Reflections on How to Enhance Learning: HPL II

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Discussion: resources and assessments

- What model, research, or other source do you currently base your adult learning on?

- How do you assess the quality and/or fidelity of trainings for your SPDG?
  - *HQPD Observation Checklist*
  - *SPDG-created assessment*
  - *Other*
- Please name one piece of information/learning you're hoping to get out of today's discussion.

Please answer using your phone or the chat window.

How did I get here

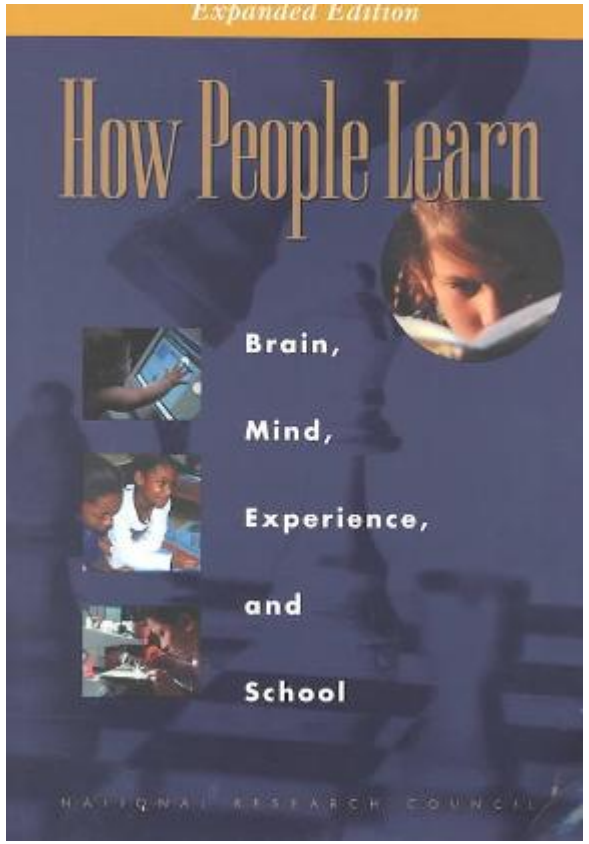
Table 1. Characteristics of the adult learning methods that were the focus of analysis

Features/characteristics	Definition
Planning	
Introduce	Engage the learner in a preview of the material, knowledge, or practice that is the focus of instruction or training
Illustrate	Demonstrate or illustrate the use or applicability of the material, knowledge, or practice for the learner
Application	
Practice	Engage the learner in the use of the material, knowledge, or practice
Evaluate	Engage the learner in a process of evaluating the consequence or outcome of the application of the material, knowledge, or practice
Deep understanding	
Reflection	Engage the learner in self-assessment of his or her acquisition of knowledge and skills as a basis for identifying "next steps" in the learning process
Mastery	Engage the learner in a process of assessing his or her experience in the context of some conceptual or practical model or framework or some external set of standards or criteria

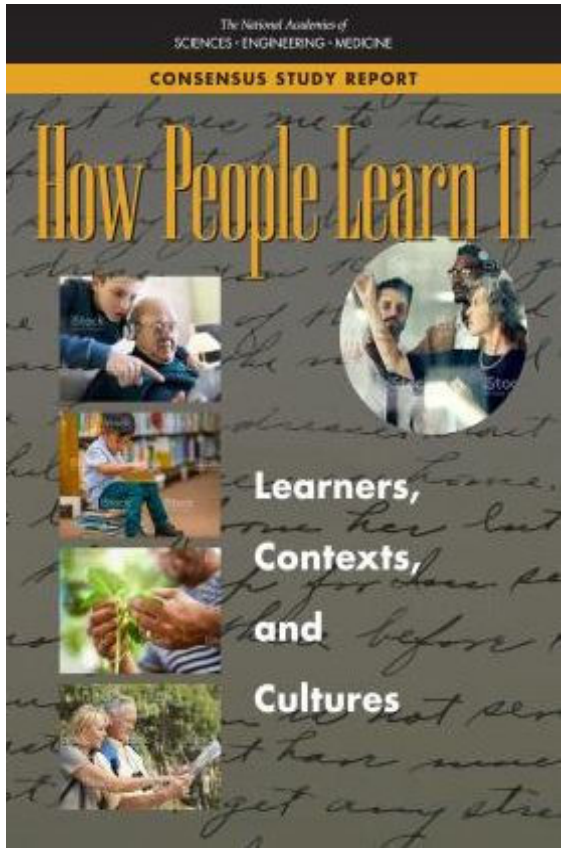
Table 2. Effect sizes for the different adult learning method characteristics and practices

