

Using Behavior Analytic Instructional Methods and Organizational Behavior Management to Train Behavior Analysts

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& ABA Technologies, Inc.

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Outline

- A. Introduction
- B. Entertainment or Education? It Takes a Team
- C. Instructional Design: Curriculum Development
- D. The Technology of Teaching: Instructional Delivery
- E. Evaluating & Improving Curriculum and Instruction

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The Shame of American Education B. F. Skinner (1984)

“It has long been said that college teaching is the only profession for which there is no professional training. Would-be doctors go to medical schools, would-be lawyers go to law schools, would-be engineers go to institutes of technology, and would be college teachers just start teaching.”

(American Psychologist, 39)

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Many College Professors Suffer from:

- Curriculum Development Disorder (CDD)
- Dysteachia

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It is Predicted That...

*“By 2015, **25 million** post-secondary students in the United States will be taking classes online. And as that happens, the number of students who take classes exclusively on physical campuses will plummet from 14.4 million in 2010 to just 4.1 million five years later...”*

Ambient Insight Research , January, 2011

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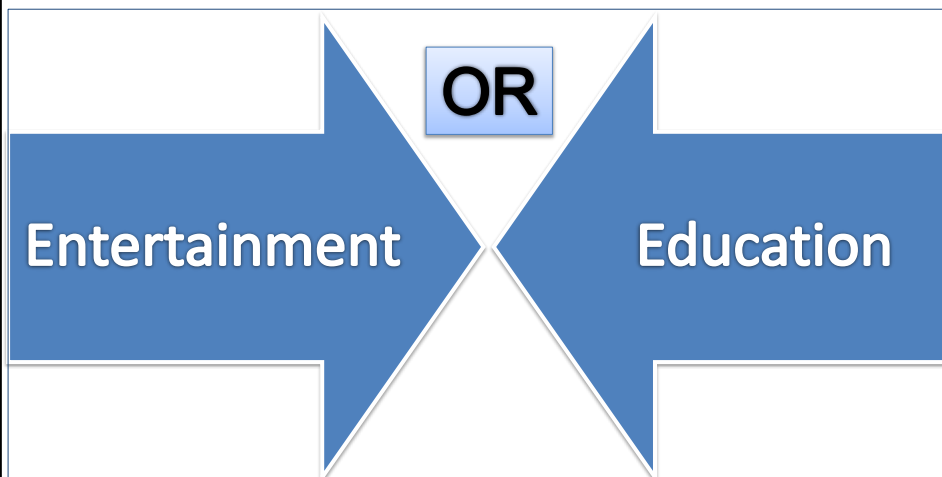
“The meta-analysis found that, on average, students in online learning conditions performed better than those receiving face to face instruction.”



- Attributed to additional learning time and instructional elements
- Literature Research 1996 – 2009
- Contrasted online to face to face condition
- Measured student learning outcomes
- Provided adequate information to calculate an effect size.

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What is More Important?



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Entertainment?



For a 2-Hour Movie

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Or Education?

Professor Dr. Bond



**Teaching Assistant
Jim Kirk**



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Education



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So...

How do we DESIGN,
DELIVER, and TEACH
online courses without
compromising educational
outcomes?

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Solutions

- Team approach with full support of administration
- Behavior analytic approach for instructional design and instruction
- Highly interactive high-tech methods to deliver instruction
- OBM methods to achieve best performance from all!

