**Numicon Central Professional Development @ ISD** **David Lyttle**

**@numiconisd**
**@isdedu**

# *Making Numbers Real!*

*A general introduction to Numicon in an elementary school with a focus on upper elementary.*

**Date:** **Saturday 7 December 2019**
**Time:** **09:00 - 16:00**
**Location:** **SRS School (South Building)**
**International School of Düsseldorf, Niederrheinstr, 336, 40489, Germany**

## Schedule and Outline

**09:00 - 10:00** **Session 1: Exploring Numicon Shapes & Mathematical Reasoning**
***Activity:*** *Perceptions on Mathematics*
***Explore Activity:*** *Making a Staircase (Intro activity for all ES levels)*
***Explore Activity:*** *10 in a Bag (Math Vocab Focus all ES levels)*
***Investigation Activity:*** *Magic Squares: Patterns of 3 (Upper elem enrichment)*
*Pattern and Algebra as Generalization of Rules (Algebra in Prep leading to Algebra in Gr5)*

**10:00 - 10:30** **Session 2: Zooming Out: Theory & Pedagogy of ES Mathematics**
*Goal of ALL Math Lessons*
*= Number Sense, Visualisation, Metacognition, Communication, Generalisation*
*The theory behind these goals and the Concrete -> Pictorial -> Abstract approach to learning*
*Reviewing seminal works:*

**10:30 - 10:45** **Morning Tea Break**

**10:45 - 11:30** **Session 3: What is Numicon?**
*Pure Constructivism Practically Applied*
*Pattern at Heart of Learning*
***Activity:*** *Counting to Calculating (The essence of Part Whole)*
*Progression of Concepts in the Elementary School*
***Activity:*** *Introducing Cuisenaire Rods (All ES)*
***Activity:*** *The Part Whole Model (Linking all ES Number Together)*
***Activity:*** *Exploring Equivalency Factor / Fraction Walls (Gr3-5)*
*Linking Numicon to the PYP (All ES)*

**Contact Details: David Lyttle**
Work No: +49 (0)211 9406 744 Twitter: @numiconisd Email: numicon@isdedu.de

**11:30 - 12:15** **Session 4: Progression of Addition and Subtraction**

*Ensuring a firm foundation - leading to high end KS2 Concepts*
*Numicon with Number Bonds, Equivalency, Place Value (Foundations)*
*Addition with: Rounding and Compensation, Making 10s, Place Value Partitioning*
+ *Videos and activities to trial (Middle to Upper Elem)*
*Subtraction with: Inverse Relationships, Rounding and Compensation, Integers*
+ *Videos and activities to trial (Middle to Upper Elem)*

**12:15 - 13:00** **Lunch Break**

**13:00 - 13:30** **Session 5: Bar Modelling**

*Why Bar Model?*
*Continuous, Comparative, Part Whole*
***Activity:*** *Illustrating the Comparative Bar Model*
***Video:*** *Bar Modelling Linking the CPA approach together (Gr3)*

**13:30 - 14:30** **Session 6: Multiplication, Division & Reasoning**

*Associative, Distributive, Inverse, and Commutative Properties*
*Learning multiplication through by applying multiplicative properties*
***Video:*** *Box Method distributive properties and solutions (Gr4)*
***Video:*** *Solving Division through grouping (Gr5)*
***Activity:*** *Algebra M&D Boxes (Gr3-5)*
***Activity:*** *Factors and Multiples Chain (Gr2-4)*
*Review: Reasoning*
***Activity:*** *Prime Factors (Gr4)*

**14:30 - 14:45** **Afternoon Tea Break**

**14:45 - 15:45** **Session 7: Fractions and Decimals**

***Activity:*** *Butterfly Fractions (Gr3)*
***Activity:*** *Cottage Cheese Problem (Gr4)*
***Activity:*** *Percentages with Clothes (Gr5)*
***Activity:*** *Fractional Sets (Gr4)*
***Review:*** *Scaling and Decimals*
***Activity:*** *Proving Quotients in Division of Fractions by Fractions (Gr5)*

**15:45 - 16:00** **Session 8: Implementing Numicon, Assimilation and Review**

*Numicon as an Integrated approach to learning*
*Reflect on Goals, Personal perceptions*
*Final Questions*
*Feedback*

**Contact Details: David Lyttle**
Work No: +49 (0)211 9406 744 Twitter: @numiconisd Email: numicon@isdedu.de