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Innovative Approach to Active Learning

John G. Graveel
Purdue University

George E. Van Scoyoc
Purdue University

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Department of Agronomy

Purdue

IMPACT at Purdue University "Instruction Matters: Purdue Academic Course Transformation"

Purpose as defined by the Provost

"Partner with faculty and develop a network of individuals committed to the transformation of ten to twenty campus courses per year for three years, integrating a more enhanced student centered approach".

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Specific Goals:

- **Faculty will benefit from the best technology, assessment, research and pedagogy support**
- **Integrate technologies and active learning pedagogies that support the instructional mission of IMPACT**
- **Develop a project plan that evaluates the process of course transformation and integrates the strategic themes of student success, retention, and completion**

IMPACT PROGRAM

- **Spring 2011, 3 years**
- **CIE, ITaP, Discovery Learning Center**
- **Ten courses: (several examples)**
  - **AGRY 255 – Soil Science**
  - **BIOL 131 – Developmental Structure and Function of Organisms**
  - **CHM 115 – General Chemistry**
  - **MA 154 – Algebra and Trigonometry II**
  - **PSY 120 – Elementary Psychology**

(Currently we have 49 courses and 61 faculty in the program from 11 colleges.)

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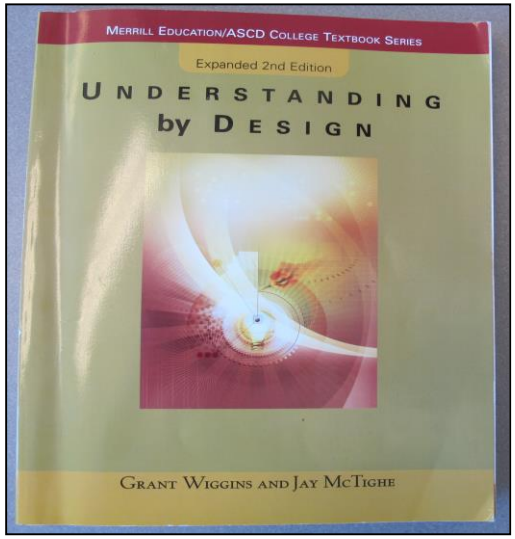
University Programs to Familiarize Faculty with Student Based Learning

Workshops: Understanding by Design
Grant Wiggins and Jay McTighe

- Initial Discussion of the Book
- Student Understanding and Essential Questions
- Assessment and Evidence
- Criteria and Validity
- The Learning Plan



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Outside Speakers

Robert J. Beichner (SCALE-UP)

- Student Centered Active Learning Environment for Undergraduate Programs
- Place were student teams are given interesting topics to investigate while the instructor facilitates

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Student Centered Approach to Instruction

Student-centered Teaching Methods

- Shift the focus of activity from the teacher to the learners.

Active Learning

- Students solve problems, answer questions, formulate questions of their own, discuss, explain, debate or brainstorm during class

Student Centered Learning in the Agronomy Department

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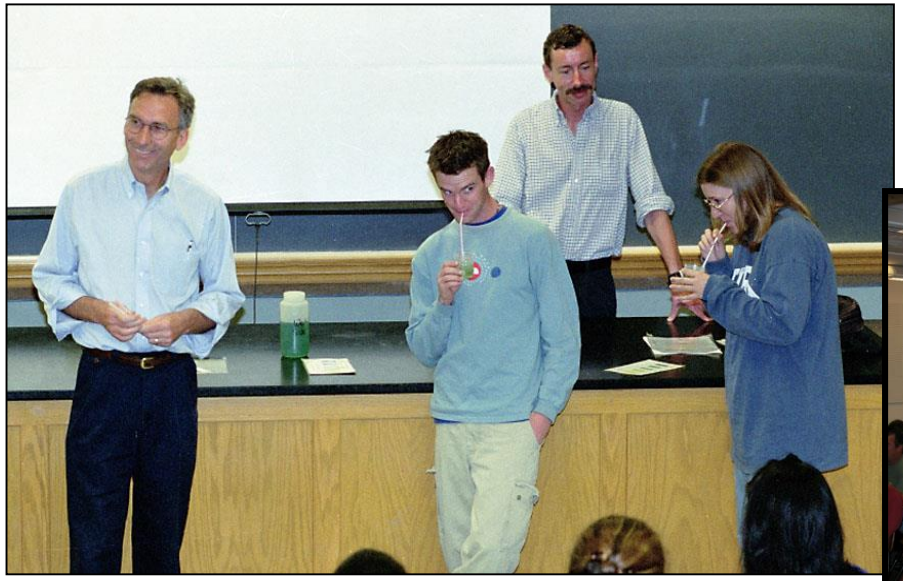