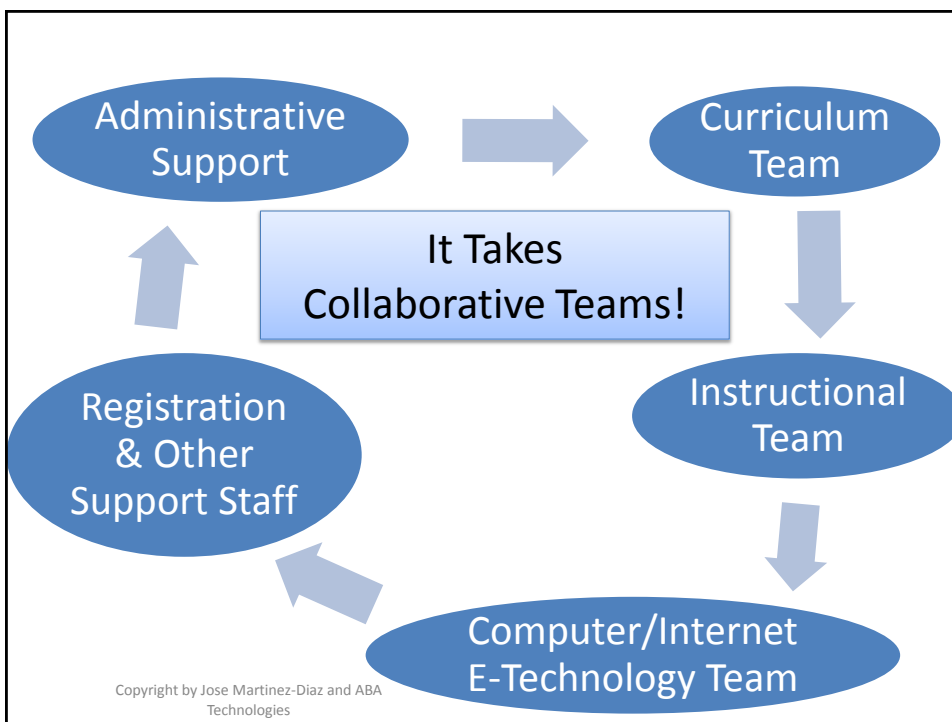
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Ernest A. Vargas: Triad Model

Integration of:

- Science (of Behavior)
- Technology (Engineering)
 - Instructional Design
 - Instructional Delivery
- Organization (Management; Teams)

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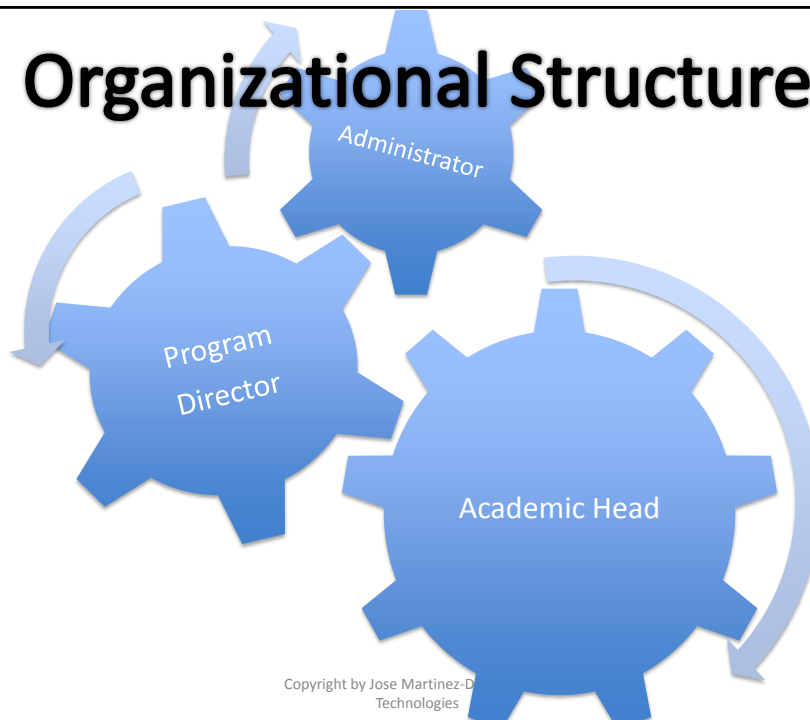


You Need a Team...

- Academic Head + Program Director + Administrator
- Curriculum Team
- Instructional Team
- Evaluation & Improvement Team
- Computer Instructional Technology Team
- Support staff
- Administrative support!

