

Lamoille Area Professional Development Academy  
**LAPDA Mathematics Leadership Support System K-8**

**Dates/Times:** November 8, 2010 (1 PM – 7 PM)  
December 14, 2010 (1 PM – 7 PM)  
January 11, 2011 (1 PM – 7 PM)  
February 7th, 2011 (1 PM – 7 PM)  
March 17, 2011 (1PM – 7 PM)  
April 26, 2011 (1 PM – 7 PM)  
May 24, 2011 (1 PM – 7 PM)  
Practicum 5 days (TBD)

**Instructors:** Elizabeth Hulbert and Marjorie Petit

**Description:** This course consists of a seminar series and a practicum. The seminar series and practicum will focus on important mathematical topics and the research related to how students develop mathematical understanding, common errors that students make and develop strategies for implementing a lesson study approach to supporting instructional improvement. Teachers will have the opportunity to work closely with the math teacher leader cohort to support the implementation of a lesson study model as a professional development tool for the improvement of classroom instruction and student performance. There will be a direct link between the research and the instructional methods. Teachers will learn and practice using strategies and methods that reflect current research in mathematics instruction. Another significant aspect of the course will be a focus on using formative assessment to inform instruction.

**Seminar Sessions:** The purpose of this seminar series is to provide mathematics teacher leaders a coherent support system that integrates mathematics content, tools, and knowledge base.

- To help mathematics teacher leaders maximize their potential for supporting improved overall instructional improvement by helping to strengthen mathematics content and pedagogical content knowledge while building core leadership skills.
- To provide teacher leaders with a forum to meet and collaborate with other teacher leaders in similar roles around current issues/topics of immediate concern in mathematics.

**Practicum:** The purpose of the practicum is to support teacher leaders as they implement a lesson study model of instructional improvement.

The practicum will build on work on lesson study in seminar sessions and involves:

- observing an existing lesson study session
- facilitating a lesson study which a teacher team at their school
- debriefing at a seminar session
- facilitating a second lesson study session with the same group of teachers
- debriefing at seminar series
- developing a plan for scaling-up the lesson study model at their school

**Methodologies:** This course will incorporate a variety of teaching strategies with the purpose of modeling research-based best practices. There will be lecture, discussion, small group collaborative learning, participant presentations, and constructed understanding through teacher facilitation and modeling.

**Course Goals and Objectives:**

- Participants will become familiar with mathematical research about how students learn and understand mathematical concepts related to aspects of rational numbers, multiplicative reasoning, proportionality, functions, and geometry.
- Participants will use knowledge of research to analyzing student work with related research in mind.
- Participants will analyze how these mathematical ideas develop across k – 8.
- Participants will implement a lesson study protocol in their schools.
- Participants will support the implementation of formative assessment strategies in their schools through their lesson study protocol.
- Participants will support the use of effective instructional strategies (e.g., questioning, use of student solutions, student engagement, and formative assessment) in their schools through their lesson study protocol.
- Participants will become familiar with and strategize strategies to deal with current issues/topics in math education

**Course Requirements:**

- Assigned readings and responses
- Review and design of instructional program
- Lab School Portfolio
- Documentation of classroom implementation (fall 2009)
- Presentation of classroom implementation
- Attendance

**Text:** Participants will read a variety of current articles on important mathematical topics, effective instructional strategies, grade level expectations, formative assessment strategies, and current research related to these topics. While we will not be using one text we will draw primarily from the following books and documents:

Van de Walle, John A. (2007). *Elementary and Middle School Mathematics: Teaching Developmentally*. Boston: Allyn and Bacon. (Sixth Edition ISBN 0-205-48392-5 or Seventh Edition)

National Council of Teachers of Mathematics. (2006). *Curriculum focal points for prekindergarten through grade 8: A quest for coherence*. Reston, VA: NCTM. <http://www.nctm.org/standards/focalpoints.aspx?id=282>

National Research Council. (2001). *Adding it up: Helping children learn mathematics*. J. Kilpatrick, J. Swafford, & B. Findell (Eds.). Washington, DC: National Academies Press. (Chapter 4)

Vermont Standards and Grade Level Expectations - found at <http://education.vermont.gov/new/html/pubs/framework.html>

National Math Panel Report – found at <http://www.ed.gov/about/bdscomm/list/mathpanel/index.html>

National Research Council (2009). *How Students Learn: Mathematics in the Classroom*. M. Suzanne Donovan and John D. Bransford (Eds.). Washington, DC: National Academies Press.

Below is a list of the primary topic(s) planned for each day.

Date	Primary Topics
<b>Day 1</b>	Lesson study process, NRC Math Proficiencies, Math across the K-8 curriculum, multiplication of whole numbers
<b>Day 2</b>	Team meetings, examining student work, Division of whole numbers, lesson study training
<b>Day 3</b>	Team meetings, examining student work, Functional thinking, debriefing observation of lesson study
<b>Day 4</b>	Team meetings, examining student work, fraction operations, lesson study training
<b>Day 5</b>	Team meetings, examining student work, proportional reasoning, lesson study training
<b>Day 6</b>	Team meetings, examining student work, geometry and measurement, lesson study training
<b>Day 7</b>	Team meetings, examining student work, lesson study training, Final presentations

Additional topics to be covered when appropriate:

- 1) Questioning/coaching techniques in mathematics
- 2) Best practice math instructional techniques
- 3) Formative assessment in math classrooms
- 4) Use of evidence in student work to unpack students' understandings in and make instructional decisions
- 5) Current national and statewide trends

## **Course Requirements**

### Seminar series

- Attendance and active participation at all seminars
- Reading and reflecting on assigned readings
- Developing a lesson study model
- 

### Practicum

- Observing and reflecting on an existing lesson study session
- facilitating a lesson study which a teacher team at their school
- debriefing at seminar session
- facilitating a second lesson study session with the same group of teachers
- debriefing at seminar series
- developing a plan for scaling-up the lesson study model at their school

### Collaboration

- Supporting and collaborating with a participants to implement lesson study sessions in each others' schools

### Journal

Organize a looseleaf notebook (journal) to be turned in at the follow-up class that includes:

- Seminar notes
- Observations from the visit to an existing lesson study session
- Notes from collaborative planning sessions with participant partner
- Article reflections
- Log of practicum implementation (lesson study sessions)
- Student work

### Final presentation

- All participants will give a short presentation at the final class on the results of the practicum implementation that must include multiple evidences such as:
- Video or audio of some aspect of the lesson study group
- A plan for next steps
- Reflections of the effectiveness of lesson study work, successes and challenges
- Student work

### **Grading Criteria**

#### Components

- |   |     |
|---|-----|
| • Seminar attendance and participation            | 30% |
| • Practicum implementation and final presentation | 50% |
| • Journal   | 20% |

Final deadline for all work

June 15, 2011