Evidence-Based Teaching Strategies for Student Success

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Today’s Workshop Goals

Part 1
- **Goal #1** Introduce ourselves
- **Goal #2** Define our terms & discuss best evidence for EBT & EBL
- **Goal #3** Describe 3 key principles underlying EBT & EBL (metacognition, motivation, & practice testing)

Part 2
- **Goal #4** Discuss & demonstrate EBT & EBL techniques for increasing metacognition & motivation
- **Goal #5** Discuss & demonstrate EBT & EBL techniques for increasing practice testing
- **Goal #6** Provide key references & resources
Goal #2 Define our terms & discuss best evidence for EBT & EBL

- **Evidence-Based**
  - K&K adapted definition = *empirical methods focused on improving performance; experimental- & experience-based efficacy under controlled conditions* (AKA “what works!”)
  - History: Evidence-Based Medicine (EBM), Evidence-Based Practice (EBP) & Evidence-Based Treatment (EBT) in Clinical Psychology, Evidence-Based Practice in Psychology (EBPP)

- **Research Findings**
  - Psychological science has contributed much to EBT & EBL (e.g., Campbell et al., 2015; Gurung & Schwartz, 2009; Halpern & Hakel, 2003; Mayer, 2014; McKeachie & Svinicki, 2006)
  - Our personal favorite = Dunlosky et al., 2013
Goal #3 Describe 3 key principles (Metacognition, Motivation, & Practice Testing) underlying EBT & EBL

1. **Metacognition**
   - Successful students monitor thoughts, feelings, and actions of self (and others) during learning (e.g., Bannert et al., 2014, Kinnebrew et al., 2014; Veenan et al., 2006)

2. **Motivation**
   - To reach their goals, successful students self-regulate, persevere, & delay gratification (e.g., Haynes Stewart et al., 2011; Mischel et al., 1989, 1996, 2011; Schunk & Zimmerman, 2013)

3. **Practice Testing**
   - Research shows that practice testing & distributed practice might be the single BEST methods for learning (e.g., Dunlosky et al., 2013)
**Dunlovsky et al., 2013**

**Summary of Findings**

### Table 4. Utility Assessment and Ratings of Generalizability for Each of the Learning Techniques

<table>
<thead>
<tr>
<th>Technique</th>
<th>Utility</th>
<th>Learners</th>
<th>Materials</th>
<th>Criterion tasks</th>
<th>Issues for implementation</th>
<th>Educational contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elaborative interrogation</td>
<td>Moderate</td>
<td>P-I</td>
<td>P</td>
<td>I</td>
<td>P</td>
<td>I</td>
</tr>
<tr>
<td>Self-explanation</td>
<td>Moderate</td>
<td>P-I</td>
<td>P</td>
<td>P-I</td>
<td>Q</td>
<td>I</td>
</tr>
<tr>
<td>Summarization</td>
<td>Low</td>
<td>Q</td>
<td>P-I</td>
<td>Q</td>
<td>Q</td>
<td>I</td>
</tr>
<tr>
<td>Highlighting</td>
<td>Low</td>
<td>Q</td>
<td>Q</td>
<td>N</td>
<td>P</td>
<td>N</td>
</tr>
<tr>
<td>The keyword mnemonic</td>
<td>Low</td>
<td>Q</td>
<td>Q</td>
<td>Q-I</td>
<td>Q</td>
<td>Q-I</td>
</tr>
<tr>
<td>Imagery use for text learning</td>
<td>Low</td>
<td>Q</td>
<td>Q</td>
<td>Q-I</td>
<td>P</td>
<td>I</td>
</tr>
<tr>
<td>Rereading</td>
<td>Low</td>
<td>I</td>
<td>P</td>
<td>Q-I</td>
<td>P</td>
<td>I</td>
</tr>
<tr>
<td>Practice testing</td>
<td>High</td>
<td>P-I</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>Distributed practice</td>
<td>High</td>
<td>P-I</td>
<td>P</td>
<td>P-I</td>
<td>P</td>
<td>P-I</td>
</tr>
<tr>
<td>Interleaved practice</td>
<td>Moderate</td>
<td>I</td>
<td>Q</td>
<td>P-I</td>
<td>P</td>
<td>P-I</td>
</tr>
</tbody>
</table>

**Note:** A positive (P) rating indicates that available evidence demonstrates efficacy of a learning technique with respect to a given variable or issue. A negative (N) rating indicates that a technique is largely ineffective for a given variable. A qualified (Q) rating indicates that the technique yielded positive effects under some conditions (or in some groups) but not others. An insufficient (I) rating indicates that there is insufficient evidence to support a definitive assessment for one or more factors for a given variable or issue.
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Goal #4 Discuss & demonstrate EBT & EBL techniques for increasing metacognition & motivation

- K & K Personal Evidence–Based Practices
  - **Mix it up + Relevance + Repetition** = Best personal methods we’ve found to increase metacognition & motivation, while also providing time for student engagement, active learning, critical thinking, & covering all the necessary content
Mix it up + Relevance + Repetition