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Organizational Structure



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Organizational Structure

- Head, School of Behavior Analysis (Jose)
- Program Director (Jose)
 - Lead Instructor
 - Curriculum Teams
 - Instructional Teams
- Administrator (C. Schmitt, MA, MS)
 - E-Technology & Tech Support Teams
 - Registration Team

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Instructional Design

Principles of Behavior Analysis

Direct Instruction

Programmed Instruction

PSI

Precision Teaching

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Curriculum Team

- ① Content Expert(s)
- ② Instructional Design Expert(s)
- ③ Evaluation and Improvement Expert(s)
- ④ Support Staff

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Instructional Design & Curriculum

- What to teach
- In what sequence
- Learning objectives
- Critical attributes
- Variable attributes
- Examples (that tie to critical attributes)
- Non-examples (that tie to critical attributes)
- Instructional materials

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Instructional Design & Curriculum (Continued)

- Design ASRs for frequent practice
 - Acquisition ASR Type 1: Example or Not?
 - Acquisition ASR Type 2: Discriminate...
 - Fluency ASRs
- Evaluate Mastery of Objective(s)
 - Unit Tests (Multiple Versions)
 - Assignments
 - Final Exam (Multiple Versions)

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Instructional Design & Curriculum

- **What to teach**
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Example of What to Teach & In What Sequence

- **What:**
 - BACB Fourth Edition Task List (General)
 - For each task... What to actually teach
- **Sequence (BACB calls it a course sequence)**
 - What tasks go into what courses
 - In what order do you teach the courses
 - Within each course, order of covering tasks

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Instructional Design & Curriculum

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Learning Objectives

- Provide a specific and clear criterion for measuring student achievement
 - Criteria for evaluating the quality of an objective
 - Good: Define...; give example...; discriminate between examples of...
 - Bad: Understand..., grasp the importance of...
- Test items and assignments should be based on objectives
- Bloom's Taxonomy

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Example of Taking a General Task and Writing Objectives for It

Task FK-10	Define and provide examples of behavior, response, and response class.
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1. Give at least two definitions of the term, behavior.
2. List the critical attributes of behavior.
3. Describe each of the critical attributes of behavior.
4. Name two tests to determine whether a phenomenon is behavior.
5. Explain each of the two tests to determine whether a phenomenon is behavior.
6. Given an example, evaluate whether or not a phenomenon passes the relevant test to determine whether or not a phenomenon is behavior.
7. Discriminate between examples and non-examples of behavior.
8. Give examples of behavior.
9. Give non-examples of behavior.
10. Define public behavior.
11. Give examples of public behavior.
12. Define private behavior.
13. Give examples of private behavior.
14. Discriminate between public and private behavior.
15. State another term for private behavior.
16. Discriminate between private events and mentalistic terms.
17. Define response.
18. Give examples of response.
19. Discriminate between the terms behavior and response.

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Task & Objectives (continued)

20. Define response cycle.
21. Give examples of response cycle.
22. Describe what is meant by "behavior is a collective term."
23. Given that behavior is a collective term, use the term, behavior, correctly.
24. Define the term property.
25. List the fundamental properties of behavior.
26. Define each of the fundamental properties of behavior.
27. State the associated dimensional quantity.
28. Define the term dimensional quantity.
29. List the dimensional quantities of behavior.
30. Define each of the dimensional quantities of behavior.
31. Give examples of each of the dimensional quantities of behavior.
32. Discriminate between fundamental properties and dimensional quantities of behavior.
33. Define topography.
34. Give examples of topography.
35. Describe why magnitude and intensity are topographical properties of a response and not quantities.
36. Define function.
37. Give examples of function.
38. Give non-examples of function.
39. Discriminate between topography and function.
40. Define response class.
41. Define topographical response class.
42. Give examples of topographical response classes.
43. Define functional response class.
44. Give examples of functional response classes.
45. Discriminate between topographical and functional response classes.

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Examples of Objectives

1. State at least three different definitions of the term “***behavior***”.
2. List and explain the critical attributes of the term “***behavior***”.
3. List and explain the variable attributes of the term “***behavior***”.
4. Correctly discriminate between examples and non-examples of behavior.

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Examples of Objectives

5. Given a non-example of behavior, identify the critical attribute(s) that it does not possess.
6. Give examples of behavior.
7. Use the term *behavior* correctly when verbalizing about behavior.
8. Discriminate between the terms *behavior*, *response*, and *response class*.

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Example of Definition

“Behavior is that portion of an organism’s interaction with its environment that involves movement of some part of the organism.”

