KEAN

Cognitive Neuroscience, Adaptive Learning,
and Innovative Teaching Methods: Increasing Student Learning Outcomes
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Background

Instructors should empower students to take ownership of their academic pursuit by promoting democratic interactions in the classroom where students are encouraged to demonstrate critical thinking skills as they share their ideas and questions. A teacher's goal is to facilitate the students' acquisition of knowledge and critical thinking skills (Mc Keachie, 2002). The teacher creates an atmosphere in the classroom that helps foster these skills by using dynamic activities and knowing that learners can differ in their interpretation of apparently similar opportunities and differentially respond to them (McCaslin, 2009).

Goals
The presentation goals include: discuss use of recent cognitive discoveries in teaching methods to increase students' adaptive learning ; 2) to explain the benefits of using technology and diverse teaching methods in providing supportive learning environment for students to better meet the demands, needs, and goals that are required for their academic success.

Teaching Philosophy & Teaching Methods
I think that how we **teach** depends on how we *believe* the **MIND** works, and how we **perceive behavior.**
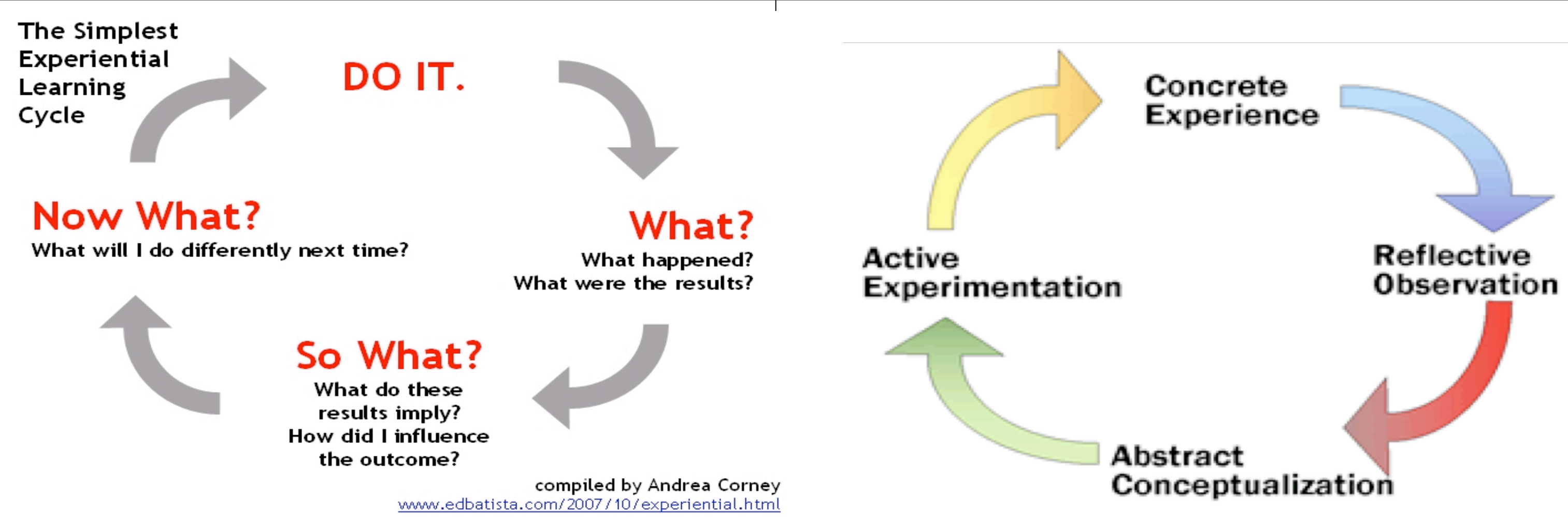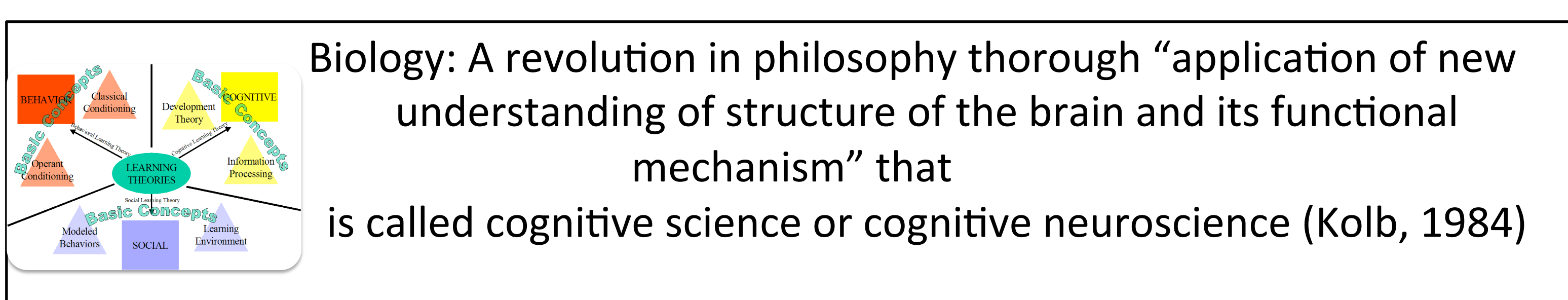Based on the teaching philosophy that features a learner-centered approach and cognitive neuroscience, the presenter used multiple teaching modalities including: interactive lecture discussion; audiovisual teaching (film clips, animations, educational DVDs, and online textbook resources); role play; and case studies.

