

# A Multiple Intelligences Approach to Teaching Number Systems

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none

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Number Systems; Octal; Multiple Intelligence

## 1. INTRODUCTION

The Theory of Multiple Intelligences has become quite widely accepted and it has been shown that learning can be improved by addressing the various intelligences.

## 2. ASSERTIONS:

1. All learners can learn to some extent with each (or almost any) approach.
2. It is not possible to fully "understand" something (depth) without involving more than one "intelligence".
3. Thorough assessment (of understanding) is not possible if it is based on a single intelligence.
4. Most lessons are not "pure" in that they already address more than one intelligence.
5. Many aspects of a lesson are also not pure: attention-getting can help learning; activities can gain attention or be used to assess; people can learn from assessments.

## 3. TEACHING NUMBER SYSTEMS

In many cases the same material can be presented in various ways. Often, if a concept is found to be difficult to master,

presenting the same ideas in several different forms can help students build viable internal models for understanding.

The slides [1] outline varying approaches to teaching introductory students about number systems. Here the lesson is roughly categorized into three parts: gaining attention; the activities themselves, and assessment. Several ideas are presented in each category and each is cross-referenced as to which forms of intelligence it most closely aligns itself with [1.Linguistic (words); 2.Logical-Mathematical (numbers, logic); 3.Spatial (pictures, charts, 3D); 4.Musical (music, song, sound); 5.Bodily-Kinesthetic (physical activity); 6.Interpersonal (social); 7.Intrapersonal (self, philosophy); 8.Naturalistic].

Ideas include: the usual conversion algorithms; explaining our counting system to aliens; the odometer analogy; mapping music onto octal digits; counting in binary on our fingers; using an abacus; and having people be "bits" and counters.

An added bonus is that it can be used to break up the monotony of approach that many of us tend to fall into – especially when we are pressed for time to prepare. Taking a Multiple Intelligences approach to a lesson can help inspire new teaching ideas.

## 4. REFERENCES

- [1] Related Slides:  
<http://www.pages.cpsc.ucalgary.ca/~becker/Main/Reference/MI-NumberSystems.ppt>
- [2] Binary Representation Notes:  
<http://www.pages.cpsc.ucalgary.ca/~becker/231/Notes/Binary>