Creating Technology Rich Learning Environments for the Classroom

PRESENTED BY BETSY DELL

ROBERT GARRICK, LARRY VILLASMIL,
ELIZABETH DELL, AND RHIANNON HART

ROCHESTER INSTITUTE OF TECHNOLOGY

ROCHESTER NY

Chapter included in Series: Cutting-Edge Technologies in Higher Education

VOLUME 6E

INCREASING STUDENT ENGAGEMENT AND RETENTION USING CLASSROOM TECHNOLOGIES:

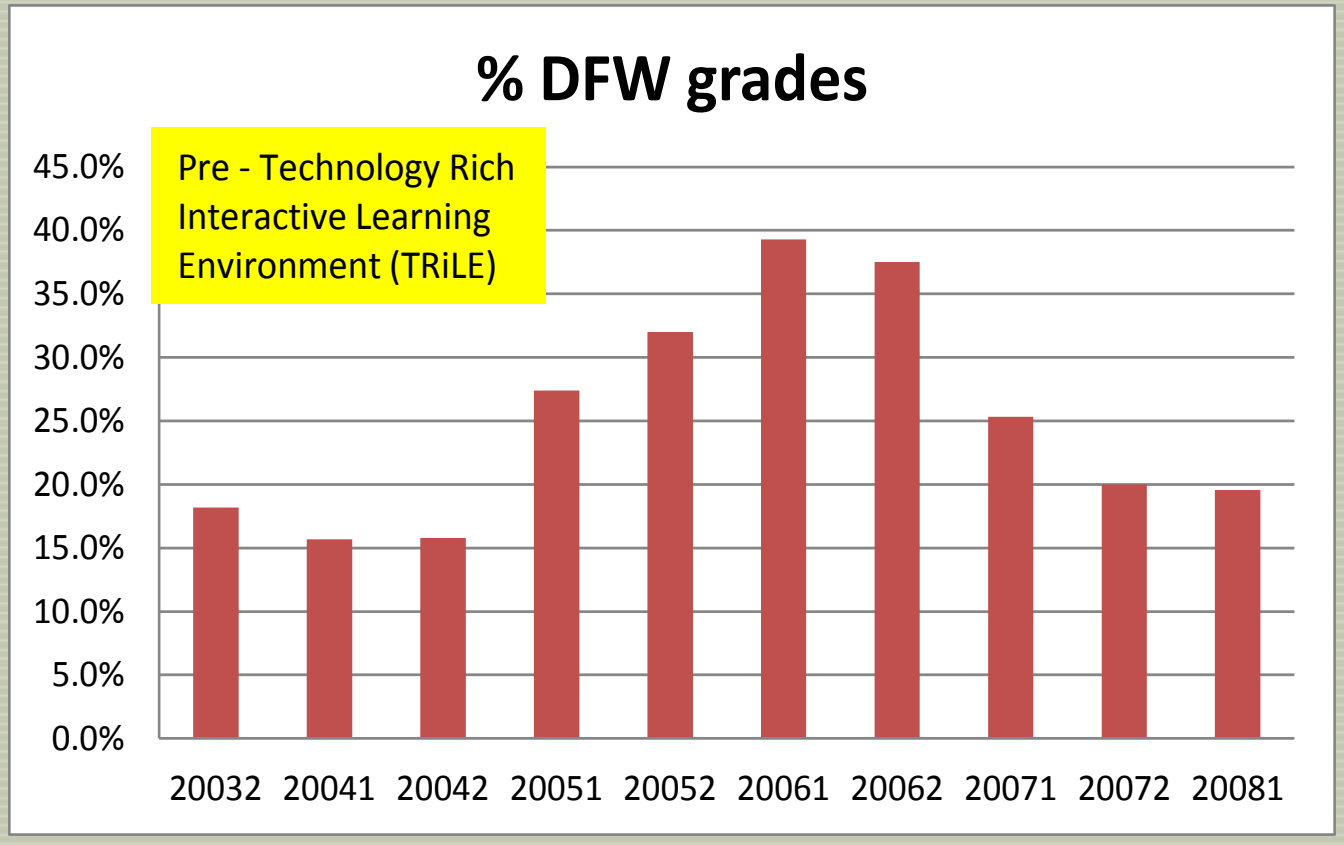
CLASSROOM RESPONSE SYSTEMS AND MEDIATED DISCOURSE TECHNOLOGIES.

