

Course Title: EDU 9: Teaching Elementary and Middle Level Math**Instructors:** Paul Lawrence, Angie Su**Length:** 15 hours**Dates:** Rolling admissions**Prerequisites:** Bachelor Degree**Number of credits:** 1**Course Description:**

The course will provide teachers with easy-to-implement, well-sequenced activities that promote conceptual understanding and that relate concrete understanding to symbolic interpretation. Teachers will acquire techniques to assess all students' understanding of skills and concepts so that lessons can be adjusted to meet student needs and expand their understanding. Teachers will be provided with activities that require pattern recognition and descriptions with respect to operational procedures including whole numbers, fractions and decimals. Teachers will be able to utilize activities that provide creative practice with operational skills.

Angie Su's innovative Project MIND Workshop teaches, in a new way, thinking and problem-solving strategies, utilizing both the decimal system and the binary systems. Her unique methods of teaching and demonstrating problem-solving techniques will give teachers the skills they need to be excellent Math teachers. She emphasizes that her methods can work for all types of students, regardless of their gender, cultural background, and socio-economic status, including alternative, gifted, at-risk, exceptional, and multicultural students.

In the Project MIND program, Ms. Su provides students with opportunities to create their own projects and math problems based on the content they learn in the classroom so that they can be self-starters in the learning process. She also uses activities that help make mathematics fun, interesting, and challenging for children, and these activities are taught in this course for teachers to use in their classrooms.

Eight Topics of interest:

Instructor Paul Lawrence:

- Multiplication of fractions part 1
- Multiplication of fractions Part 2
- Division of fractions
- Addition and subtraction of decimals part 1
- Multiplication and Division of decimals

Angie SU

- Games and Strategies for Teaching Number Operations
- Puzzles, Brainteasers, and games for K-12 Math Foundations part 1
- Puzzles, Brainteasers, and games for K-12 Math Foundations part 2

Objectives:

1. Knowledge –at the end of this course the student will be able to understand:
 - a. Concepts in a spiral format so that learning occurs when the child is ready
 - b. How to use games, puzzles, math stories, math songs, and brainteasers to help teach mathematical concepts;
 - c. How to use effective representations and manipulatives for problem-solving
2. Skills –after this course a student will be able to:
 - a. Use investigative and self-discovery approaches
 - b. Utilize games as teaching tools
 - c. Encourage competition amongst the students
3. Dispositions – they will appreciate out of this:
 - a. The use of multiple teaching techniques and strategies to solve problems
 - b. Providing multiple formats for homework assignments
 - c. Sets high standards and expectations

Instructor Overview

Knowledge Delivery Systems maintains a online platform that automatically grades their pre and post assessments, monitors their participation in the lecture, and awards them credit when they complete the program. KDS also employs a team of educators to monitor the progress and quality of work students provide.

David Reynolds:

David is an experienced historian and professor with a B.A. and M.A. in History from SUNY Buffalo and a Ph.D in History from the University of Wisconsin. He was a distinguished professor of History at Marist College from 1986-1992 and has worked as a educational consultant for New School Vision and Continuous Learning Corporation. He currently works for KDS as a course developer and educational consultant and is working with the state of Florida to optimize their education system and resources.

Methods of instruction:

Percentage of Course

Credit

- | | |
|------------------------------------|----------------|
| • 8 individual sections (15 hours) | |
| • 8 pre assessments | 0% |
| • 8 graded post assessments | 40% |
| • 8 Video Lectures | 15% |
| • Polling questions | part of videos |
| • 8, 60-100 pages Study guides | 5% |
| • Handouts | |
| • Written Paper | 40% |

Passing: Students must earn a 70% or higher to receive a passing grade

Texts (included in program)

- 520 page study guide provided in the program

Assignments

- 40 pre assignment
- 64 post assignments

Grading criteria/system and evaluation activities:

A course administrator will be reviewing students' answers and providing feedback. Students will be evaluated on their creativity and ability to incorporate techniques from the lecture into examples and lesson plans.

- Graded Paper

Due dates of major assignments, projects, and examinations: Online self running programs can be started and completed at the participants own leisure within 2 months from the day they begin the course.

Plans for transferring skills into the work setting:

Culminating Course Assignment

This written project will consist of two parts; the need for change and the literature review to support your argument.

The Culminating Assignment for this course is an applied project in the work setting, "The Capstone Experience." The project will be designed to bring about Change for Improvement. The student will identify a need within their classroom and/or school and design a project with a focus on change for improvement.

The student will report the results of the applied project by writing an 8-10 page Change Paper. Within the Change Paper, the student will incorporate further learning experiences appropriate to course material by conducting a formal review of the related literature. The review of related literature is a requirement within the Change Paper. Guidelines and helpful hints for the review of related literature are provided.

Guidelines for Writing the Culminating Paper

Part 1: Change paper

The student will create a document that contains evidence of a need for change, with recommendations for new strategies that will improve an area of concern. For the change paper, the paradigm shift recommended for your workplace should be within your knowledge base and should relate directly to the course taken through Knowledge Delivery Systems and the exploration of additional resources related to course content.

The Change Paper will contain the following information, in this order, to establish your framework.

- A description of the workplace setting: the kind of facility, purpose of the facility, number of employees in major categories, length of establishment, culture or atmosphere, etc. and the writer's position there.
- An explanation of the area being considered for improvement. Select an area you identify as an area of needed improvement within your school. Present a rationalization for the need to make a change or to respond to an emerging need. Identify the stakeholders who would receive the benefit of the change.
- Write a review of the related literature on the topic to be improved (refer to Writing a Literature Review for further instructions). Use 4-6 scholarly articles from the literature that include theory, practice, and applied research.

- Recommend strategies to achieve the improvement. Example: Select a strategy from the literature reviewed. Explain how this could be accomplished and by whom. Project the learning outcomes that would support your paradigm shift and the expected timeline for completing the change.
- Conclude on the concept with reference to relative literature in this document that would insure success of the change.

Part 2: Literature Review, Supporting your argument

A review of the literature is a standard procedure that is followed in writing scholarly papers. The review informs the student what scholars and researchers have learned about the problem. It is an opportunity for the student to examine what solutions have been tried and implemented to correct a specific discrepancy or to solve a problem. The review of literature also informs the reader that the topic or the problem is a legitimate one, recognized by the educational community.

The steps in organizing a review of the literature are simple. After the search of abstracts is completed, follow these steps.

- Review abstracts to remove obviously unrelated or inappropriate material. If information is scant, or most of the information appears to be inappropriate to the student's topic, perhaps the concern should be restated in more appropriate terms.
- Determine whether the available research is on theory, strategies, or solutions. Individuals working on a change paper are not encouraged to test new methodologies never tried by anyone else. Rather, they are to consider existing solutions in new and innovative ways to improve the situation.
- Obtain full text of each selected research study relevant to the topic. Check the bibliography of the research for possible connections to other authors.
- Write a summary of each selected research study using the full article as a guide for your notes. Build a framework from information in the collected articles to support your argument that the problem exists. Writing a review from abstracts will result in an incomplete analysis.
- Look at your collection of summaries to find subtopics from among them. Organize them by concept to create a verbal picture of viable solutions.
- Put them all together starting with a brief description of the issues or problem area found in this literature. This should require only a few sentences.
- At the end, add your idea of how to make improvements that are supported in this research. This is a possible solution strategy.
- Conclude with one or two paragraphs relating the final set of information to the idea being addressed.