Self-directed learning in your curriculum—getting from theory to practice.

Bill Cutrer MD MEd, Douglas Larsen MD MEd, Sandrijn van Schaik MD PhD

IAMSE Webinar - September 15, 2016

The imperative for life-long learning

- Physicians need to be life-long learners
  - Rapidly expanding medical knowledge

- Life-long learning needs to be self-directed
  - After training external direction limited

- Self-directed learning needs to be fostered during medical education

Theoretical Frameworks

- Metacognition
- Self-directed Learning
- Self-regulated Learning
- Informed Self-Assessment
- Master Adaptive Learning

Metacognition

Thinking about thinking

- Flavell (1979): knowledge about cognition and control of cognition
- In context of learning: learning how to learn

Self-directed Learning

Knowles (1975):
- diagnosing one's learning needs
- formulating learning goals
- identifying resources for learning
- implementing appropriate learning strategies
- evaluating learning outcomes

What is learning?

Photo by Greg Riegler
https://creativecommons.org/licenses/by-nd/2.0)

Photo by skeeze via Pixabay

Hager P. Learning and Metaphors. *Medical Teacher.* 2008;30:679-686

Learning from practice
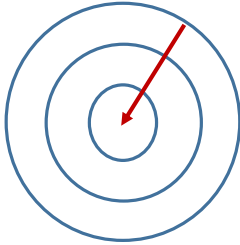
Photo by selmaemiliano via flickr
Taking Care of the Young
https://creativecommons.org/licenses/by-nd/2.0)

Lave J, Wenger E. *Situated Learning.* 1991

Self-regulated learning

Goals and Plans

Action and Monitoring

Assessment and Reflection
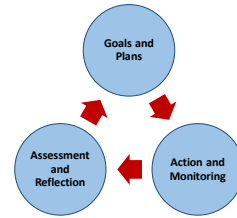
Zimmerman and Schunk, 2011

Goal setting is the answer! . . . Right?

- While some studies of learning goal activities have shown benefit, others have shown that learners struggle.
- Studies of pediatric residents using learning goals and individualized learning plans:
  - Only 39% felt that they were worth the time and effort
  - Only 26% tracked the progress of their learning goals
  - 57% felt that it was difficult to remember to work on their goals
  - Only 35% felt that they provided a helpful framework for learning
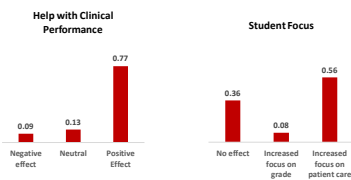 - Only 30% felt that they enhances their awareness of the learning process

Le STT et al 2010
Stuart E et al 2005

What if we change the timeframe?

- Washington University in St. Louis Patient-Centered Learning Goals Program
  - First piloted in the neurology clerkship
  - Third-year medical students in their core clinical clerkships
  - One goal each week
    - Bullet point plan for implementation and tracking
  - Follow-up section evaluating the previous weeks goals
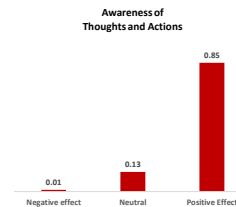 - Goals are shared with the attendings and residents

Effects on learning in the neurology clerkship

- 82 students participated in the program during the study period
- 75 completed the evaluation survey (91% response rate)

Help with Clinical Performance

Negative effect	Neutral	Positive Effect
0.09	0.13	0.77

Student Focus

No effect	Increased focus on grade	Increased focus on patient care
0.36	0.08	0.56

Larsen et al, in press

Effect of weekly goals in the neurology clerkship

Awareness of Thoughts and Actions

Negative effect	Neutral	Positive Effect
0.01	0.13	0.85

- "They allowed me to come up with concrete plans and to track my progress."

- "[I]t let me reflect and forced me to think about what I'm actually doing."

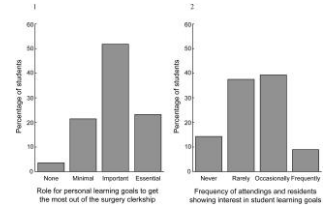- "The weekly goals made me think about things I needed to do."