EMERALD PUBLISHING

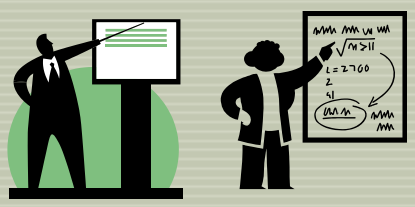
Presentation outline

- *Education problem being addressed*
- *Learning theory basis for redesign of courses*
- *Features desired in a technology rich learning environment*
- *Examples from the classroom*
- *Assessment measures*

Education problem being addressed



Traditional class delivery method or "Pour it in"



MULTIPLE INSTRUCTORS
ONE METHOD

100 %

"PERPETUATING
THE CYCLE"

PASSIVE
ROLE

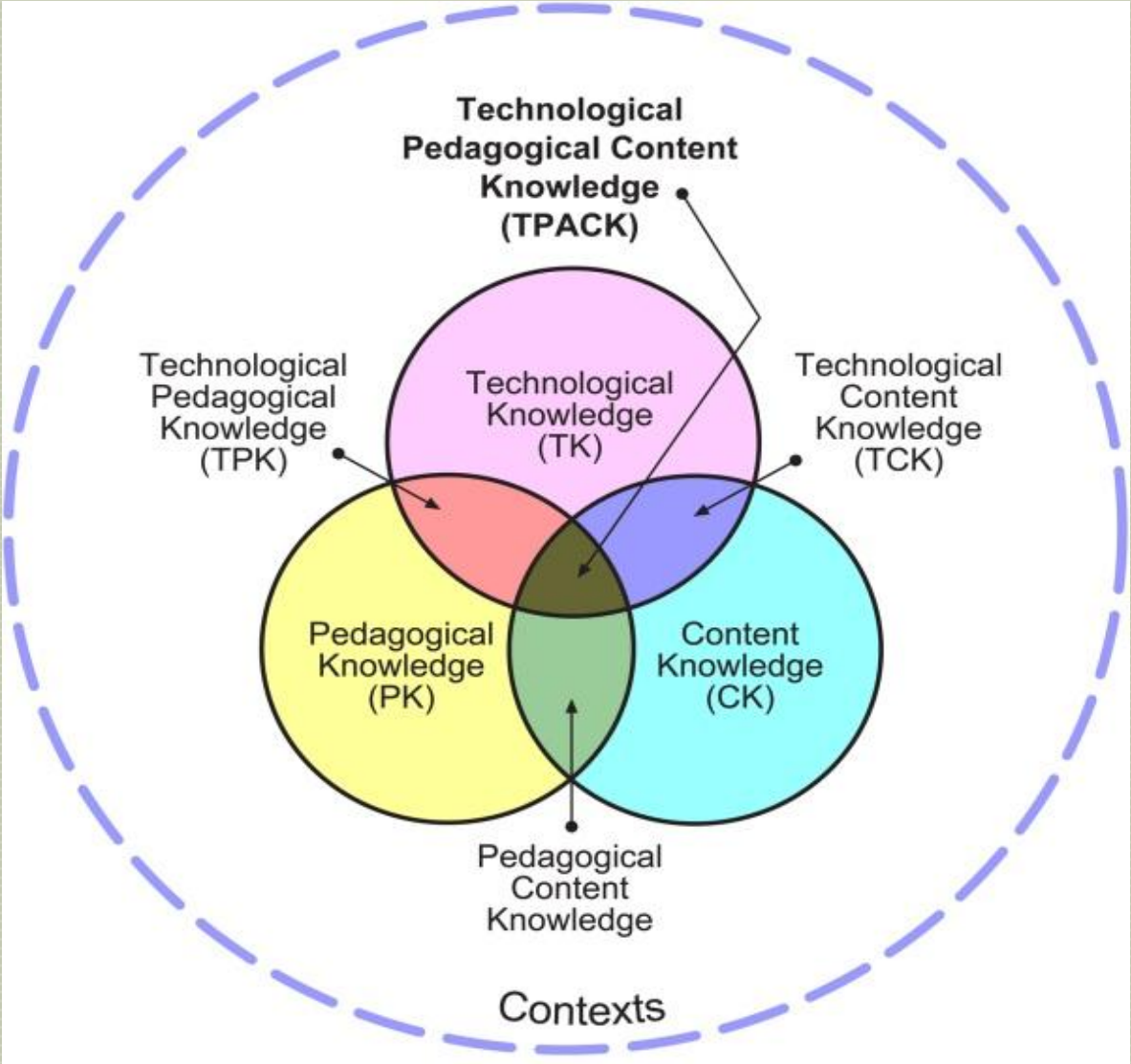
17 %

POOR
RETENTION

modeled after Lila Smith (1975)(Karl A. Smith, et al., 2005b)

R·I·T

Theoretical Basis



Technological Pedagogical and Content Knowledge (TPACK) (Koehler, 2012)

Key design principles

Key *pedagogical design principles for creating the technology rich learning environment.*

- A learning environment that emphasizes collaboration and values peer instruction
- Sufficient amount of student invention and practice with the new content to allow successful linkage and retrieval