Characteristics/practices	Number Studies	Number Effect sizes	Cohen's *d* mean effect size	95% Confidence interval
Introducing information				
Preclass exercises	9	9	1.02	0.63–1.41
Out-of-class activities/self-instruction	12	20	0.76	0.44–1.09
Classroom/workshop lectures	26	108	0.68	0.47–0.89
Dramatic readings	18	40	0.35	0.13–0.57
Imagery	7	18	0.34	0.08–0.59
Dramatic readings/imagery	4	11	0.15	−0.33–0.62
Illustrate/demonstrate				
Learner input	6	6	0.89	0.28–1.51
Role-playing/simulation	20	64	0.87	0.58–1.17
Real-life example/real life + role-playing	6	10	0.67	0.27–1.07
Instructional video	5	49	0.33	0.09–0.59
Practicing				
Real-life application + role-playing	5	20	1.10	0.48–1.72
Problem-solving tasks	16	29	0.67	0.39–0.95
Real-life application	17	83	0.58	0.35–0.81
Learning games/writing exercises	9	11	0.55	0.11–0.99
Role-playing (skits, plays)	11	35	0.41	0.21–0.62
Evaluation				
Assess strengths/weaknesses	14	48	0.96	0.67–1.26
Review experience/make changes	19	35	0.60	0.36–0.83
Reflection				
Performance improvement	9	34	1.07	0.69–1.45
Journaling/behavior suggestion	8	17	0.75	0.49–1.00
Group discussion about feedback	16	29	0.67	0.39–0.95
Mastery				
Standards-based assessment	13	44	0.76	0.42–1.10
Self-assessment	16	29	0.67	0.39–0.95

How People Learn I (HPL I) and II (HPL II)



National Research Council, 2000



National Academies of Sciences, Engineering, and Medicine, 2012

How People Learn I

Based on groundbreaking research from multiple disciples

Offered conclusions that were

- based on various lines of research and
- relevant to a variety of audiences

Research participants - WEIRD -Western, Educated, Industrialized, Rich, and Democratic

Culture (HPL II)

HPL II takes a sociocultural view of how people learn.

The charge was to include the social, emotional, motivational, cognitive, developmental, biological, and temporal contexts in explaining how learning occurs.

Integrating different cultural practices is a key learning challenge.

Culture influences not only what people learn but also how they learn it.

Poll: What about these books?

- Have you used either or both of these books?
  - Yes, one of them.
  - Yes, both of them.
  - No neither of them.
- Have you found them helpful?
  - Yes
  - No
  - NA

Theoretical Shift in Education

All learning is a social process shaped by and infused with a system of cultural meaning.

Everyone brings to their opportunities to learn the experiences they have acquired through participation in cultural practices in communities.

Role of Emotion: New Understanding

- Emotion helps people attend to, evaluate, and react to stimuli and situations.
- The brain's network supports emotion, learning, and memory.
- Emotions are an essential and present everywhere in the dimensions of thought.
- Emotional process steers behavior, thought, and learning.

Critical Insight into Learning

Literally it is neurobiologically impossible to think deeply about or remember information about which one has had **no emotion** because the healthy brain does not waste energy processing information that does not matter to the individual.

Essentially Emotions Help Learners:

- Set goals,
- Knowing when to keep working and when to stop working,
- When you are on the right path to solve a problem,
- When you need to change course,
- What is important to remember, and
- What is not important to remember.

Conversely

Emotions like anxiety can undermine learning

Anxiety & worry – depletes cognitive resources and

Activates brain regions associated with fear and escape rather than learning

Memory

- Not a single construct that occurs in a single part of the brain.
- Instead it comprises distinct types of processes associate with different memory functions.
- It is an important foundation of most learning.
- It involves reconstruction rather than retrieval of exact copies of encoded mental representations.
- The mental file cabinet view of the mind has been **rejected**.

Poll: Emotion's role in your SPDG trainings

Have you thought about emotion in the development of your SPDG training opportunities?

- Yes, and we're applying it to development of our training.
- Yes, but we're still figuring out what it means for our training.
- No, but we're interested.
- Not certain.

If yes, what have you tried?

Please enter into the chat window or use your phone.

Types of Learning and Brain Development

Conclusion 3.1

The individual learner integrates many different types of learning both deliberately and unconsciously, in response to challenges and circumstances.

The way a learner integrates learning is shaped by social and physical environment and shapes his future learning.

Conclusion 3.2

Brain development follows a trajectory that is broadly consistent for humans but also individualized by environment and experiences.