(Johnston & Pennypacker, 2009)

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Example of Critical Attributes of Behavior

1. Behavior is a biological phenomenon.
2. Involves movement (actions)
3. Can only be done by a living organism
4. Observable
5. Measurable
6. Involves interaction with the environment

Instructional Design & Curriculum

- What to teach
- In what sequence
- Learning objectives
- **Critical attributes**
- **Variable attributes**
- Examples (that tie to critical attributes)
- Non-examples (that tie to critical attributes)
- Instructional materials

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Critical & Variable Attributes

- Critical attributes: Things that must be present for an instance to be an example of a concept
 - E.g., for X to be an example of behavior it must involve interaction with the environment
- Variable attributes: May vary...
 - E.g., behavior may be unlearned or learned

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Critical Attribute of Behavior #1: Behavior is a Biological Phenomenon

- Only biological organisms engage in behavior
- Behavior has a biological basis
- Behavior has an evolutionary basis
- Interacting with the environment always involves biological processes.
 - Mediated by the nervous system
 - Involves receptors, effectors, etc.

Ex: Variable Attributes (of Bx)

- The organism behaving
- Topography
- Learned vs. unlearned
- Respondent vs. operant vs. schedule induced
- Private vs. public
- Social vs. automatic - & - Verbal vs. non-verbal
- Discrete response vs. Not - & - Single R vs. chain
- Requires manipulandum (or not)
- Socially appropriate or not
- Effect on the environment

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Instructional Design & Curriculum

- What to teach
- In what sequence
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- Critical attributes
- Variable attributes
- **Examples (that tie to critical attributes)**
- **Non-examples (that tie to critical attributes)**
- Instructional materials

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Examples & Non-examples

- Select examples to represent a broad range that varies along non-critical dimensions and variable attributes
- Tie to critical attributes
- Continuum of examples versus non-examples
 - Minimally to maximally similar

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Example of Examples (of Bx)

- Doing sit-ups
- Doing one's laundry
- Practicing playing guitar
- Completing one's homework
- Asking someone out to dinner
- Refusing dessert when offered
- Covertly multiplying 12×15

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Example of Non-Examples (of Bx)

- Failing to comply
- Not nagging
- Having a positive attitude
- Having poor impulse control
- Being stubborn
- Expecting to get a reward
- Processing an instruction
- Knowing your multiplication tables

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Instructional Design & Curriculum

- What to teach
- In what sequence
- Learning objectives
- Critical attributes
- Variable attributes
- Examples (that tie to critical attributes)
- Non-examples (that tie to critical attributes)
- **Instructional materials**

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Curriculum Documents

- Each course has an Instructional Handbook consisting of:
 - ☑ Unit Guided Notes & Study Guides
 - ☑ Unit Power Point Handouts
 - ☑ Active Student Responding Exercises
 - ☑ Assignments
- Each co-instructor has additional materials available to all students

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Sample Instructional Handbook



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Instructional Design & Curriculum (Continued)

- **Design ASRs for frequent practice**
 - Acquisition ASR Type 1: Example or Not?
 - Acquisition ASR Type 2: Discriminate...
 - Fluency ASRs
- Provide immediate feedback**
 - Why correct is correct; why incorrect is not...**
- Evaluate Mastery of Objective(s)
 - Unit Tests (Multiple Versions)
 - Assignments
 - Final Exam (Multiple Versions)

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Example of Type 1 Acquisition ASR

☐ Is telling someone what you ate for breakfast an example of behavior?

1. Yes
2. No

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Example of Type 1 Acquisition ASR

☐ Is failing to respond to the teacher's request to get up from the floor an example of behavior?

1. Yes
2. No

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Example of Type 2 Acquisition ASR

Failing to respond to the teacher's request...

- ❑ Which critical attribute does it fail to meet?
- 1. A function has not been determined.
- 2. "Behavior" is a collective term, and should not be used in plural form.
- 3. The topography is not described.
- 4. Does not pass the Dead Person's Test.