Adaptive Learning

- "Adaptive learning is acting on yourself and your situation to better meet demands, needs, and goals" (McCaslin 2009).
- Development of "active learning" is manifested within social and cultural opportunities and constraints.
- "Adaptive learning will be enhanced by supportive relationships that can monitor and demonstrate the meaning of responsibility and commitment within an "arena of comfort" (Simmons & Blyth, 1987).
- **Learners can differ in their interpretation of apparently similar opportunities and differentially respond to them (Boekaerts & Corno, 2005; McCaslin, 2009)**

Biology & Cognitive Neuroscience: How does Learning Happen?

Biology: A revolution in philosophy thorough "application of new understanding of structure of the brain and its functional mechanism" that
is called cognitive science or cognitive neuroscience (Kolb, 1984)

The Simplest Experiential Learning Cycle

DO IT.

Now What? What will I do differently next time?

What? What happened? What were the results?

So What? What do these results imply? How did I influence the outcome?

compiled by Andrea Corney
www.edbatista.com/2007/10/experiential.html

Concrete Experience — Reflective Observation — Abstract Conceptualization — Active Experimentation

- If we want help people to learn, we must anticipate to encounter emotions and take it seriously. Remember that in our brain fear and pleasure are always at work

Sense → Integrate→ Act

Adaptive Learning/Learning-centered methods: Posted case studies related to the topic (one week before class); used pre-lecture quizzes (5; T/F questions);
Interactive lecture (posing Qs & responding to Qs); Responded to case study's questions/2Q) ; Video/film clips 3-5 minutes; asked Qs; Learners could view: posted YouTubes, film clips, and book resources prior to class; Used role play (3 minutes) in class; Faculty or learners share situations related to the topic (make it stick)

