Describing Students in a Team-Based Learning Context

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Agricultural Sciences and Engineering Technology
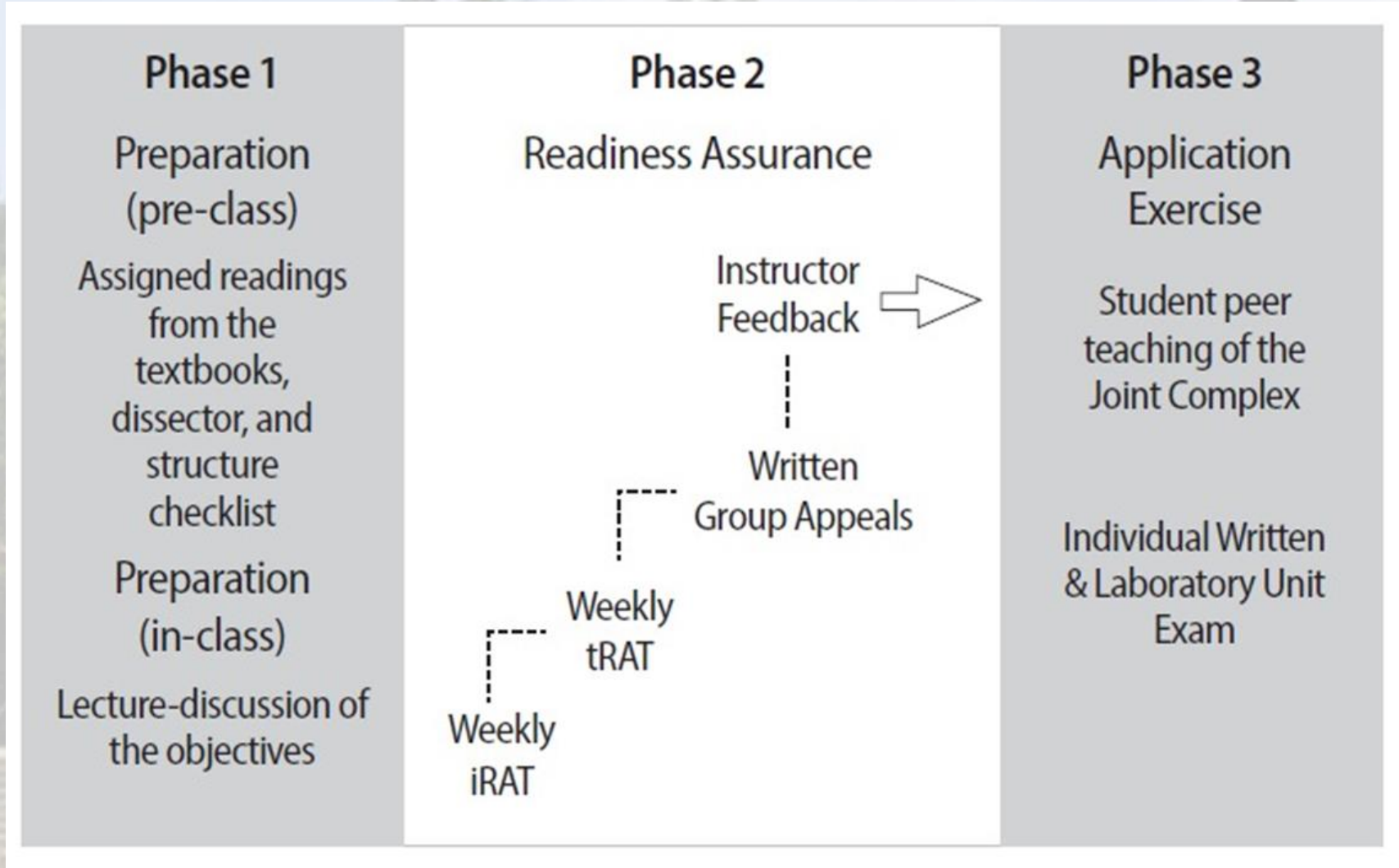
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Context

- TBL is a small-group, active learning strategy that:

  - Engages students with course material through a series of activities

  - Begins with individual prep (out of class)

  - Then Individual and Team-Based evaluation with immediate feedback

  - Finally, Team-Based learning and structured work

  - (http://www.teambasedlearning.org/)