Introduction to Environmental Science

Introductory Soil Science

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Introduction to Environmental Science

Objective: Provide students with an understanding of science underlying environmental problems facing the world today

Credits: 3

Team Taught: NRES and EAPS

Activities: In-class exercises, problem solving, group reports, and case studies

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Introduction to Environmental Science

Hazardous waste disposal, soil erosion, natural hazards, air pollution, population, environmental planning, ecology, water quality and environmental ethics

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Introduction to Environmental Science

University Willing to Design and Build New Classrooms

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New Classroom Design for Environmental Science

One of Five "SCALE-UP" classrooms

Nine students sit around each table/Three groups per table/Thirty-nine groups

Short lecture/Flip lecture/Guest speakers

Computers

Demonstrations

Problem solving

Case Studies

Discussion

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Active Learning

Makes the Learning Environment Exciting

Class Activities

- **-Promote interest**
- **-Self-confidence**

Examples

- **-In class discussions**
- **-Team work**
- **-Visual instruction**

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Inquiry Learning

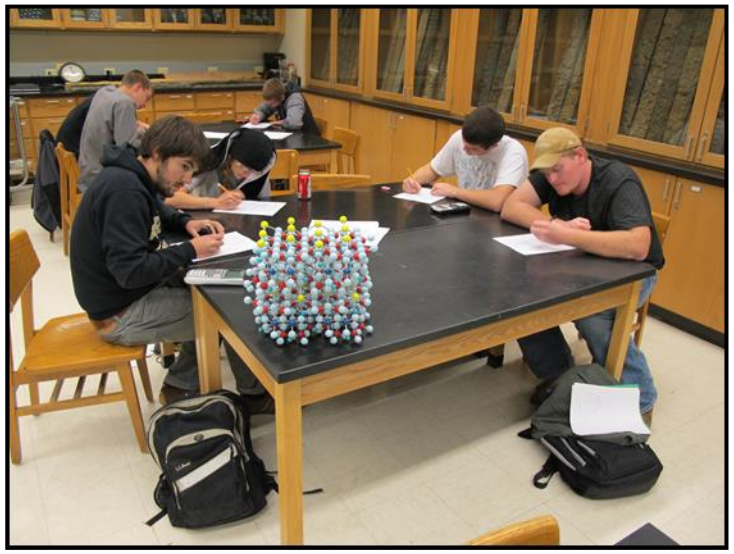
Understanding by Questioning

Encourage Students

-Think critically

-Solve problems

-Case studies



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Soil Science Course – already a very interactive format

1. **Lecture - Tuesday morning**

2. **Soils Resource Center – Tuesday to Friday**

   (Open 40 hours per week – all faculty are encouraged to critique course material on display and use the Center for materials in their courses)