Preliminary review of students' performance in a Mental Health Nursing course

Figures: Comparisons of Final Exams and ATI Test per Semester
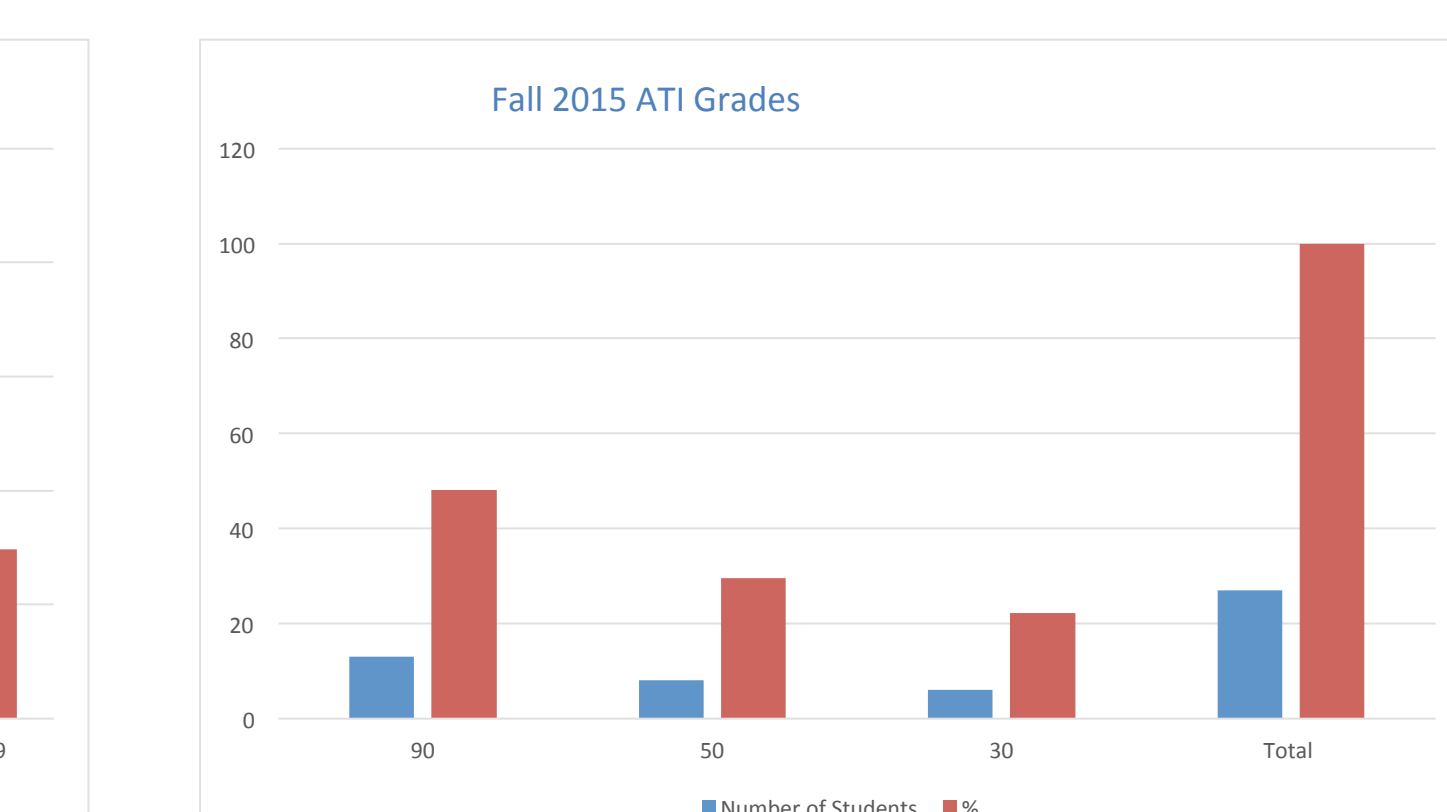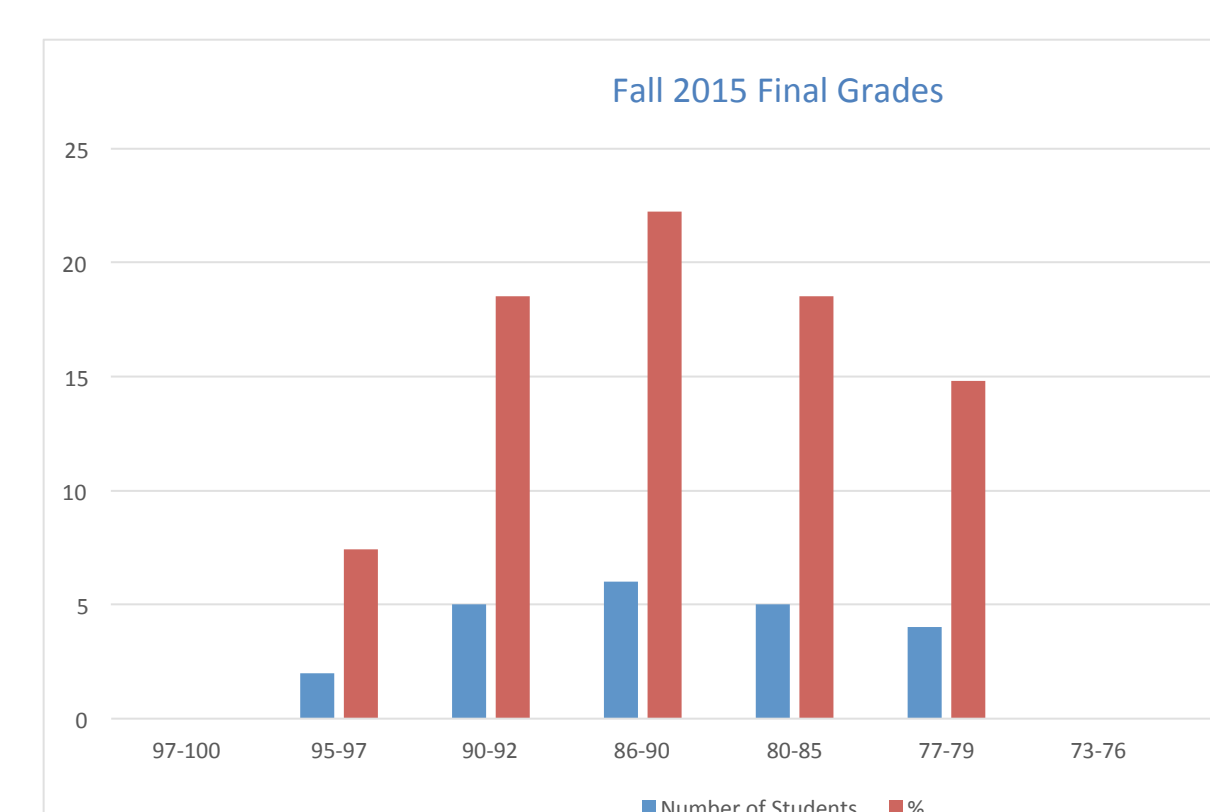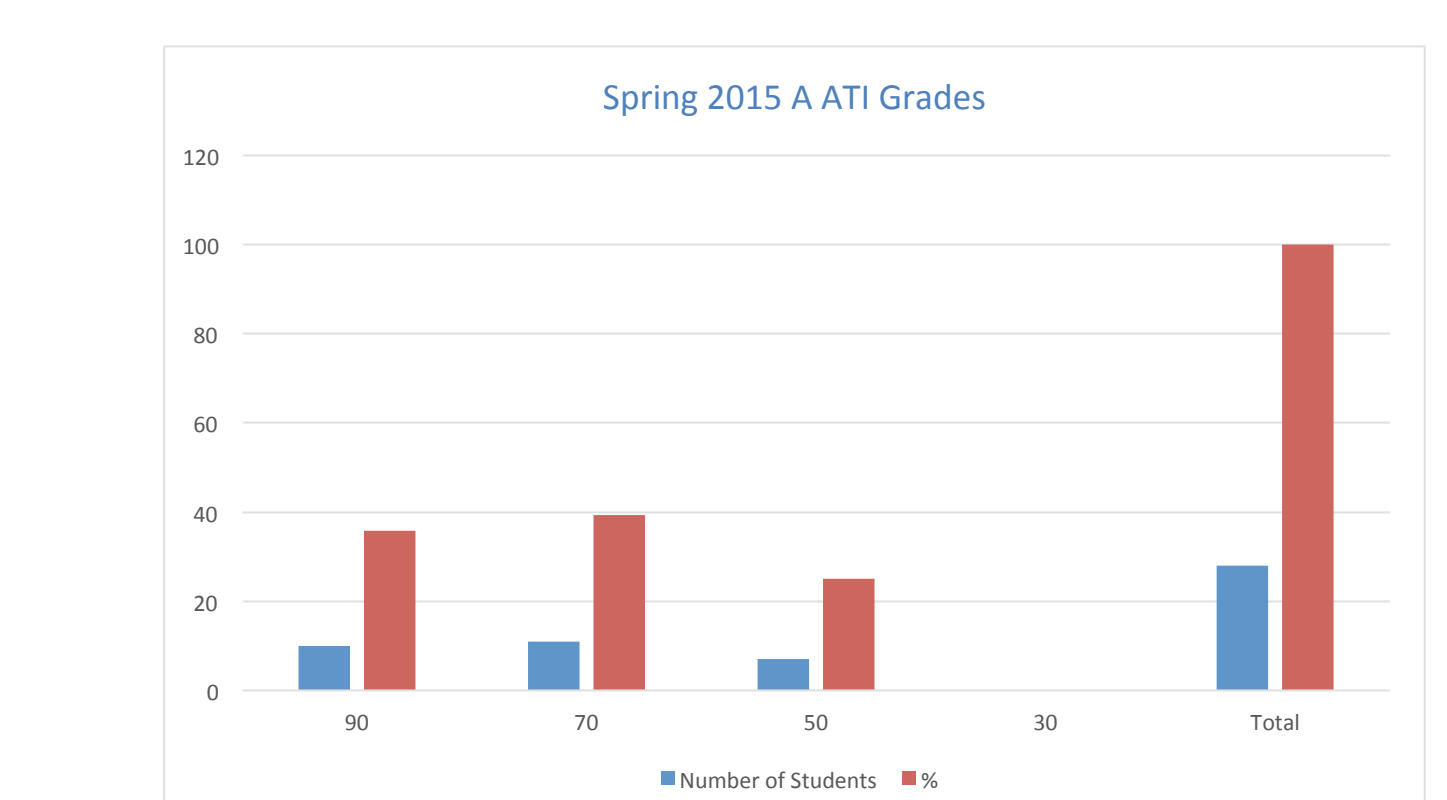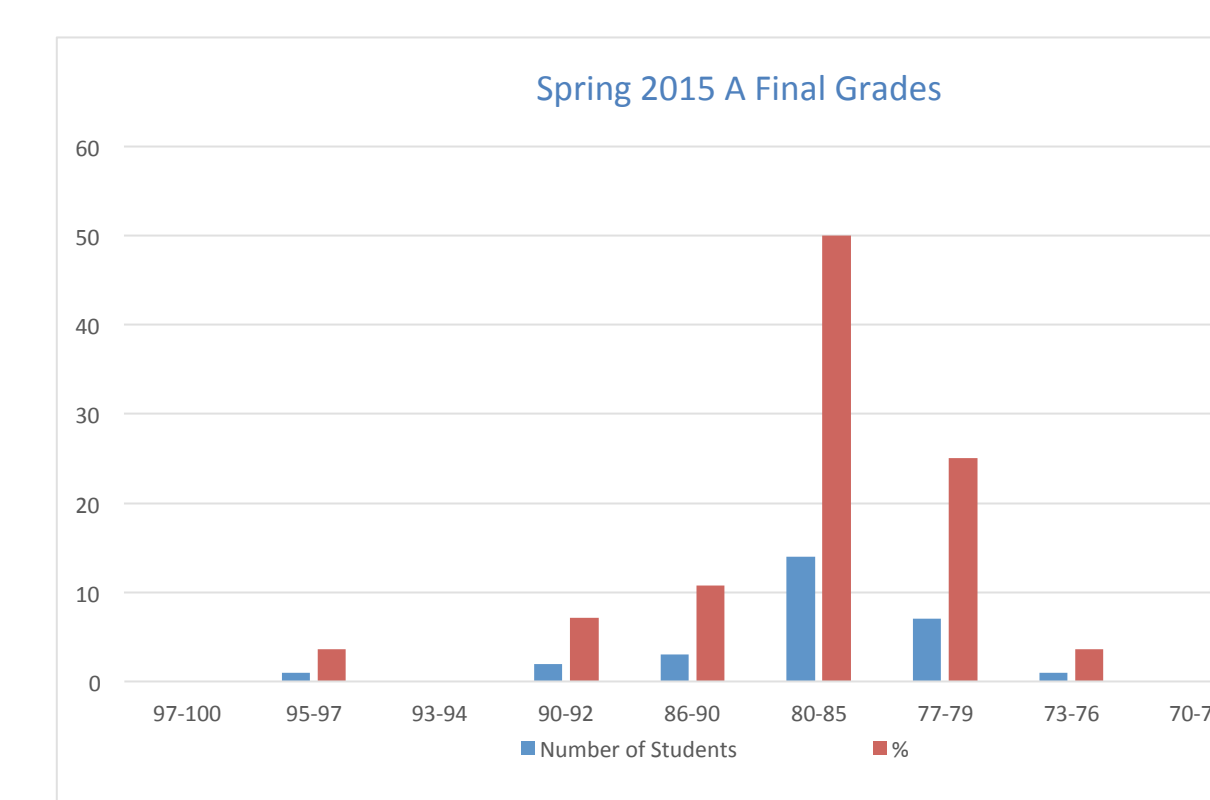