premier school also used additional reference books like Critical Thinking Activities by Dale Seymour and STAS Mental Sums Booklet.

In the premier school, which is one of the primary schools for gifted children, pupils were also provided with enrichment activities (usually meant for gifted pupils). However, their activities were not tailored to enhance any one thinking skill. Pupils in the neighbourhood school did not enjoy the privilege of enrichment activities. One of the teachers in the neighbourhood school attempted an ambitious activity - a classroom-based maths fair. Pupils were expected to move from station to station to complete some mathematical task. It was not too successful as pupils were not clear about the task procedures.

Classwork and homework focussed mainly on practices to consolidate the concepts, knowledge and skills.

Conclusion

It is evident in both premier and neighbourhood schools that attempts were made to change pedagogical practices to incorporate group work, peer discussion and questions to stimulate thinking. However, the progress was **slow** and the classroom was **still** teacher dominated. Fusion of IT into mathematics lessons was not very evident even in the premier school.

The new educational initiatives on infusing IT and thinking skills into lessons were introduced only in late 1990s. It takes time for teachers to experiment and practise the infusion of thinking skills and IT into their lessons. Unless the teachers can internalise the thinking skills and feel confident in using IT software, changes in classroom practices may not be revolutionary.