3. **Small Group Discussions - Friday**

   groups of 15 students

Meet weekly to review course

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Soils Resource Center

An Interactive Environment

Four Benches of Resources Each Week

Numerous displays and experiments

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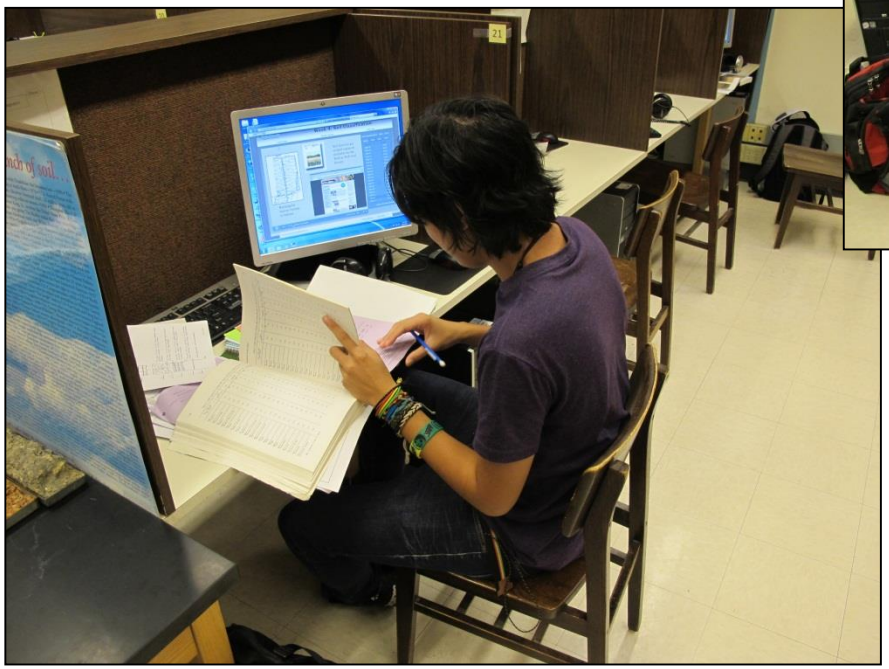
Soils Resource Center

- One topic each week
- Computer Directed
- Three hours per unit



Discussion Sessions on Friday:
A time for reflection and interactive learning

Three tables each with 4-5 students

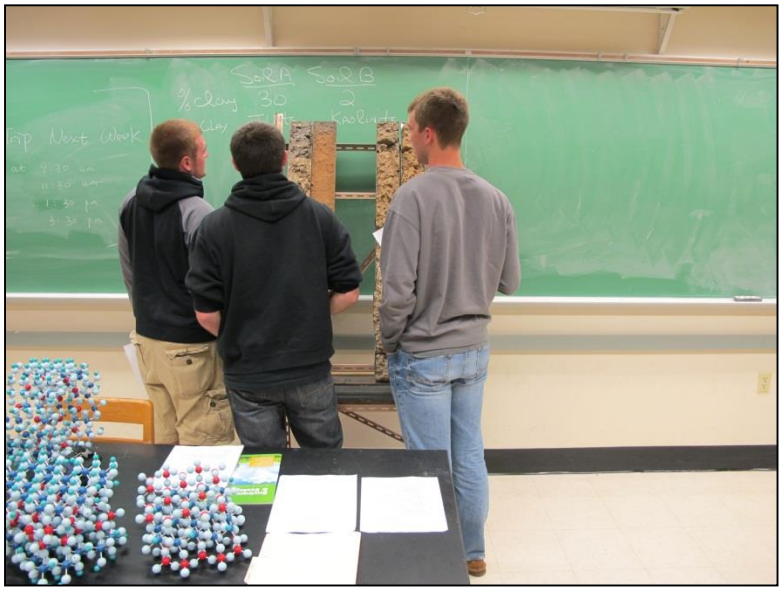
Reflecting on the week

Three-Phase Discussion Sessions

Reflecting and Writing

Discussing and Sharing

Teaching and Learning



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Expanding "SCALE-UP" Active Learning Classrooms

Hicks Library

Discovery Learning Center

Faculty Teaching Introductory Environmental Science and Soil Science at Purdue University

John Graveel

George Van Scoyoc

- Each committed to the course
- Encourage collaboration by all soil's faculty
- Course improvement a priority
- Working for early intervention for students needing assistance

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A Focus on Learning: IMPACT

- Designed to encourage explicit discussion of teaching styles, learning styles, and approaches
- Network of faculty committed to course improvement and committed to sharing
- Courses now compete to be part of the IMPACT program
- Strong University support: Provost, Center for Instructional Excellence, IT Learning Resources, Discovery Learning Center