**Mix it up**
- See, hear, do

**Personal relevance**
- Interactive
- Reflective

**Repetition**
- Necessary
- Comforting

**Evidence?**
- **Mixing it up**: We habituate to unchanging stimuli; **saliency bias**
- **Relevance**: Increases **motivation**, which is more important than IQ in success
- **Repetition**:
- Leads to **deeper processing & scaffolds** for later learning (e.g., children need answers repeated over & over, & love rereading the same books & repeated videos!)
Relevance? “Values Walk”
Front of Classroom

Agree

Strongly Agree

Strongly Disagree

Disagree

Back of Classroom
Actor

Back of Classroom

Front of Classroom

Writer

Director

Producer

("Sorters")
a. Using a stopwatch, test to see how fast you can name the color of each rectangular box.

b. Now, time yourself to see how fast you can state the color of ink used to print each word, ignoring what each word says.
Chapter 2 (Biology)
Importance of interaction of Genes & Environment
Ask Students: “How is what we’re learning today connected to what we’ve already learned?”

112 Chapter 3 | Stress and Health Psychology

Looking Back/Looking Ahead

Like most academic disciplines, psychology covers many different topics and areas of research—and this introductory text is designed to introduce you to the entire field! Because this may be overwhelming, we’ve focused on the core concepts, supported by everyday examples to help you understand and apply the information to your own life. We’ve also organized the book into chapters to match the subfields of psychology. Unfortunately, this division often creates an artificial sense that the material in one chapter is unrelated to content in the next one. Answering the following questions will help you “look back and look ahead” to see the important connections between chapters.

1. In the Prologue, you learned about Critical Thinking Components (CTCs) such as empathizing (affective), accepting change (affective), and resisting overgeneralization (cognitive). Describe how practicing these CTCs may help you to cope with stressors in your life.

2. In Chapter 2 (Neuroscience and Biological Foundations), you discovered that the sympathetic and parasympathetic nervous systems work together in a way that helps us to adapt to the demands of the environment, especially emergencies. How have the stressors in our modern world (Sources of Stress) changed the adaptability and effectiveness of these two systems?

3. In this chapter, you learned that the effects of prolonged stress may result in permanent damage to the hippocampus. Describe what you learned about the hippocampus in Chapter 2 (Neuroscience and Biological Foundations) and discuss what cognitive changes we might see in someone experiencing long-term stress.

4. In Chapter 12 (Motivation and Emotion), you will learn about some of the factors that influence us to set goals and maintain the necessary behaviors to achieve those goals. Health psychologists are particularly interested in how changes in behavior can improve health outcomes. Although most of us know what we should do to be healthy, we sometimes lack the motivation to stick to that diet or exercise routine. Choose one aspect of improving your health (such as decreasing tobacco use or increasing exercise) and describe a way to motivate yourself to follow through with it.

5. In Chapter 16 (Social Psychology), you’ll explore the ways in which other people influence our thoughts, feelings, and actions in both positive and negative ways. Consider how your social relationships and interactions with the people in your life (friends, family, co-workers, classmates, and professors) influence you. How do some of these relationships help you to cope better with your life stressors? Or perhaps contribute to them?

(Check your answers in Appendix B.)
Chapter 6 Learning

Katherine conditions Karen
Jim conditions Dwight & Sheldon conditions Penny!
Good Examples of Relevance?
Note the increasing bicep circumference of these G.I. Joe action figures. How might young boys respond & internalize this type of modeling & observational learning?
Groups asked to: “Quickly come up with all the words you’ve ever heard for abnormal behavior.”

Also useful for therapy, gender, sexuality, social.
Can You Identify the Real U.S. Penny?

(a)  
(b)  
(c)  
(d)  
(e)  

(f)  
(g)  
(h)  
(i)  
(j)  

Goal #5 Discuss & demonstrate EBT & EBL techniques for increasing practice testing

Practice Testing
- **Use your own class as a “lab”** (online self-quizzing)
- **In Class** (Foot Test, Embedded Quizzes, Pause & Reflect, Pair & Share, Diagnostic Categories)
- **Within Text** (Check & Review, Try This Yourself, Test Yourself, Identify the Research Method)
Use your own classroom as a lab
Fall 2014 PSY 111 Intro to Psych (DMACC)

- Practice testing:

<table>
<thead>
<tr>
<th>Practice test before exam</th>
<th>No practice test before exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average exam score: 74%</td>
<td>Average exam score: 58%</td>
</tr>
</tbody>
</table>

- Distributed practice:

<table>
<thead>
<tr>
<th>Wiley Plus tutorial quiz completion distributed across 4 weeks</th>
<th>Wiley Plus tutorial quiz completion within 24 hours of exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average exam score: 70%</td>
<td>Average exam score: 61%</td>
</tr>
</tbody>
</table>
Psychoanalytic/psychodynamic  Behavioristic  Humanistic

Sociocultural  Evolutionary  Cognitive  Biopsychology

Back of Classroom  Front of Classroom

(“Foot Test”)
Based on our class discussion and your textbook, what three terms can you apply to the motivation and behavior of this individual?
Based on our class discussion...