- Timely, anonymous, and complete formative assessment feedback for both the instructor and student

Key design principles (cont.)

- The ability to direct the learner's attention to the critical components
- The ability to show concurrently different approaches, applications, and linkages to allow the student to make connections to the new content

Course Redesign

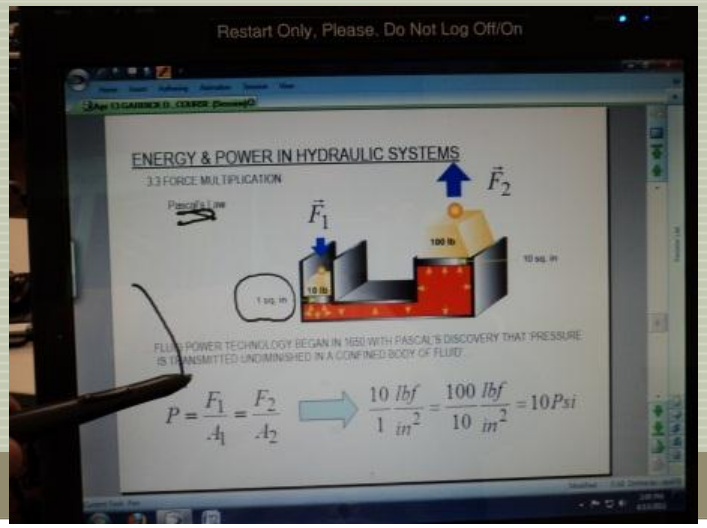
- Increase the use of interactive activities taking advantage of the technology
  - promote student participation
  - individual and group work
  - student-student interactions
- Increase the availability of content to the students outside of the classroom (flipping the classroom)
- Present and embed video links of real applications

Course Redesign

- Create and administer immediate feedback assessment tools
  - better manage student-learning outcomes
  - encourage students to come prepare to class
- Introduce activities that promote cooperative, collaborative and problem/project based learning

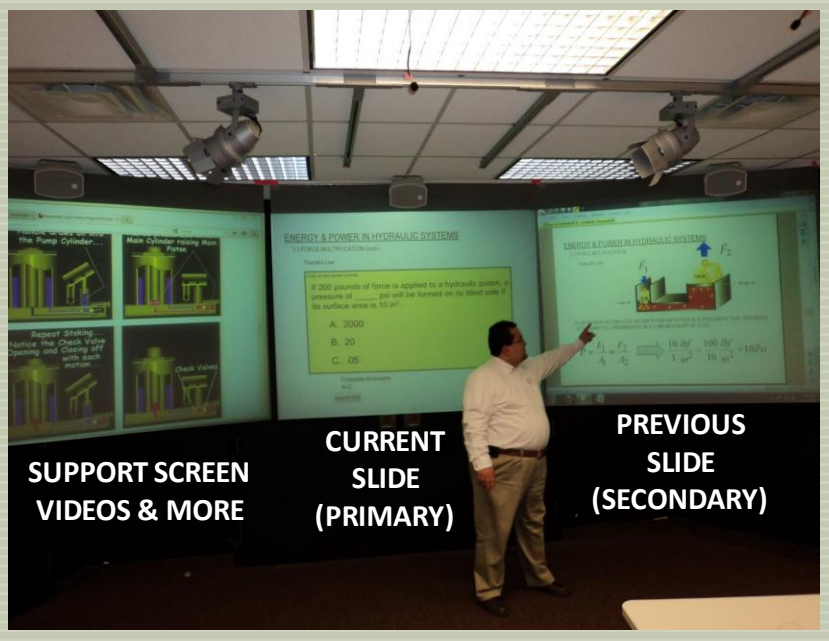
What does this class look like?

