Evidence-based strategies to improve time management and self-directed learning in higher education

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May 2nd, 2013

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Slide 1

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Douglas A. Johnson, Ph.D.

Slide 2

Students adopt ineffective learning strategies that undermine their achievement (or at least don’t improve it)

- Simple techniques are available that teachers and students could use to improve student learning and achievement
- Many teachers are not being told about these techniques
- Many students are not using them
- Students instead adopt ineffective learning techniques that undermines achievement, or at least does not improve it
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- Techniques with no or limited utility: summarization, highlighting, mnemonics, imagery use, and rereading

*From Dunlosky et al., 2013*

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- Recent surveys indicate that students endorse the use of rereading and highlighting

Slide 5

- Note that the frequently used and endorsed techniques are also the ones that doesn’t work
Why don’t they learn from experience?

Metacognition: Knowledge and beliefs about one’s own cognitive processes
In regards to academics, the awareness of strengths and weaknesses in regards to course material
Common problem of students believing they have achieved, when in fact they have not

Despite a specialized focus on how people learn, introductory and educational psychology textbooks contain little to no coverage on effective self-study techniques or practical tools that instructors can implement
Instead tend to focus of broad theories that are difficult to translate into working applications
Other disciplines do not tend to fare any better
“there is an overwhelming assumption in our educational system that the most important thing to deliver to students is content” (McNamara, 2010)

- Students who succeed in supervised learning environments do not necessarily transfer these skills to unsupervised learning environments, such as the at-home self-study required by higher education
- Potentially huge benefit if introductory courses taught about self-study skills across a variety of disciplines

- Opportunity to support well-intentioned but struggling students
- Where should we put our emphasis?
- Weak prerequisite skills and poor motivation as obstacles. The present analysis deals only with motivation.
- Typical to locate the problem as internal to the student
- An alternative approach

*From Michael, 1991*
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I remember the rage I used to feel when a prediction went awry. I could have shouted at the subjects of my experiments, “Behave, damn you! Behave as you ought!” Eventually I realized that the subjects were always right. They always behaved as they should have behaved. It was I who was wrong. I had made a bad prediction. Walden Two (pg. 271)

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- Tendency to simply blame students (motivation, demographic changes, kids these days, etc)
- While blaming students may be comforting on occasion, it ultimately does little to enhance our teaching strategies or educational outcomes
- If we want to make gains, need to focus on the academic environment

From Skinner, 1948
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Some students do find the material intrinsically interesting

This is terrific

- The question of motivation
- Some students does seem intrinsically motivated

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Some students do find the material intrinsically interesting

but that interest is often quickly satisfied with minimal contact

and must compete with other forms of reinforcement that often can’t be postponed

- But intrinsic motivation is usually satisfied much faster than the instructor would like
- Must compete with many other forms of intrinsic motivation
- Other sources of intrinsic motivation may be difficult to delay, unlike studying

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We often can’t directly control how intrinsically interesting the critical material is

- Also, instructors can do very little to modify intrinsic motivation
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- Instructors can control grades and their relation to deadlines

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- The procrastination scallop illustrates the problem
- Pattern that is common for most students (and non-students)

**Figure from Michael, 1991**

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- Solution to make the scallop more manageable
Don’t expect students to be immediately grateful

- Myth that they would perform better if given more time

Even though frequent deadlines help break up the procrastination scallop, another time management problem remains...

- Even if procrastination was fixed, another common time management problem remains

The planning fallacy

- Planning fallacy: The tendency to underestimate the amount of time required to complete a project or assignment
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- People tend to be too optimistic about future plans, downplaying obstacles or other factors that led to time management failure in the past
- Difficult to accurately estimate the whole of a project

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- Unpacking a task: Base time estimates on estimates for each component of the task (and then add them up) rather than simply estimating the entire project
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Whose cuisine reigns supreme?

- Example: Even experts, such as accomplished chefs, poorly plan out their necessary time

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Effects of unpacking for time estimation

Figure from Kruger and Evans, 2004

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- Public promise about deadlines
- Enforced by significant other, roommate, friend, or family member
- Publicly stated promises tend to be more difficult to break than the private promises

Make public promises
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- Set personal deadlines that occur more frequently than instructor-imposed deadlines

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- Don't assume the future will be problem-free or a best case scenario
- Incorporate past obstacles into future estimates

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Passive study is a very ineffective method for acquiring knowledge

- Illustration of sleep learning as a passive learning strategy

Slide 33

Passive study is a very ineffective method for acquiring knowledge

- Illustration of Mozart Effect as a passive learning strategy

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What does a penny look like?

(don't cheat and take one out of your pocket)
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Students need to take notes, rehearse the material, study notes, rehearse the material, study the textbook, rehearse the material, answer questions in the book or study objectives posed by the instructor, and rehearse the material.

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- SQ3R approach

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- Step 1: Survey the Material
- Skim titles and headings of each chapter
- Pick out important looking elements without reading carefully yet
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Step 2: Develop Questions
- Predictions regarding important material
- Review of any learning objectives supplied by instructor

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Step 3: Read Actively
- Read through material, hunting for material to confirm predictions or answer objectives
- Read all the material so context can help facilitate acquisition

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Step 4: Recite the Answers to Questions
- Create flashcards
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Step 5: Review Study Materials
- Rehearse material repeatedly until responses are both fast and accurate
- Reread materials to help connect memorized concepts (will be much easier post-memorization)

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SQ3R is not very well known, although those familiar with it assume it is

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SAFMEDS
- An evidence-based alternative to traditional flashcards
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SAFMEDS

- S – say – the learner should say the response out loud. Not “think” the responses silently.
- Related to phenomenon labeled as the production effect

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SAFMEDS

- A – all – one works with the entire deck of cards as a unit
- Can individually practice troublesome cards, but don’t neglect the entire deck

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SAFMEDS

- F – fast – in the timed sessions, work through the cards as quickly as possible
- Not slowly like flashcards
- This is a standard that goes beyond accuracy
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SAFMEDS

M – MINUTE – the brief, timed sessions

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SAFMEDS

E – EVERY – do the brief, timed sessions every day, at least once a day
D – DAY – Count up correct cards and errors on a daily basis to assess progress (or lack of)

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SAFMEDS

S – SHUFFLE – the cards before doing a timing
Avoid becoming sequence dependent
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- keep the text on the back side relatively brief
- Typically, there will be multiple cards to cover each concept
- Avoid any irrelevant hints or cues (smudges, tears, strange words, highlighting, circled numbers, differing colors, etc)

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Let’s Practice

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- Myths revealed through research on SAFMEDS

Myths

• Thinking the answer is as good as saying it
• It is best to learn some first
• It is best to learn the cards in sequence
• It is best to make few or no errors as you learn
• Learning cannot occur without understanding
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The two learning techniques shown to have the highest utility in a recent article:

Practice testing and distributed practice

- Frequent deadlines, SQ3R, and SAFMEDS have elements of the most successful and evidence-based strategies

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- All of these are strategies that can be taught

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Instead of just blaming our students, let's utilize the findings from behavioral science to enhance learning

THE END
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