DEBUGGING—A CRITICAL STEP IN THE PATH TO MASTERY

The quality of a program's implementation is a decisive factor in its success. Implementing the Math Mastery Series (MMS) is challenging. Incorporating assessment into the learning process as a daily diagnostic tool is complex and may initially seem overwhelming—this should not last long.

At our professional learning sessions, we show videos of the debugging process, but due to parent permissions, we are unable to distribute them. Debugging involves revisiting the script and carefully walking the student through it whilst checking for understanding.

Below is the transcript of a question being debugged.

Assuming that students have been placed in the correct program and the program has been properly implemented, few strands should require debugging in each lesson. Failing to debug every lesson will lead to problems for both the student (not fully grasping the concept within the round of five lessons) and the teacher (lessons taking longer than planned).

Note: The MMS Problem Solving strand, JEMM+ Question 15, and EMM Question 20, have been designed without teacher modeling. These higher-order questions require deeper thinking to build understanding. Accordingly, they should not be debugged so that students are motivated to think constructively. The same goes for the JEMM Strategic Thinking Units, which take a hands-on approach to problem solving.

Transcript: This is an extract of the teacher debugging EMM Question 7 from the video EMM in ACTION (progress bar 4:20 to 5:40). It took 1 minute and 20 seconds. In that lesson, three strands (Q7, Q9, and Q11) underwent debugging, taking a total of 4 minutes and 30 seconds.

Teacher: Okay, who's got another bug? Megan
Megan: question seven
Teacher: question seven says, 'Find the multiple of two that comes just after 264.' So we know that 264 (teacher writes 264 on board) is a multiple of two. It gives us some information before that question and says this Megan, 'Any number that can be divided by two without a remainder is a multiple of two.' Okay, what's the next number after 264 (teacher points at 264), just the very next number?
Megan: 265
Teacher: yep, 265 (teacher writes 265 under 264). Can you divide 265 (teacher draws a box around 265) by 2, without a remainder?
Megan: no
Teacher: no, and how do you know that?
Megan: because two can't fit into five exactly
Teacher: exactly. Okay, so that's one number after (teacher draws a curved arrow down from 264 to 265); what's the next number what's after that? (teacher draws a curved arrow down from 265 to an empty space)
Megan: 266
Teacher: okay 266 (teacher writes 266 under 265). Can 266 be divided by two without a reminder?
Megan: yes
Teacher: it can, so the answer is?
Megan: 266
Teacher: because that's the next number after 264 which can be divided by two without a remainder. Okay?
Megan: okay

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