

EDCI 428

Teaching Science in the Middle / Junior High School

Spring 2009

January 12-February 19, 2009

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Office Hours: by appointment

Classes: Tuesday 1:30 - 4:20 Thursday 1:30 - 4:20

Room: 3100 BRWN

Textbook: A packet of readings is available from Copy Mat.

Journal: You will also email me brief reflections once during the six weeks of the course. The objective is for you to reflect on how you would use the teaching techniques and practices that you have learned in a middle level environment. I may choose to reply to you directly or by way of class discussion. At all times I regard your e-mailed comments as confidential.

Professional Organizations: You should consider joining the National Science Teachers' Association (NSTA), which is the major professional organization for precollege science teachers. Membership includes a subscription to *The Science Teacher*. The web address is www.nsta.org/.

Another professional organization you might wish to consider is the National Middle School Association (NMSA), a professional organization for middle level educators who teach young people between the ages of 10 and 14. Membership includes a subscription to the *Middle School Journal*. The web address is www.nmsa.org/.

You will also become acquainted with the Hoosier Association for Science Teachers, Inc. (HASTI). In fact I encourage you to attend the HASTI conference in February. Proof of registration and/or attendance is awarded 50 bonus points toward your grade. The web address is www.hasti.org/.

Adaptive Programs: Students with disabilities must be registered with Adaptive Programs in the Office of the Dean of Students before classroom accommodations can be provided. If you are eligible for academic accommodations because you have a documented disability that will impact your work in this class, please schedule an appointment with me as soon as possible to discuss your needs.

Emergencies: In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. Here are ways to get information about changes in this course: my email address, mnakhleh@purdue.edu, and my office phone, 494-5314.

Academic Dishonesty: Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section III-B-2-a, <<http://www.purdue.edu/univregs/>>University Regulations] Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest." [University Senate Document 72-18, December 15, 1972].

Class Attendance: Purdue University policy states that all students are expected to be present for every meeting of classes in which they are enrolled. All matters relative to attendance, including the make-up of missed work, are to be arranged between you and the instructor. Only the instructor can excuse you from classes or course responsibilities. In the case of an illness, accident, or an emergency, you should make direct contact with your instructor as soon as possible, preferably before the class. If the instructor cannot be reached directly a message should be left in the instructor's department mailbox or with the instructor's secretary. If you will be absent for more than five days, have not been able to reach the instructor in person or by telephone or through leaving notification of your circumstances with the instructor's secretary, you or your representative should notify the Office of the Dean of Students (765-494-1254) as soon as possible after becoming aware that the absence is necessary. Be advised, you may be asked to provide documentation from an authorized professional or agency that supports an explanation for your absence.

In plain English: Don't be absent. If you plan to be absent or are absent for any reason let me know—immediately.

Indiana Standards: Following is the URL for IN Middle School Standards:
<http://www.indianastandardsresources.org/standardSummary.asp?Subject=sci&Grade=>
 You will need to state the relevant IN Standard for the lesson that you teach.

Introduction

Welcome to the middle level! I started my professional career teaching life science, earth science, and math to 7th and 8th graders in middle school for three years. I then became a high school teacher of chemistry, physical science, and computer science for 12 years in Maryland. I was "in the trenches" until 1990, and I hope that my experiences will be a useful resource as you work to build your teaching expertise in this course.

Middle level teaching is different from high school or elementary teaching, and middle level students are different from either high school or elementary students. They are, as their name indicates, in between and in the process of becoming. It is an interesting, sometimes stressful, period in a young person's life. Therefore middle level is an interesting, sometimes stressful, environment in which to teach.

Together we will explore forgotten, maybe unknown, terrain concerning what young adolescents are like and how they learn. We will ask you to remember what you thought and felt when you were in grades 5, 6, 7, and 8! Sometimes we as a class will *act* like students in those grades as you struggle to teach us. This will not be done to embarrass anyone. The purpose is to give you practice in "thinking on your feet" before having to venture into a real classroom situation. We will coach each other, and hopefully we will all become better teachers. Teachers spend a lifetime perfecting their art; we only have six weeks. *If discipline problems arise during your microteaching remember that you will be graded on effort in classroom management, not perfection.* I only require that you address discipline problems, and you may always call a time-out without any penalty if you don't know what to do. Role players must also remember that all management incidents must be events that could really occur in schools!

Objectives

This course is designed to address the following questions:

1. What are the characteristics of middle level students?
2. How are middle level classrooms structured?
3. What are the desired learning outcomes for middle level students?
4. How does a science teacher manage middle level students?
5. How does a science teacher effectively teach in a multicultural environment?

The readings, activities, and assignments of this course are built around these questions. The purpose of this course is to help you work out your own answers to these questions. By the end of this course, you should be able to:

1. State your goals for middle level science teaching based on an informed position.
2. Use questions, demonstrations, and activities to probe students' concepts.

3. Describe teaching strategies which motivate students and which foster learning.
4. Teach a science lesson employing appropriate strategies.

Assignments and Grading

<u>Assignment</u>	<u>Number of Points</u>	<u>Due Date</u>
1. Microteaching*	200	as assigned
2. Participation and attendance**	50	throughout
3. Final Goal Statement*	<u>150</u>	Thursday, February 19
350-400 points total		

*Document to be placed on TaskStream. We will discuss the details in class.