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Example of Fluency ASR

- Set timer for 1-minute
- Ask students to write down as many examples of behavior as they can when told to start.
- Start timer and say "Start!"
- Timer rings; Ss put down pens
- Grade: Count # correct
- May also count # incorrect
- Graph data (2 lines if correct & incorrect)

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Instructional Design & Curriculum (Continued)

- Design ASRs for frequent practice
 - Acquisition ASR Type 1: Example or Not?
 - Acquisition ASR Type 2: Discriminate...
 - Fluency ASRs
- **Evaluate Mastery of Objective(s)**
 - **Unit Tests (Multiple Versions)**
 - **Assignments**
 - **Final Exam (Multiple Versions)**

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Tests for Mastery

- Several test items are written for each objective
- At least two versions of each unit test
- Cumulative final exam based on course objectives
- At least two versions of final exam

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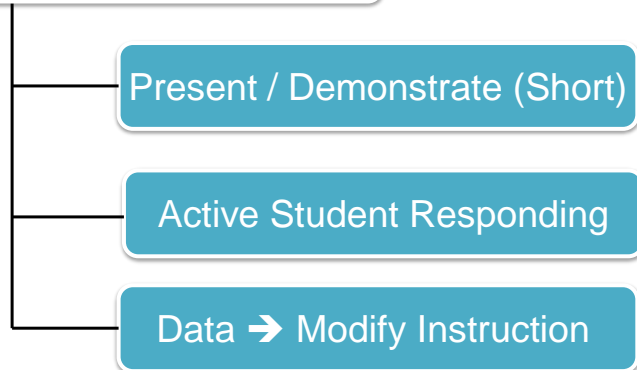
Instructional Team

- Lead Professor
- Lead Co-instructors
- Co-instructors
- Co-Instructor Manager and Assistants

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Instructional Delivery

Principles of Behavior Analysis



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Delivery Methods

- Video (Short lecture/ASRs) + Interaction with Materials (Instructional Handbook) - 35/45 hours
 - Jose and Guest Instructors
- Live (10 hours/45)
 - Mostly online through video conferencing in a virtual classroom, but also in brick-&-mortar classrooms)
 - Co-instructors (Leads, Assistant Leads, & PT co-instructors)
- Discussion Board, Email & Phone Calls
- Interaction with Online Materials

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Demonstration of Video Delivery +

- ① View a Sample of the Guided Notes
- ② Go to Video
- ③ Watch and participate...

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Example of Video

ASR #38

- Is this a codic?
- Saying “cookie” as a result of seeing the word “cookie”
- 1=yes
- 2=no



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Live Online Delivery

- Review of Key and Difficult Points
- ASRs (Polls)
- Q&A time
 - Short sample of session from recording
 - Title: BEHP5000 Co-Instructor Session – Katie Nicholson_44
 - Uploaded on: 09/18/2011 9:23 PM

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Other Online Material

Go to Angel

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Evaluation & Improvement

- Curriculum Evaluation & Improvement
- Instructor Evaluation & Improvement
- Program Enrollment
- Student Evaluation & Outcomes

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Evaluation & Improvement

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Ongoing Curriculum Improvement

- Revision of materials and ASRs
- Replacement of segments in Unit Videos
- Sometimes an entire Unit Video is redone by instructor or even replaced by another instructor
- Item analysis and other procedures to evaluate and improve tests

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Long-term Curriculum Improvement

- Data used for major curriculum revisions
- Example: Many lessons learned!
 - 1 Unit per week instead of 7 units in 9 weeks
 - 5 minute video segments instead of 20 minutes
 - And many more...!

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Evaluation & Improvement

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Performance Matrix: Bonus Pay Example

Performance Matrix																	
Item	-20	-10	0	10	20	30	40	50	60	70	80	90	100	110	120	Weighting	Weighted Score
Discussion Board	0		1					2					3			20%	15.0
Online Meetings																	
Hosted	7	8	9										10	11	12	20%	24.0
Checklists Completed	7	8	9										10			10%	10.0
Checklists Submitted																	
On-Time	5	6	7			8				9			10			5%	1.5
Scorecard	30		35					40					50			15%	20.0
Student Satisfaction Surveys	14		15		16	17	18			19			20			30%	24.0
			Base										Goal			100%	94.5
																Total Possible Bonus	\$ 100.00
																Total Bonus:	\$ 94.50

Co-instructor Z contributed to the discussion board on average 3 times a week, hosted all of his Online Meetings, and subbed for his fellow co-Instructors twice. Completed all of his checklists and submitted all but of them two on-time, earned 50 points on the Online Meeting scorecard and was rated 19/20 by his students.