Time determines monitoring

- What types of actions do you want to influence?
- How closely does it need to be monitored?
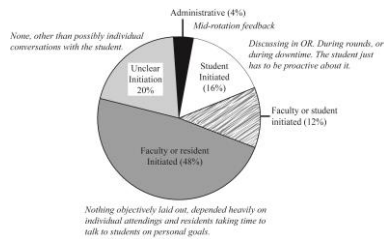- What are the resources to support the timeframe?

Learning goals are tools to navigate our environment

- Students on the third-year surgery clerkship
- End of year survey
- 126 students surveyed
- 60 responded (48% response)

Lyon-Warren et al, in press

The disconnect

Administrative (4%)
Mid-rotation feedback

None, other than possibly individual conversations with the student.

Discussing in OR. During rounds, or during downtime. The student just has to be proactive about it.

Unclear Initiation 20%

Student Initiated (16%)

Faculty or student initiated (12%)

Faculty or resident Initiated (48%)

Nothing objectively laid out, depended heavily on individual attendings and residents taking time to talk to students on personal goals.

Lyons-Warren et al, in press

Self-regulated learning is not about the self

- <u>Student's Perspective:</u> The goals certainly did influence my interactions with the team. . . .[M]y attendings took the time to pull them up and review them with me and provide suggestions for carrying out my goals. For example, I wanted to learn more about acute care and prevention of stroke which prompted [my attending] to provide me with good reading material. The team was also cognizant of my desire to try to localize lesions on my own and gave me the opportunity to practice . . . I also wanted to expand my physical exam repertoire and the teams were great about demonstrating and explaining certain maneuvers.

- <u>Attending's Perspective:</u> There's certainly some of the learning goals where it wasn't necessarily my expertise, that I was learning from the things that they were doing too, as opposed to teaching through me telling you what to do and how ... I try not to do that. But it just made it easier I think to have a more back and forth conversation, than a one-sided didactic type of session.

Its about the collaboration

- The number one determinant of learning goal efficacy was whether or not supervisors engage with learners in a collaborative effort around their goals.
- Both students and their supervisors had to see the goals as a tool to change what they would typically do
- Lockspeiser et al found that for residents using learning goals the two most important factors were: 1) program support and 2) engagement by faculty

Key elements in moving from theory to practice

- Time
  - Does the timeframe of your intervention support self-monitoring?
  - Does the timeframe influence day-to-day practice?

- Collaboration
  - Who are the collaborators in your intervention?
  - What are the incentives and disincentives towards collaboration?
  - Do both learners and their collaborators see your intervention as their own tool or as an externally imposed requirement?

Setting the Stage

- **Self-regulation** is important in fostering health care providers who will:
  - **MAINTAIN** their knowledge and skills in practice
  - **IMPROVE** their knowledge and skills in practice

- Set of behaviors requires:
  - an awareness of personal knowledge gaps
  - a willingness to address knowledge gap

  → **"Energy" that drives self-regulation**

http://www.jlfstone.net/wp-content/uploads/2014/07/Setting-the-Stage-for-Learning.jpg

What is a Master Adaptive Learner?

- Predominant work of clinicians is problem-solving

- Address problems based on prior knowledge and understanding

  (ROUTINE EXPERTISE)

  OR

- Utilize new learning and innovative solutions to address problems

  (ADAPTIVE EXPERTISE)

- Learning for now

- Learning for next year

- Learning for 20 years from now
  - Habits
  - Methods

AMA

Self-Regulated Learning in Medical Education
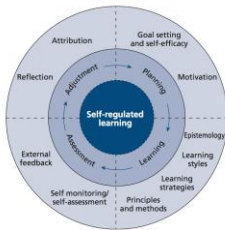
White, Gruppen & Fantone (2010) Self-regulated learning in medical education. *Understanding medical education: Evidence, theory and practice*
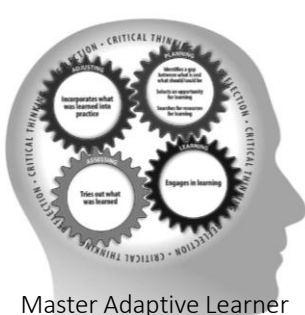
How Physicians Learn and How to Design Learning Experiences for Them: An Approach Based on an Interpretive Review of Evidence