Conclusion 3.3

Relationship between brain development and learning is reciprocal.

Processes that Support Learning

- Learning is supported by an array of cognitive processes that must be coordinated for successful learning to occur.
- Learners orchestrate processes essential to learning, such as attention, emotion regulation, and inhibition of incorrect or inappropriate responses.
- Memory—an essential component of most, if not all, types of learning.

How Memory really works

- Learning actually involves the skill of reconstructing memories based on past experiences and cues in the present environment, rather than reproducing copies of experiences.
- Each individual processes memories from a subjective perspective, so that **your** memories of the same information or episode will not be identical to those of another person.

Long-term Memory

- 3 types of long-term memory – Procedural or implicit memory is unconscious. Episodic memory is awareness of past events (personal history). Sematic memory fact or concepts not drawn from personal experience (states capitals).

- “Although some memories may last a lifetime, all are reworked over time, and most fall victim to disruption and interference and are rapidly forgotten.”

Role of Sleep on Memory and Learning

- Quantity of sleep and quality of sleep is important physical and mental health
- Sleep before learning sharpens brains ability to remember.
- Quantity of sleep after the learning encourages the retention of information from working memory in other parts of the brain for long-term memory.

- Walker, M. (2017) *Why we sleep: Unlocking the power of sleep.* New York, NY: Scribner

Strategies of **Knowledge Retention**: Spaced Practice vs Mass Practice

Spaced Practice vs Mass Practice

Greater learning occurs when using spaced than mass practice across:

- Learning materials and content (e.g., vocabulary learning, history facts, pictures, motor skills)
- Stimulus formats (e.g. audiovisual, text)
- For both intentional and incidental learning

Benefits of spaced learning are higher across learners ages 4 to 76 years.

Interleaved and Variables Practice

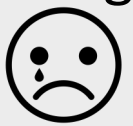
- **Interleaving learning** refers to mixing in different activities
- **Variable learning** refers to practicing skills in different ways
- Varying or interleaving skills, activities, or problems within a learning session promotes better learning

Using these techniques also require the spacing of learning

These are research areas where studies are ongoing.

Strategies for Understanding and Integration

- **Summarizing** creates a verbal (text or spoken) description that distills the most important information from the materials
- **Drawing** use graphics strategies to portray important materials
- Notetaking is a form of summarizing. But summarizing on computers is not all that helpful but writing by hand is helpful because it requires more mental processing.
- But what if you can't read your handwriting



Developing Explanations

Elaborative interrogation – learner is asked to ask themselves questions that invite deep reasoning such as why, how, what-if, what-if-not

Self explanation – learners produce explanations of material or of their thought processes while they are reading, answering questions, or solving problems – this involves more opened prompts than why – to generate explanations.

Teaching Others

You must construct explanations but unlike elaboration or self explanation, there are no specific prompts…the act of preparing to teach is more open-ended. Learners often feel more involved empowered since they are so actively involved.

Peer learning and teaching

Important Caveat. In developing explanations to teach others, learners may tend to make broad generalizations at the expense of significant specifics, particularly if they don't have time to work deeply.

Poll: Strategies in your SPDG trainings

- Which of the following strategies have you built in to your SPDG training?
  - Spaced practice
  - Variable or interleaving practice
  - Summarizing
  - Drawing
  - Elaborative Interrogation
  - Self-explanation
  - Teaching others

Motivation to Learn

- Motivation is a condition that activates and sustains behavior toward a goal.
- It is critical to learning and achievement across the life span in both informal settings and formal learning environments.
- Motivation is also increasingly viewed as an *emergent phenomenon*, meaning it can develop over time and changes as a result of one's experiences with learning and other circumstances.

Mindset – Carol Dweck Impacts Motivation

A key factor in motivation is an individual's *mindset*:

the set of assumptions, values, and beliefs about oneself and the world that influence how one perceives, interprets, and acts upon one's environment.

Fixed or Malleable Mindsets

- Learners who have a fixed view of intelligence tend to set performance goals demonstrating competence as a learning goal,
- Learners who have malleable incremental theory of intelligence tend to set mastery as a goal and to place greater value on effort.
- Mindsets develop over time as a function of learning experiences and cultural influences.

