

**IMC 16**  
DUBLIN · IRELAND



# 16th International Mobility Conference

‘Transitions; moving on, moving out’

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16th International Mobility Conference 'Transitions; moving on, moving out'

# **Moving On, Moving Out in Education and Employment: Focusing on Authentic Mathematics through Orientation and Mobility**

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# Recommendations Based on Research

- Students can learn both concepts and skills by **solving problems**.
- Giving students both an opportunity to discover and invent new knowledge and an opportunity to **PRACTICE** what they have learned improves student achievement.
- Teaching mathematics with a focus on number sense encourages students to become **problem solvers in a wide variety of situations** and to view mathematics as a discipline in which thinking is important.
- Long-term use of **concrete materials** is positively related to increases in student mathematics achievement and improved attitudes toward mathematics.
  - Grouws & Cebulla (2002)

# So what does this mean?

For students to develop a grounded understanding of the importance and application of mathematics, they have to be provided opportunities to not only learn the basic concepts but EXPERIENCE the concepts and MAKE applications!

GENERALIZATION!!!!

# Who's Job Is It Anyway?

- Direct instruction should come from general educators.
- TVIs have a unique role as collaborators.
- O&M specialists are considered related service providers.
- All are part of the multidisciplinary team (as required by law) but hopefully moving toward become more interdisciplinary!

# Vision Professionals

- Keep in mind the unique barriers that our students/clients encounter and how vision professionals can help circumvent these.
  - TVIs serve a unique role in providing access to information and co-teaching concepts.
  - O&M specialists focus on independent travel.
  - Both focus on providing meaningful experiences.
- My contention is that in the midst of providing these "experiences" that we can provide student opportunities to apply the concepts learned in the classroom!

# ALERT! ALERT! ALERT!

**You are about to enter a math connections zone!**

- Do not go to sleep!
- You may quickly realize that you actually already teach these concepts (and I hope you do!)
- My purpose is to show you the connections and add the mathematical terminology!

# Common Core State Standard's Domains

1. Counting & Cardinality
2. Operations & Algebraic Thinking
3. Number & Operations in Base Ten
4. Number & Operations-Fractions
5. Measurement & Data
6. Geometry
7. Ratios & Proportional Relationships
8. The Number System
9. Expressions & Equations
10. Functions
11. Statistics and Probability



# Counting & Cardinality

- Defined:
  - Counting; "Counting On"; Basic Numeracy
- O&M Connections:
  - Counting (doors, driveways, steps, etc.)
  - One-to-one correspondence
  - Numerals (print and Nemeth)

# Operations & Algebraic Thinking

## Number & Operations in Base Ten

### The Number System

- Concepts: numeracy, operations, numbering systems.
- O&M Connections:
  - Even and Odds
  - Estimations ("near" and "rounding")
  - Operations (take every opportunity)

# Number & Operations: Fractions

- Concepts: fractional numbers and fractional decimals
- O&M Connections:
  - Basic fractional concepts
  - Generalization of fractions
  - Decimals
  - Generalization of decimals

# Measurement & Data

- Concepts: Units of measurement (length, height, weight, time, currency, capacity)
- O&M Concepts:
  - Understanding of length measurement in nonstandard and standard terms.
  - Small time increments (seconds, minutes)
  - Distance formula
  - Currency
  - Weight
  - Capacity and Volume

# Geometry

- Concepts: "to measure the earth"
- O&M Concepts:
  - Spatial Concepts
    - positional terms (up, down, below, above, etc.)
    - directional terms (right, left, compass, etc.)
    - geometric terms (point, line, line segment, ray)
    - reasoning (If the east wing of the building is shaped like this, what will the west wing look like?)
  - Angles (degree turns)
  - Parallel and Perpendicular (duh!)
  - Polygons (blocks, roundabouts, etc.)
  - Perimeter and Area
  - Maps (location on a grid, transformations)

# Ratios & Proportional Relationships

- Concepts: ratios and proportions
- O&M Concepts:
  - Maps
  - Model to Real Objects

# Expressions & Equations

## Functions

- Concepts: patterns, relations, and functions; problem solving
- O&M Concepts:
  - Number patterns (even, odd, blocks, etc.)
  - Basic functions (How many steps would it take to get back?  
 $2x$ ? How many steps would it take to get there and back?  
 $4x$ ?)
  - Shopping exercises (If 1 can costs \$0.59, how much would 4 can cost?)

# Statistics & Probability

- Data Analysis:
  - Sales price
  - Weather forecasting
- Probability:
  - Basic "odds" concepts and applications.





# Questions?

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