Donald E. Moore, Jr., Ph.D.
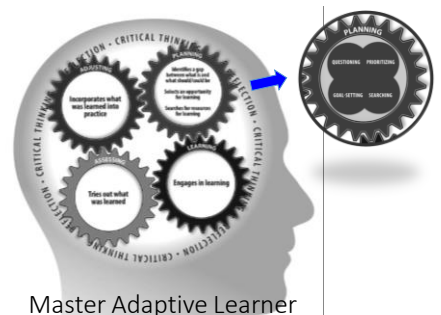Vanderbilt School of Medicine

Table 1. Stages of Learning

	Recognizing an Opportunity for Learning	Searching for Resources for Learning	Engaging in Learning	Trying Out What Was Learned	Incorporating What Was Learned
Studies on Physician Learning					
Geertsma et al 1982[16]	Priming	Focusing	Focusing	Follow-up	
Schon 1983[36]	Reflecting-in-action Reflecting-on-action	Decision to pursue information	Develop learning project		
Means 1984[37]	Awareness	Actively seeking a solution Decision-making			Problem resolution
Putnam, Campbell 1989[38]		Preparing to make a change	Making the change	Solidifying the change	Solidifying the change
Garcia, Newsom 1996[39]	Priming	Follow-up	Follow-up	Follow-up confirmation	
Pathman et al 1996[30]	Pre-awareness Awareness	Agreement		Adoption	Adherence
Slotnick 1999[31, 32]	Scanning	Evaluating	Learning	Gaining experience	Gaining experience

Moore (2007) *Continuing Education in the Health Professions: Improving Healthcare Through Lifelong Learning*
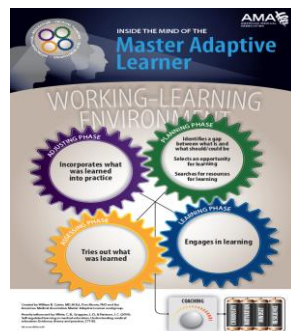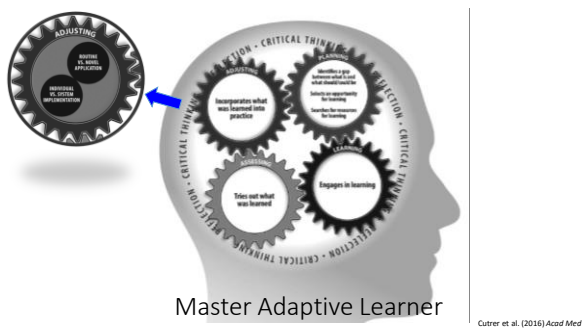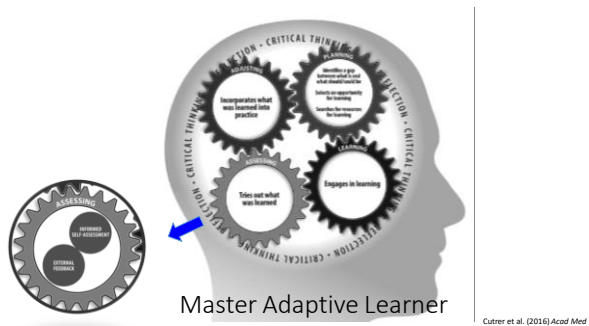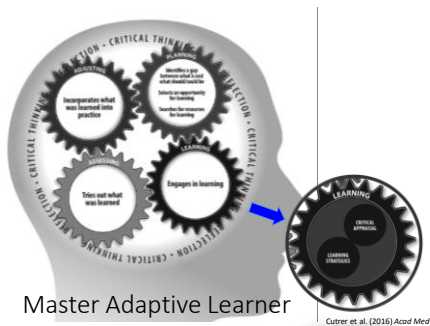

Master Adaptive Learner

Cutrer et al. (2016) *Acad Med*

Master Adaptive Learner

Cutrer et al. (2016) *Acad Med*

Master Adaptive Learner

Cutrer et al. (2016) *Acad Med*

Master Adaptive Learner

Cutrer et al. (2016) *Acad Med*

Master Adaptive Learner

Cutrer et al. (2016) *Acad Med*

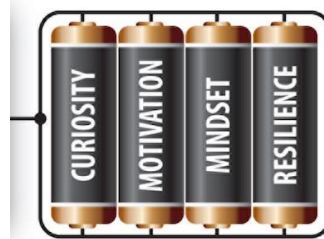

THE NEW YORKER

ANNALS OF MEDICINE
PERSONAL BEST
Top athletes and singers have coaches. Should you?
BY ATUL GAWANDE