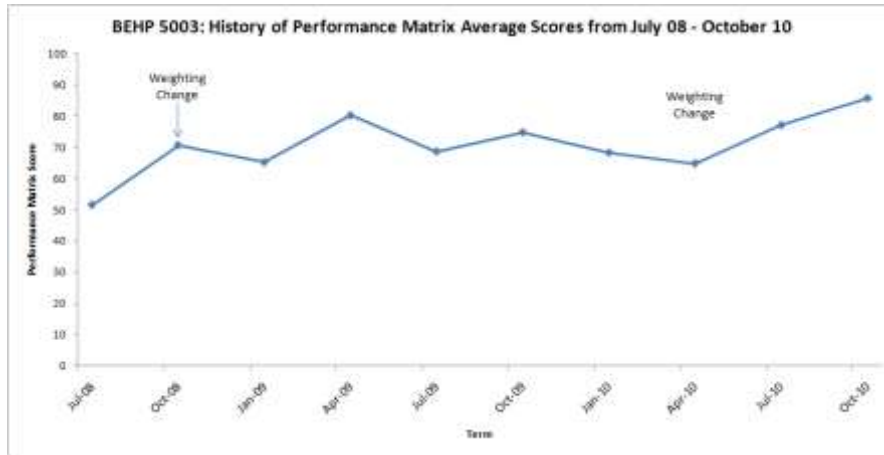
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Performance Matrix: Bonus Pay Example

- Co-Instructor Z's weighted scores are calculated by multiplying the **Conversion Score** (from the conversion scale) X by the **Weighting Score**.
- This gives Co-instructor Z weighted scores of respectively 15, 24, 10 , 15, 20 and 24 for a total of 94.5.
- Therefore, he earns 94.5% of his total possible earning him bonus pay of \$94.50.

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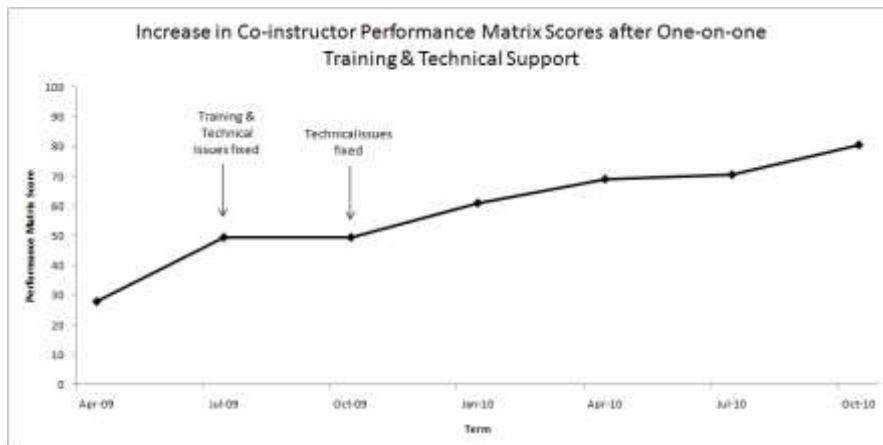
Performance Matrix Average



BEHP 5003: History of Performance Matrix Average Scores

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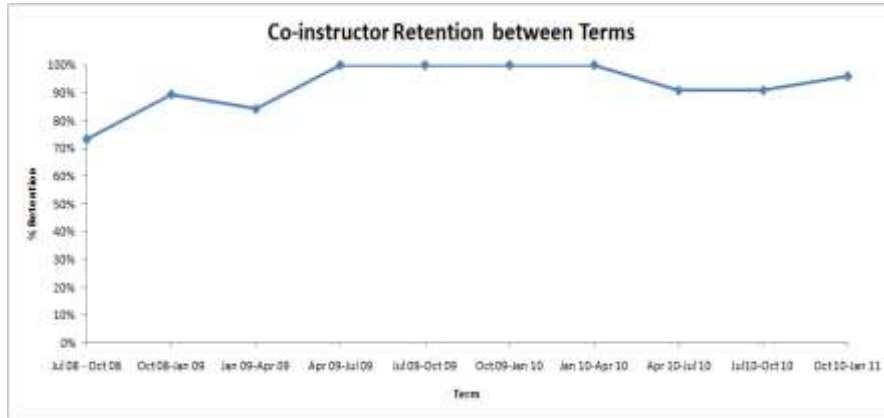
One-on-One Training