- What happens to excess neurotransmitters or to those that do not “fit” into the adjacent receptor sites?
Answer: The sending neuron normally reabsorbs the excess (called “reuptake”), or they are broken down by special enzymes.
Identify the research method

You’ve undoubtedly heard many warnings about the dangers and problems associated with teenage sexuality. In addition to potentially fatal sexually transmitted infections (STIs), having unprotected sex at too early an age can lead to unplanned pregnancies, which would seriously affect your career choices and lifetime options.

Researchers also have found that the genes we inherit apparently play a role in the age at which we first have sexual intercourse, when we first go through puberty, and the age at first childbearing (Carlson et al., 2014; Harden, 2013). Why? Evolutionary psychologists have explained that organisms in environments with abundant and reliable resources tend to have a slower, “quality-oriented” reproduction strategy and age at first sex (AFS) compared to a faster, “quantity-oriented” strategy for those with scarce and undependable resources (Belsky et al., 1991; Charnov, 1993; Stearns, 1992).

Unfortunately, those with adverse environments in early life, such as a lower socioeconomic status (SES) and ethnic-minority background, tend to initiate sexuality at a lower age compared to those from more advantaged circumstances (Carlson et al., 2014). Keep in mind, however, that there are always individual differences in how we profit or suffer from our genetic and environmental backgrounds (e.g., Pluess & Belsky, 2013).

Setting aside problems with possible STIs and unplanned pregnancies, do initial sexual experiences have a lasting impact on our overall psychological satisfaction with our sexual lives? To study this question, researchers asked 331 young men and women to anonymously complete a questionnaire measuring their level of anxiety, regret, and contentment surrounding their first sexual act. They were also asked to evaluate their current sex life (Smith & Shaffer, 2013).

As you might expect, those who reported more positive first-time experiences also reported higher levels of physical and emotional satisfaction in their subsequent and current relationships. Specifically, those who felt loved and respected by their partner during their first sexual experience found later encounters more emotionally satisfying. Sadly, people who described feelings of anxiety and negativity during their first sexual experience reported lower sexual satisfaction with their current sex lives.

Why is this research important? Some people may believe that the first sexual experience is “no big deal” or something you just have to get out of the way. However, this research reveals that it may have a lasting impact.

Test Yourself
1. Based on the information provided, did this study (Smith & Shaffer, 2013) use descriptive, correlational, and/or experimental research?
2. If you chose:
   - descriptive research, is this a naturalistic observation, survey, case study, or archival research?
   - correlational research, is this a positive, negative, or zero correlation?
   - experimental research, label the IV, DV, experimental group(s), and control group.

Check Your Answers in Appendix B.

Note: The information provided in this study is admittedly limited, but the level of detail is similar to what is presented in most textbooks and public reports of research findings. Answering these questions, and then comparing your answers to those in the Appendix, will help you become a better critical thinker and consumer of scientific research.
Review of Today’s Specific EBT/EBL Techniques:
Increasing Metacognition & Motivation

- **Mix it Up + Relevance + Repetition**
  - Sample ideas discussed earlier with multiple applications
    - ...Values Walk & Sorters (all chapters)
    - ...Pause & Reflect & Pair & Share
    - ...Stroop Test (Intro, Research, Experimenter Bias, Consciousness)
    - ...Word Exercise (Gender, Sexuality, Abnormal, Social)
    - ...Penny Demo (Intro, Consciousness, Memory)
Review of Today’s Specific EBT/EBL Techniques:
Increasing Practice Testing

- **Use your own class as a “lab”** (online self-quizzing)
- **In Class** (Foot Test, Embedded Quizzes, Pause & Reflect, Pair & Share, Diagnostic Categories)
- **Within Text** (Check & Review, Try This Yourself, Test Yourself, Identify the Research Method)
Goal #6 Provide Key References & Resources (email us for complete list)


A few of our favorite CONTENT & TEACHING resources!

- Ted Talks
- Applications of Psychology
- Psychology Matters
- Teaching Resources at MERLOT!
- Animations & Photos for PPT
- Great Technology information
- CNN, ABC, & more.
  Video clips updated daily!
- Annenberg Series: FREE to view in class!
- Fun Prizes!
**STP: Office of Teaching Resources**
Classroom activities, annotated bibliographies, film guides, lab manuals, advising aids, textbook compendiums, & much more.
http://www.teachpsych.org/otrp/resources/index.php

**ToPIX: The Office of Teaching Resources Idea Exchange**
Comprehensive resource of peer reviewed classroom demos, activities, handouts, video/audio, & current events, all organized by topic. Also includes info on assessment, rubrics, outcomes, teaching tools & more.
http://topix.teachpsych.org/w/page/19980966/About-ToPIX

**Online Psychology Laboratory (OPL)**
OPL provides highly interactive resources for the teaching of psychological science. The peer-reviewed materials include online studies & correlational studies, large data sets, demonstrations, & teaching aids. You are invited to use the site for further psychological phenomena & the scientific process, including research methods, practical applications, & ethics.
http://opl.apa.org/
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- **Goal #6** Provide key references & resources
“Students don’t care how much you know, until they know how much you care!”
Education is not the filling of a pail, but the lighting of a fire.

*William Butler Yeats*
Thank You For Attending Our Presentation!

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