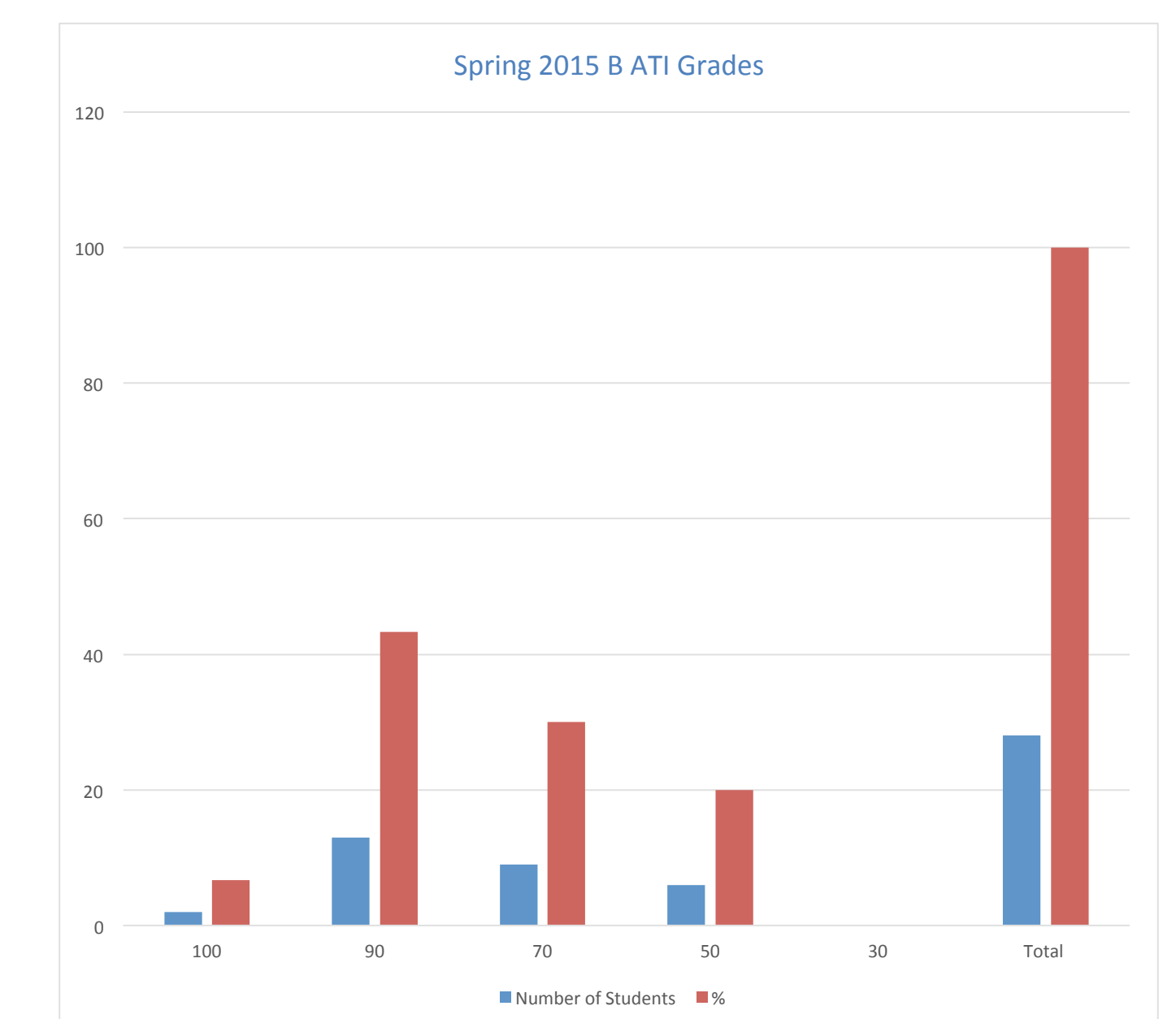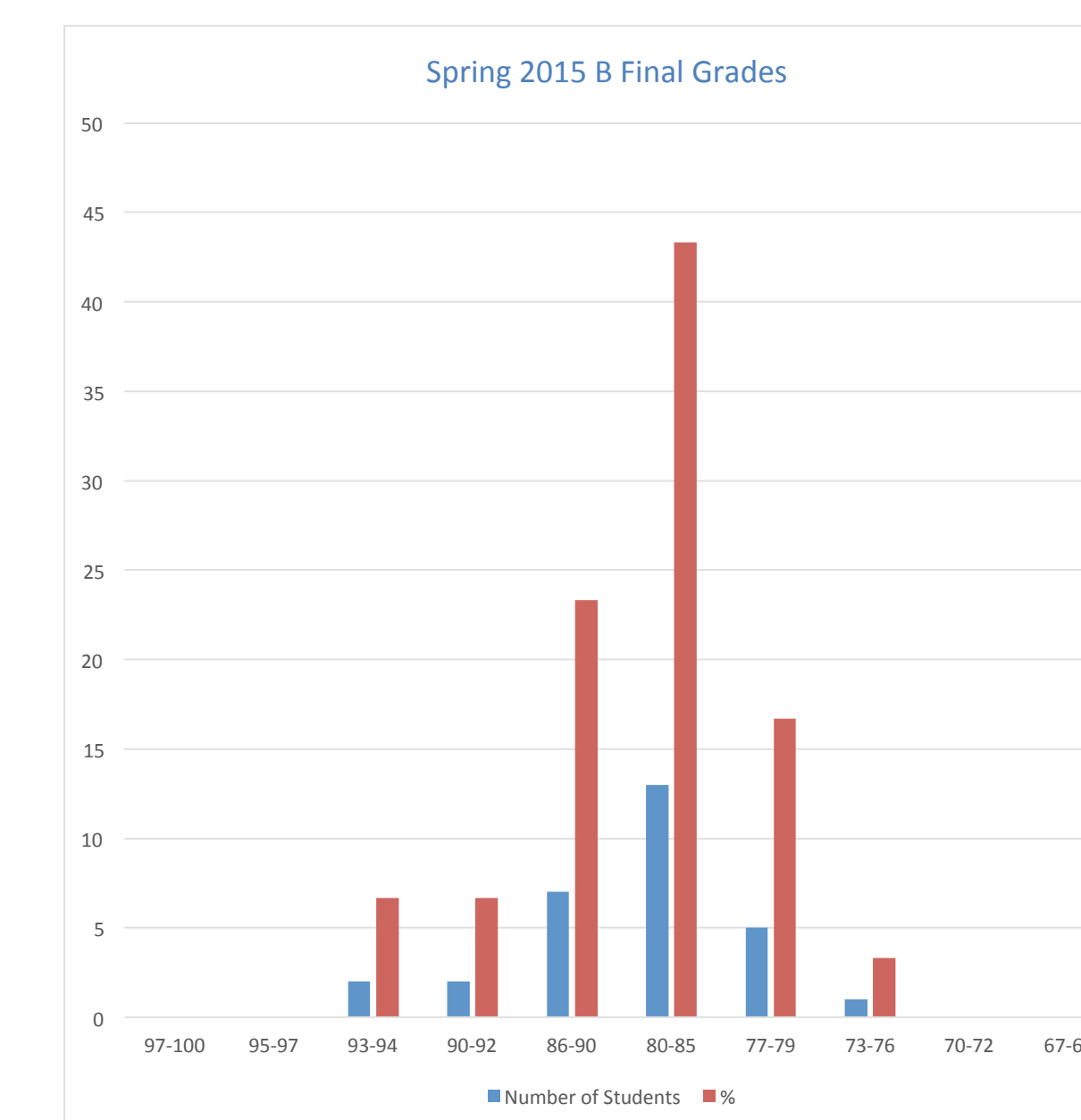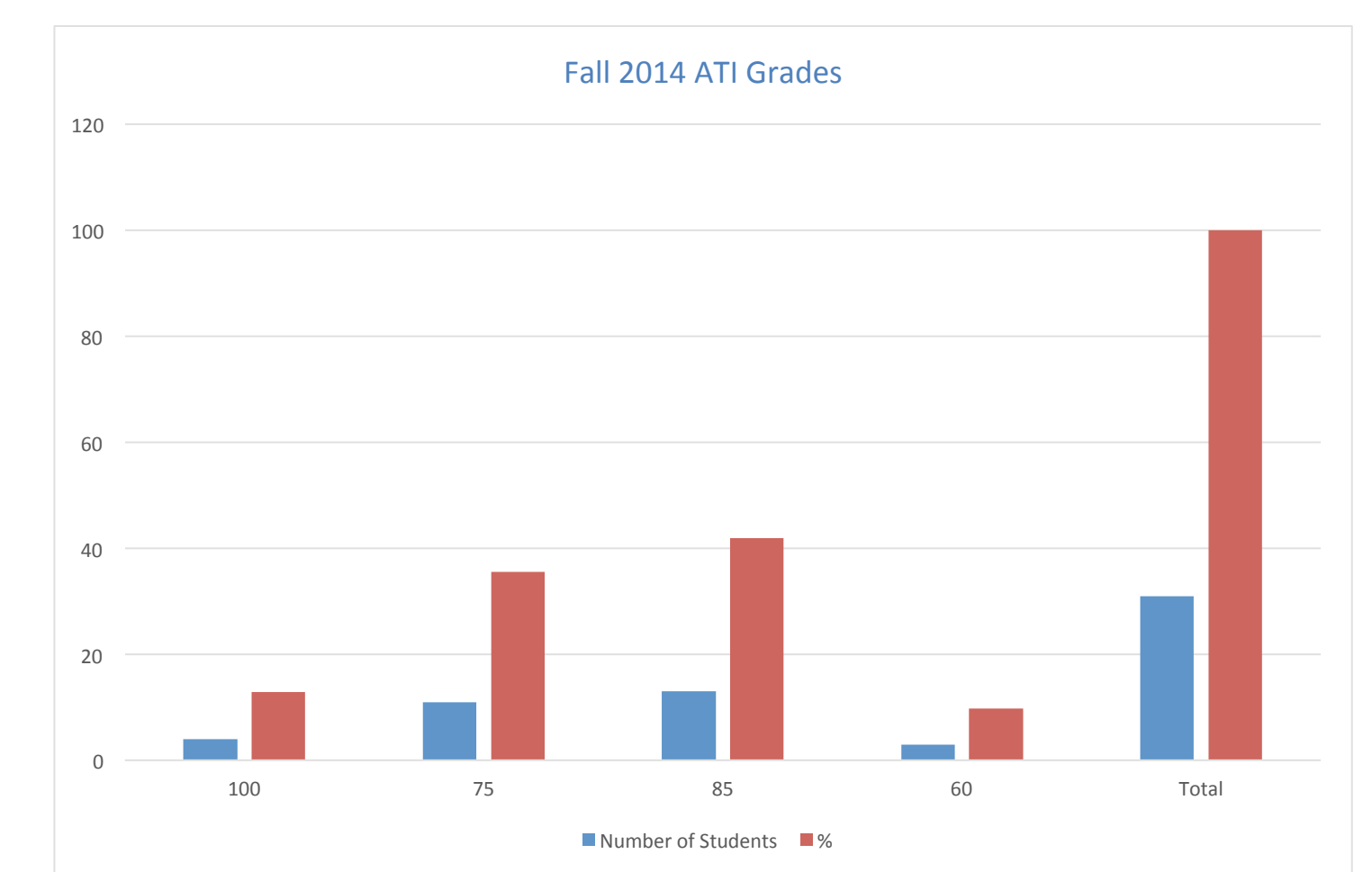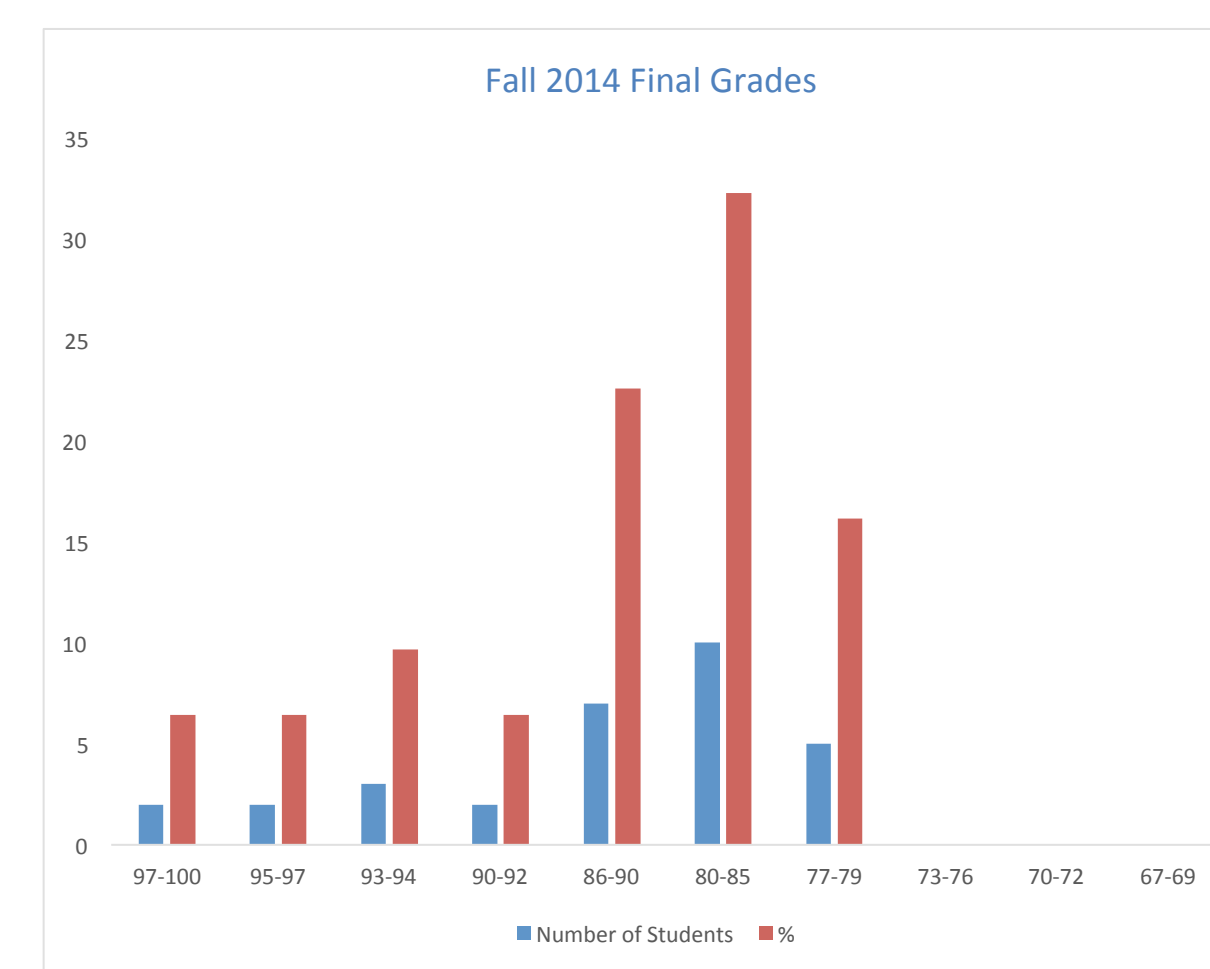
Conclusions

- Based what we know about the brain function and structure, the balanced use of frontal cortex and back cortex is proposed.
- The traditional (didactic) teaching approach → on back cortex functions.
- The discovery approach (proposing ideas and testing ideas) →on the front cortex functions.
- Based on the structure of the brain we should challenge our learners to use both the front and back cortex

Selected References

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