TABLE 6-1 Mindsets, Goals, and Their Implications for Learning

Mindsets	
Fixed mindset—*you are born with a certain amount of intelligence*	Growth mindset—*intelligence can be acquired through hard work*
Goals	
Performance goal—*works to look good in comparison to others*	Mastery goal—*works to learn/ master the material or skill*
Learning Behaviors	
Avoids challenges—*prioritizes areas of high competence*	Rises to challenges—*prioritizes areas of new knowledge*
Quits in response to failure—*expends less effort*	Tries harder in response to failure—*puts forth more effort*
Pursues opportunities to bolter self-esteem—*seeks affirming social comparisons*	Pursues opportunities to learn more—*seeks more problem-solving strategies*

Poll: The Growth Mindset Framework

- Do you use Carol Dweck's Growth Mindset framework in the development of your SPDG plans?
  - Yes, and we're applying it to development of our training.
  - Yes, but we're still figuring out what it means for our training.
  - No, but we're interested.
  - Not certain.

Self-Efficacy Impacts Motivation

- When learners expect to succeed, they are more likely to put forth the effort and persistence needed to perform well.
- Another important aspect of self-efficacy involves beliefs about whether you belong in a particular learning situation. Learners might misinterpret short-term failure as reflecting that they do not belong, even though they are learning something that new learners often don’t get it “right.”

Values Impact Motivation

The concept of **value** encompasses learners' judgments about:

(1) whether a topic or task is useful for achieving their learning goals,

(2) the importance of a topic or task to the learner's identity or sense of self,

(3) whether a task is enjoyable or interesting, and

(4) whether a task is worth pursuing.

Learners may not engage in a task or persist with learning long enough to achieve their goals unless they value the learning activities and goals.

Interests Impact Motivation

- Individual or *personal interest* is viewed as a relatively stable attribute of the individual.
- *Situational interest* refers to a psychological state that arises spontaneously in response to specific features of the task or learning environment.
- Situational interest is malleable, can affect learner engagement and learning, and is influenced by the task and materials trainers use or encourage.

Choice Impacts Motivation

- When learners believe they have control over their learning environment, they are more likely to take on challenges and persist with difficult tasks, compared with those who perceive that they have little control.
- Evidence suggests that the opportunity to make meaningful choices during instruction, even if they are small, can support autonomy, motivation, and ultimately, learning and achievement.

Learner's Goals Impact Motivation

- Goals—the learner's desired outcomes—are important for learning because they guide decisions about whether to expend effort and how to direct attention, foster planning, influence responses to failure, and promote other behaviors important for learning.
- Learners may not always be conscious of their goals or the motivations processes that relate to their goals.

Poll: Motivational concepts

- Indicate which of the following motivational concepts you have considered in development of your SPDG professional learning activities?
  - Learners' expectations for success (self –efficacy)
  - Interests
  - Values
  - Choices
  - Learners' goals

Digital Technology

Discussed the many opportunities technology can foster collaborative and cooperative learning.

Collaborative learning requires interdependency , where in group member work together to plan organize joint activities to complete a task or solve a problem.

Cooperative learning involves breaking a task into pieces: group members work separately, although they may coordinate activities that proceed in parallel.

Digital Technology

CONCLUSION 8-1: The decision to use a technology for learning should be based on evidence indicating that the technology has a positive impact in situations that are similar with respect to:

- the types of learning & goals for learning;
- characteristics of the learners;
- the learning environment;
- features of the social & cultural context likely to affect learning; and
- the level of support in using the technology to be provided to learners and educators.

Digital Technology

CONCLUSION 8-2: Effective use of technologies in formal training requires careful planning for implementation that addresses factors known to affect learning.

These factors include alignment of the technology with learning goals, provision of professional development and other supports for instructors and learners, and equitable access to the technology.

Poll: Digital technologies

- Besides power points and webinars, what types of digital technologies do you use in your SPDG training?
  - Bug-in-ear (BIE) coaching?
  - Virtual coaching meetings?
  - Virtual team support?
  - Other?

Needed Research: Learning Disabilities

- Advances in experimental design and neuroimaging methods have the potential to substantially improve the ways learning disabilities are defined and diagnosed.
- Unfortunately, there has been little integration between the field of neuroscience and studies of interventions for learning disabilities.
- Technology is also part of the story. Rapidly developing digital, electronic, and mechanical technologies offer promise for the accommodation of a broad set of learning disabilities, but more research is needed to better understand universal design for learning.

Conclusions

- Learning is a dynamic, ongoing process that is simultaneously biological and cultural. Each individual learner functions within a complex developmental, cognitive, physical, social, and cultural system.
- Learning involves the orchestration of interconnected networks. There is no learned skill that uses only one part of the brain, and these various brain systems support each aspect of the human experience: social, cognitive, emotional, and cultural functioning and even health and physiological survival.

Thank you for…..

- Inviting me to spend time with you today and
- Taking time out of your busy day to join us.

If you would like to talk more about these ideas, just email me…

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Thanks