OCTOBER 3, 2011

No matter how well trained people are, few can sustain their best performance on their own. That's where coaching comes in.
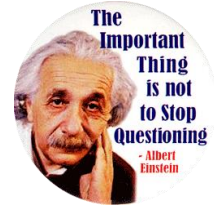
Learner Characteristics

Practical strategies

To assist students with development of relevant skills:
- Reflection
- Learning plans
- Learning goals
- Portfolios
- Coaches

Questions?

The Important Thing is not to Stop Questioning — Albert Einstein

http://glickitkyman.typepad.com/.a/6a013feit76a0e9f5f3bf16b0761586w970d-500wi

Key References

- Knowles MS. Self-directed Learning. New York: Association Press; 1975.
- White CB, Gruppen LD, Fantone JC. Self-regulated learning in medical education. In: Understanding Medical Education: Evidence, Theory and Practice, Second Edition. 2014
- Sandars J, Cleary TJ. Self-regulation theory: applications to medical education: AMEE Guide No. 58. Med Teach. 2011
- Moore DE Jr. How physicians learn and how to design learning experiences for them: An approach based on an interpretive review of the evidence. In: Hager M, Russell S, Fletcher SW, eds. Continuing Education in the Health Professions: Improving Healthcare Through Lifelong Learning. New York, NY: Josiah Macy Foundation; 2008.
- Cutrer W, Miller B, Pusic M, et al. Fostering the Development of Master Adaptive Learners: A Conceptual Model to Guide Skill Acquisition in Medical Education. Academic Medicine, 2016.
- Mylopoulos M, Brydges R, Woods NN, Manzone J, Schwartz DL. Preparation for future learning: A missing competency in health professions education? Med Educ. 2016;
- Regehr G, Mylopoulos M. Maintaining competence in the field: Learning about practice, through practice, in practice. J Contin Educ Health Prof. 2008
- Davis DA et al. Accuracy of Physician Self-assessment Compared with Observed Measures of Competence: A Systematic Review. JAMA, 2006
- Sargeant J, Armson H, Chesluk B, et al. The processes and dimensions of informed self-assessment: a conceptual model. Academic Medicine. 2010
- Murdoch-Eaton D and Whittle S. Generic skills in medical education: developing the tools for successful life-long learning. Medical Education 2012
- Rhem, J. Using reflection and metacognition to improve student learning: Across the disciplines, across the academy. Eds. Matthew Kaplan, et al. Stylus Publishing, LLC., 2013.
- Maggie Challis AMEE Medical Education Guide No. 19: Personal learning plans, Medical Teacher, 2000
- Sandars J. The use of reflection in medical education: AMEE Guide No. 44. Medical Teacher 2009
- Zimmerman BJ, Schunk DH. Self-regulated learning and performance. In BJ Zimmerman, DH Schunk (Eds.) *Handbook of Self-Regulation of Learning and Performance*. Routledge: New York, 2011. Pages 1-12
- Larsen DP, Larsen DP, Naismith RT, Margolis M. High-frequency learning goals: Using self-regulated learning to influence day-to-day practice in clinical education. *Teaching and Learning Medicine* 2016, in press.
- Lyons-Warren AM, Kirby JP, **Larsen DP**. Student views on self-regulated learning in a surgery clerkship. *Journal of Surgical Research* 2016, in press.
- Stuart E, Sectish TC, Huffman LC. Are residents ready for self-directed learning? A pilot program of individualized learning plans in continuity clinic. *Ambulatory Pediatrics* 2005;5:298-301.
- Li STT, Tancredi DJ, Co JPT, West DC. Factors associated with successful self-directed learning using individualized learning plans during pediatric residency. *Academic Pediatrics* 2011;10:124-30.
- Lave J, Wenger E. *Situated learning: Legitimate peripheral participation.* Cambridge: Cambridge University Press, 1991.