**HASTI convention attendance: 50 bonus points will be applied towards your grade for attending.

Following is a brief overview of each assignment:

1. Microteaching. You will develop *and teach* one 30-40 minute lesson in a science topic of your choice, using the lesson plan format given out in class. This cannot be the same lesson you taught in secondary methods. You may choose to do a demonstration, a lecture, an activity, or a combination of these. *You will be asked to make enough copies of your lesson plan, including handouts and background information, for everyone in the class.* In this way everyone can begin to build a file of lesson plans which will be an invaluable start in your professional career.

You will be videotaped when you are teaching the class. In addition to reviewing the written critiques of your teaching, you are asked to view the videotape and submit a written reflection upon the strengths and weaknesses of your teaching. This is done to encourage you to habitually reflect upon your own teaching.

A good grade on microteaching means that the lesson showed thought and care in planning and execution and that the lesson (often with revisions) has a reasonable chance of success in a real world classroom. A good grade is not a *guarantee* of success in a classroom.

2. Participation and attendance: Social interaction and discussion are vital to learning in this course. You are learning how to teach what you know, and the only way this can be done is by coaching, practice, and discussion. You must not only show up, you must actively participate! *If you will be absent for any reason, please notify me before the start of class.* Email notification is often the most effective and quickest form of communication. Because you are training to be a professional person, you never miss this class without first notifying me. A professional person is

never absent from work without first notifying their supervisor, and I apply the same standard of courtesy to this class.

3. Final Goal Statement: Page 2 of this syllabus states that by the end of this course you should be able to "state your goals for middle level science teaching based on an informed position." On one page you will state your beliefs about middle school students, your goals for middle level teaching, and how these beliefs and goals will be reflected in specific instructional strategies. The page will be typed or printed, double-spaced, with one inch margins. Font size must be 10 or 12 points. *No low quality printouts will be accepted.*

Grades in the course will be computed on the basis of the total number of points accumulated divided by the total number of points possible. There are no preset limits on grades. If everyone garners enough points, everyone will earn an A. These points are converted to whole number percentiles, and the following scale will be applied:

90-100%	A
80-89%	B
70-79%	C
60-69%	D
<60%	F

Schedule of Classes

	<u>Topic</u>	<u>Activity/ Article</u>	<u>Discussant</u>
<u>Week # 1</u>			
1/13	Tu	Overview of course Your expectations	Discussion & role playing Assign lessons <u>Nakhleh</u>
1/15	Th	Nature of adolescents	Hillman _____
		Lesson #1	_____
		Lesson #2	_____
<u>Week #2</u>			
1/120	Tu	Learning Cycle Techniques	Beisenherz & Dantonio _____
		Lesson #3	_____
		Lesson #4	_____
1/22	Th	Visual strategies	Irwin & Pease _____
		Lesson #5	_____
		Lesson #6	_____
<u>Week #3</u>			
1/27	Tu	Advanced Lesson Planning & Delivery	_____
		Lesson #7	_____
		Lesson #8	_____
1/29	Th	Exemplary practice	Martin _____
		Exemplary practice	Mason _____
		Lesson #9	_____
		Lesson #10	_____
EMAIL JOURNAL DUE			

Week #4

2/03	Tu	Lesson #11	_____
		Lesson #12	_____
2/05	Th	HASTI Conference 02/06-08 Wed-Fri http://www.hasti.org/	choose any day

Week #5

2/10	Tu	Diversity in the classroom Manning	_____
		Lesson #13	_____
		Lesson #14	_____
2/12	Th	Cooperation in the classroom Evans et al.	_____
		Lesson #15	_____
		Lesson #16	_____

Week #6

2/17	Tu	Lesson #17	_____
		Lesson #18	_____
2/19	Th	Lesson #19	_____
		Lesson #20	_____

FINAL GOAL STATEMENT DUE (via email)
TASKSTREAM DOCUMENTS DUE ONLINE

Selected References

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- Carnegie Council on Adolescent Development. (1990). *Turning points: Preparing American youth for the 21st century*, Washington, D.C.
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- Herron, J. Dudley. (1996). *The chemistry classroom*. Washington, D.C.: American Chemical Society.
- Hillman, Stephen B. (1991). What developmental psychology has to say about early adolescence. *Middle School Journal*, 23 (1), 3-8.
- Indiana Department of Education. (1991). *Betwixt and Between*. Middle Grades School State Policy Initiative Project Task Force Report. Funded by a grant from the Carnegie Corporation of New York.
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- Lotan, Rachel A., Swanson, Patricia, E., & LeTendre, Gerald K. (1992). Strategies for detracked middle schools: Curricular materials, instructional strategies, and access to learning. *Middle School Journal*, 24(1), 4-14.
- Manning, M. Lee (1993). Cultural and gender differences in young adolescents. *Middle School Journal*, 25(1), 13-17.
- Martin, Terry. (1991). "Working together means winning together": Joan Kluck at Wapato Middle School. *Middle School Journal*, 23 (1), 45-51.
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- Ralph, Edwin G. (1993). Beginning teachers and classroom management: Questions from practice, answers from research. *Middle School Journal*, 25(1), 60-64.
- Reed, Daisy F. (1991). Effective classroom managers in the middle school. *Middle School Journal*, 23 (1), 16-21.

Scales, Peter C. (1992). From risks to resources; Disadvantaged learners and middle grades teaching. *Middle School Journal*, 23(5), 3-9.

Wood, Karen D. (1991). Customary practice and indicated directions: Instruction in the middle grades. *Middle School Journal*, 23 (1), 52-56.