From Ron Tzur, Ph.D. Notes for Conducting M & M Activity

The overarching plan for the first day should be:

1) Engage the participants in the M&M activity.

2) Monitor their development of systems as a "tough supervisor" while orienting their reflection with timely prompts onto issues of difficulty to count more than a few items ('subitizing,' up to 6-7 for most normal people), does orientation (from where you look at the number representation) make a difference in reading how many, and the need to account for really large quantities of one (in the thousands, millions, etc. as we're a VERY serious factory...).

3) STOP their work on the systems when all groups have developed SOME kind of grouping of groups, with or without color/other coding.
4) Let the entire cohort move about and learn each group's system under the premise that they may be called out to substitute a worker in that post. Emphasize the need to pay attention to a kid's experience of learning a system that's not known to her/him and is very familiar to those who know it. They should take notes of each system so it can be discussed in their own group later.

The above will take about 2-3 hours. A break (and M&M eating) will probably be needed here.

5) Present the key question of the day with the requirement to have each and every member in the group capable of being called up to present the answer & reason (i.e., the solution): Is our group's system a Base-10, Place-Value number system? Why do you conclude so?
Which of the other groups' systems is Base-10, Place-Value number system? Why do you conclude so?

6) Hold an entire cohort discussion, where each group will present their answer (yes or no) and their argument(s), then the others can ask questions and/or critique.

7) My prediction is that NONE of the systems will be a full-blown PV, B-10 system. In such a case, you make the strong statement to this effect. The above (5-7) will take about 1.5 hours A break will probably be needed here.

8) Engage them in the presentation (PP, use what I created) of each component (base, 10, place, value) and be on the lookout for their difficulty to comprehend the distinction between the two (because their assimilatory scheme is that "whatever you group recursively by 10s is a

PV-B10 system").Stop the work on number system before getting to the Base-4 stuff and:

9) Ask them to go back to their systems and suggest what is missing in it for being a PV-B10 system; again, pay attention to difficulties to accept the systems are not and highlight their previously incomplete conception (only the grouping by ten) as the key issue for the math that needs to be taught.
The above (8-9) can take up to another 1.5 hours.

10) As time permits, move to the task of selecting which of the four tasks (popsicle sticks, unifix cubes, M&M, Ten-Frames) should be used to initiate the teaching of PV-B10 and why.
The above will take at least 2 hours and take you way beyond the first day.