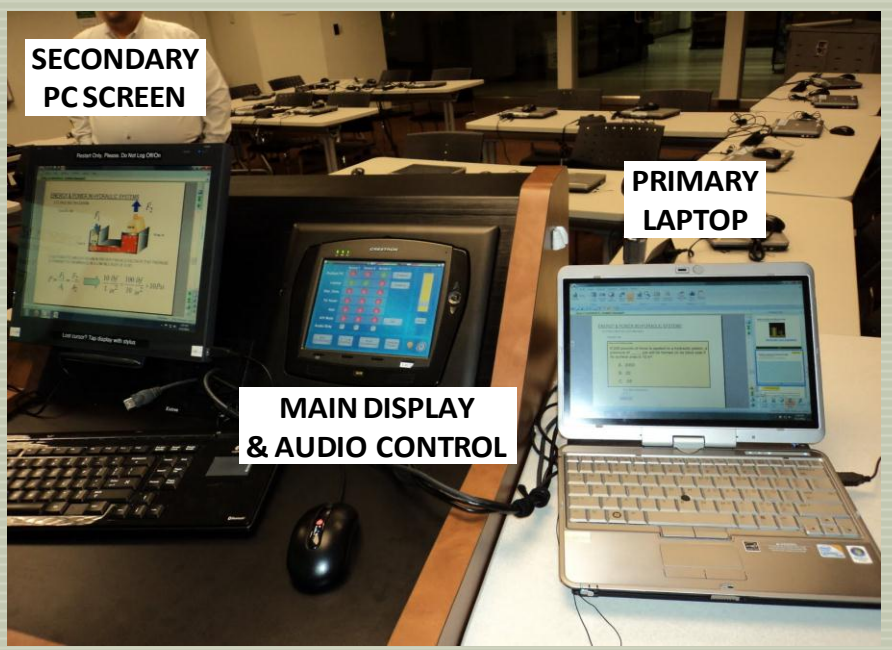
Convertible Laptops and Slates



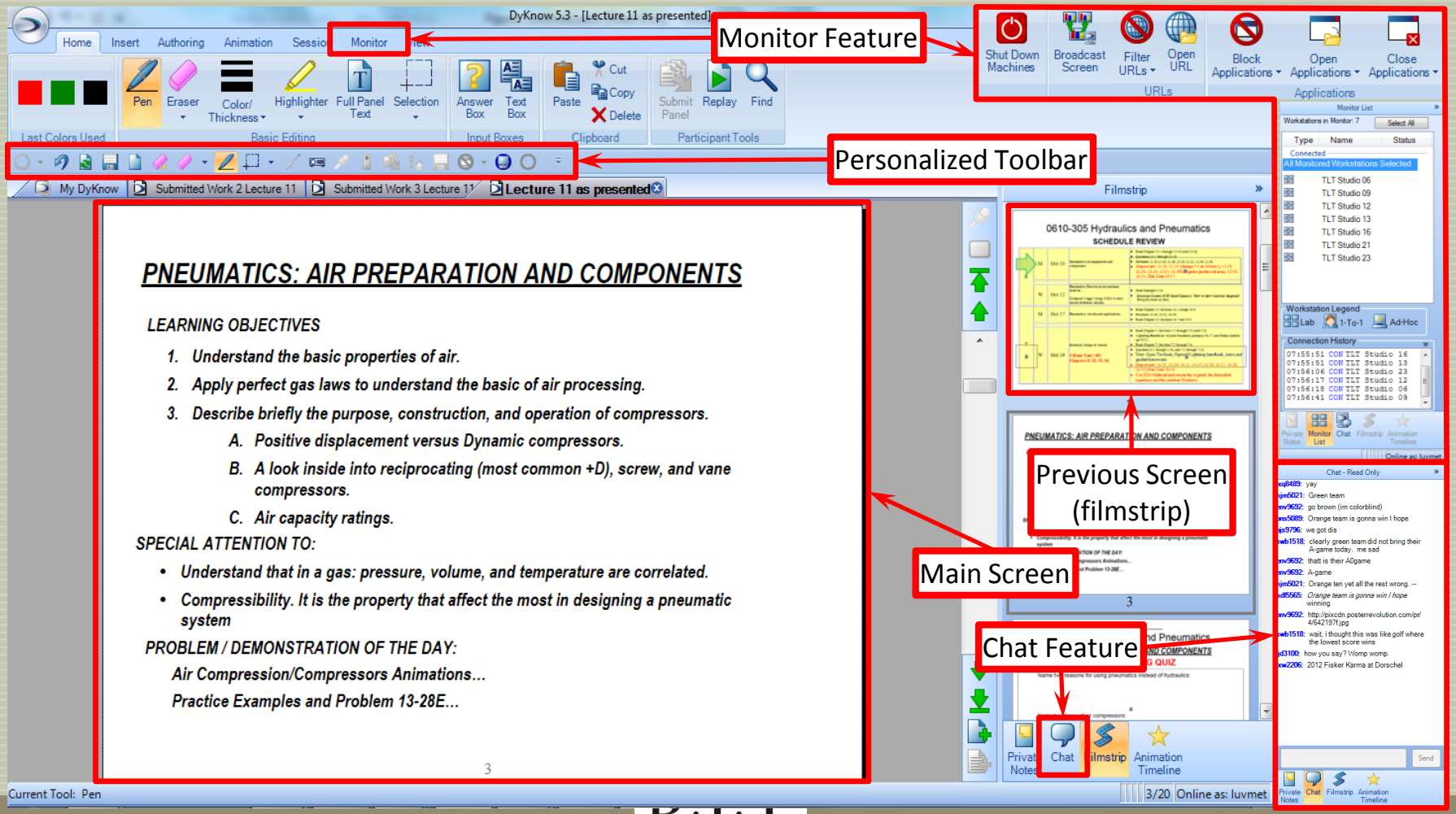
Group Work

Immersive visual environment





SOFTWARE ENVIROMENT (DyKnow)



“Seeing” student learning progress

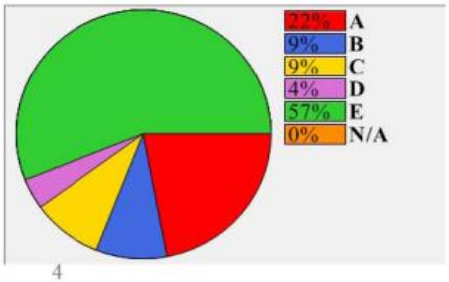
0610-305 Pneumatics and Hydraulics

DyKnow Test Drive
Where I will write; where you should write

Polling test

I think DyKnow may be able to help me in the class in the following ways

A) Take notes on the presentation AND have all of the professor notes
B) Be able to absorb the material rather than just copying the material
C) Use the chat feature to ask the professor to review a point
D) Prepare for tests using my electronic notes I can access from any location
E) All of the above