Increase in Co-Instructor Performance Matrix Score after One-on-One Training & Technical Support

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Co-Instructor Retention



Co-Instructor Retention Between Terms

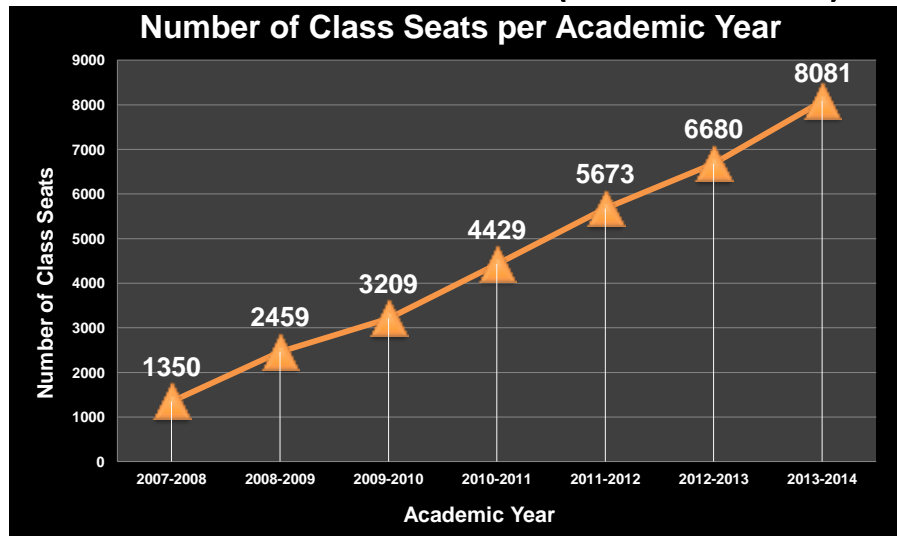
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Evaluation & Improvement

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- Instructor Evaluation & Improvement
- **Program Enrollment**
- Student Evaluation & Outcomes

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Student Enrollment (Class Seats)



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2014-2015 Projected Enrollment

- Student seats in first ½ of 2014-2015:
 - April 2014 Term: 2402
 - July 2014 Term: 2685
 - TOTAL: 5087
- Projected: 10,174

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Evaluation & Improvement

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- **Student Evaluation & Outcomes**

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Data Used for Student Evaluation

- Acquisition ASRs
- Fluency ASRs
- Unit Practice Tests
- Unit Tests (2 per unit)
 - Scores & Item Analyses
- Comprehensive Final Examinations
- Pass Rate for Courses
- Mock Behavior Analysis Exams

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Other Data Used for Program Evaluation

- Feedback by Co-Instructors based on interaction with students in live sessions, discussion board, etc.
- Feedback by Students
- Pass Rate for Certification Exams

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2013 BCaBA Exam Pass Rate

- 67% of first-time candidates passed exam
- Only one university did better (72%)
 - It is a small degree program (10 candidates)
- Range: 35% to 72%
- Our # of candidates: 304
- That is $304/699 = 44\%$ of all candidates
- Overall pass rate for all candidates: 57%
- Overall pass rate for other programs: 47%

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2013 BCBA Exam Pass Rate

- FIT's ABA Online Pass Rate: 66%
- Average Pass Rate: 58%
- Range: 0% to 100%
- # of FIT Candidates: 566
- That is $566/3006 = 19\%$ of all candidates
- All programs with higher pass rates were very small degree programs
- Second largest certificate program: 56% (172)

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The Bottom Line: Student Outcomes

- Caution: To train behavior analysts it is necessary, but not sufficient to provide excellent academic instruction
- We also need excellent supervised work experience
 - Some stories

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THANK YOU!

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