Typical TBL Sequence

Phase 1

Preparation (pre-class)

Assigned readings from the textbooks, dissector, and structure checklist

Preparation (in-class)

Lecture-discussion of the objectives

Phase 2

Readiness Assurance

Instructor Feedback

Written Group Appeals

Weekly tRAT

Weekly iRAT

Phase 3

Application Exercise

Student peer teaching of the Joint Complex

Individual Written & Laboratory Unit Exam

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Source: Livingston et al., J Educ Eval Health Prof, 2014

Context

- Currently 2 courses taught using this system
    - AGBU 2317 Principles of Agricultural Economics
    - AGBU 4363 Agribusiness Sales and Consulting
- Principal Instructor: Dr. Foy Mills
- Students *seem* to like the method, but what do they really tell us in the end-of-course questionnaire?

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Research Questions

Which students were more highly satisfied with the course under TBL and/or traditional lecture activities (LEC)?

Do students perceive themselves to be more distracted from the content during TBL activities or LEC?

Do they do better on exams when using TBL over LEC?

Which demographic factors relate to these?

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Methods and Procedures

- 2 courses over 2 semesters (N=160)
  - Fall 2014 (n=90)
  - Spring 2015 (n=70)
- Each taught using Michaelson's TBL
- End of Course eval: Mennenga's TBL-SAI
  - Wk 15 of 16-wk course – final grades unknown
  - Student perceptions in 3 areas:
    - Student Accountability to Team (8 Likert-type items)
    - Student TBL-LEC Preference (16 Likert-type items)
    - Student Satisfaction (9 Likert-type items)
    - Additional section added on demographics

Methods and Procedures

- OLS Linear Regression for variance explanation (not prediction) (Pedhazur, 1982)

- Paired t-test on means

Methods and Procedures: Response Variables

- **TBL Course Satisfaction**
  - Adjusted for reverse-coded items
  - Composite of the 9 Likert-type scales
  - Range: 1 to 5, treated as continuous

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Methods and Procedures: Response Variables

- **TBL-LEC Preference**
  - "I do better on exams when we used TBL to cover the material"
  - Range: 1 to 5, treated as continuous
  - Exam scores as proxy for preferred course structure type
    (*higher grades = better for me!*)

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Methods and Procedures
Demographic Variables

- Class (modeled as 3 dummies)
- Sex
- GPA (0 = <2.0 … 5 = 3.5-4.0)
- Expected Grade (0 = F … 4 = A)
- Parent Highest Level (0 = no college … 5 = Doc)
- Prior Group Experience (0-5)
- 1st Semester in College
- 1st Semester at SHSU
- Transfer Student

Results and Discussion:
Demographics on Satisfaction

- Forced Entry Linear Regression (OLS) of demographic variables on Satisfaction Composite

- 2 significant variables:

- **GPA** ($p<.05$), negative correlation

- **Prior Experience with Group Work** ($p<.01$), positive correlation

- Explained some variation in overall satisfaction with TBL (R2 = 16%)

Results and Discussion:
Demographics on Course Preference

- Same 2 significant variables:
- **GPA** ($p<.07$), negative correlation
- **Prior Experience with Group Work** ($p<.03$), positive correlation
- Much less variation explained (R2 = 5.6%)
- i.e., significant, but not significant.

Results and Discussion:
Difference in Means (1-tail)

Q25: I am easily distracted during traditional lecture

Q26: I am easily distracted during team-based learning activities

- Difference between these 2 variables was highly significant ($p<.01$, df=160)

- Some expect TBL classrooms to be distracting due to conversations, activities, etc. in many groups around the room

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Summary
Caveat: all self-reported

- TBL is a rising star, and coming to a classroom near you

- In general, most demographic qualities do not correlate with preferences for classroom style

- GPA (neg corr) and Previous Group-Work Experience (pos corr) do explain some variation in overall satisfaction

- Group work doesn't seem to be a distraction for students.

Areas for Additional Research

- Add to Menninga data and compare to Nursing/Med career fields
- Factor Analysis on individual satisfaction measures
- Friend in Class vs. degree completion (longitudinal study)
- Transfer student vs. Team Contribution factors
- Information Retention measures related to Bloom's Taxonomy progression

Questions, Comments, and Improvements?

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