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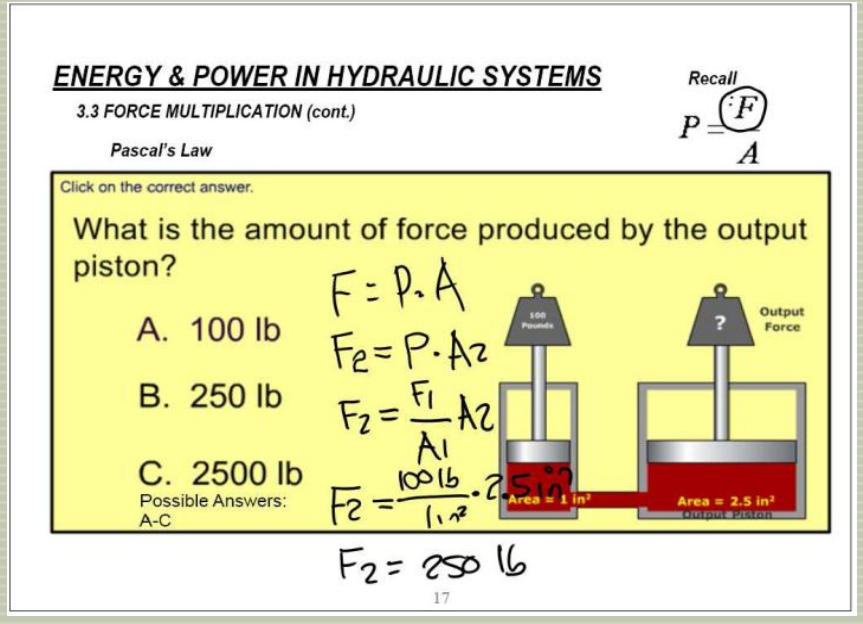
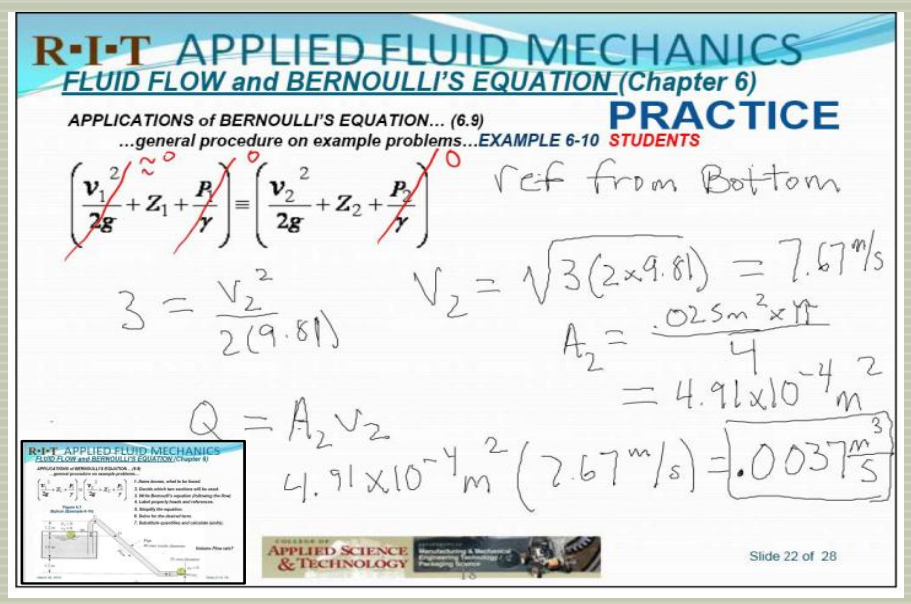
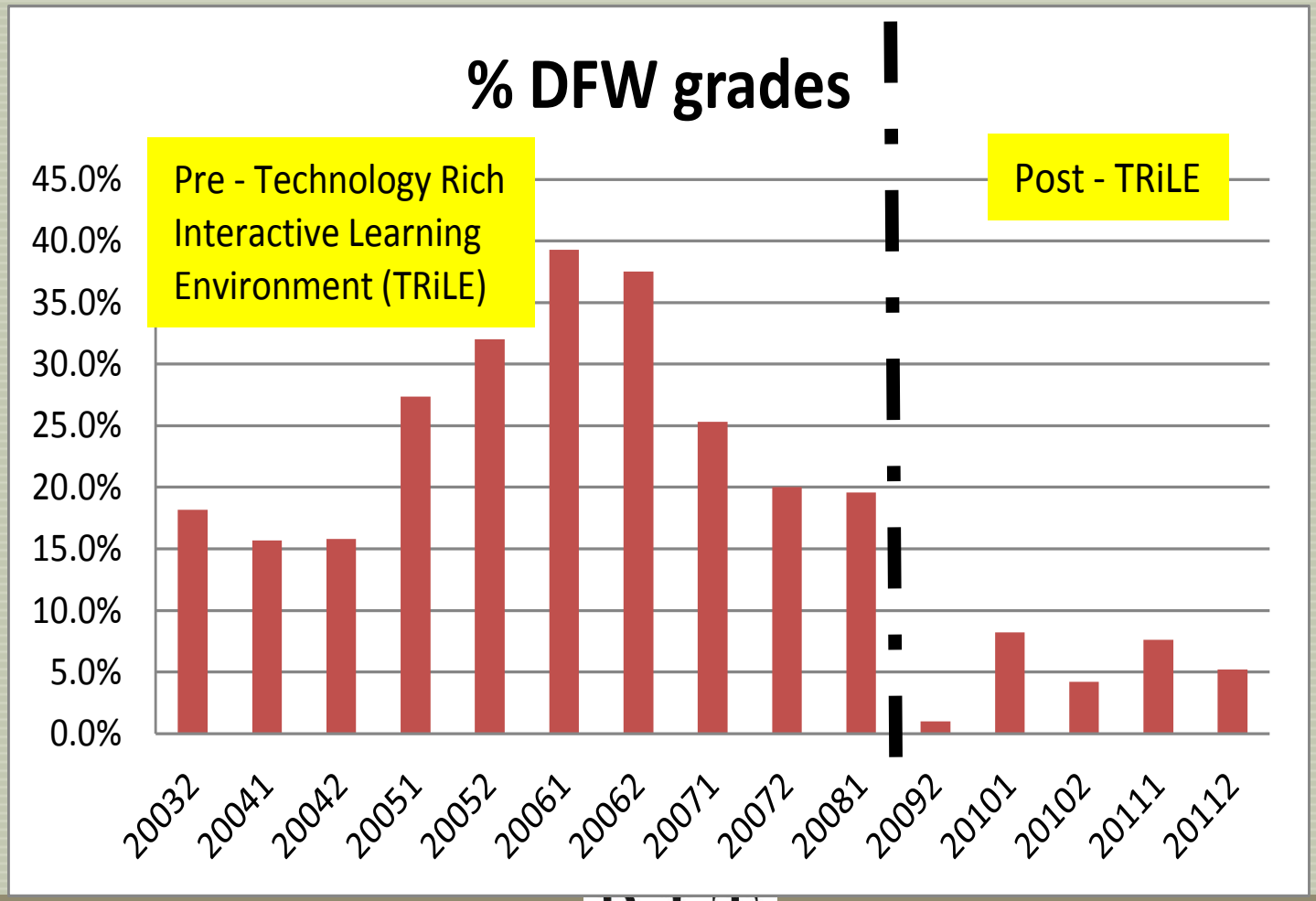
“Seeing” student learning progress





R·I·T

Assessment measures.



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Technology Rich Interactive Learning Environment (TRILE) vs. Control Classes

TRiLE	Control
Mean (standard deviation)	
3.192 (0.8500)	2.500 (1.014)

	TRiLE	Control
Low GPA (<3.0)	2.507 (0.8259)	1.904 (0.8687)
High GPA (>3.0)	3.607 (0.5407)	3.263 (0.5833)

Grades for Low versus High GPA students in the TRiLE versus control classes

R·I·T

Grades for Men versus Women in the TRiLE versus control classes

	TRiLE	Control
Male	3.160 (0.8684)	2.568 (0.9966)
Female	3.474 (0.6118)	2.105 (1.0485)

Conclusion

- The TRiLE approach in the classroom helps students succeed in engineering technology classes.
- Students with a lower GPA entering the courses perceived a greater benefit from this learning environment and recommended using the technology rich lecture environment.
- The technology rich environment allows the instructor to implement an interactive and engaging learning environment.

Acknowledgements

This material is based upon work supported by the National Science Foundation Research Initiation Grant in Engineering Education (RIGEE) under Grant No. 1137106.

Contact Information

Betsy Dell
Rochester Institute of Technology
emdmet@rit.edu