



AETC Webinar

Using Adult Learning Principles to Create Effective Training

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Disclosures

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Today's Learning Objectives

Upon completion of this presentation, participants will be able to:

1. Describe the key principles of adult learning.
2. Reflect on how you like to learn today.
3. Reflect on the manner in which you currently deliver instruction today.
4. Describe how adult learning could be incorporated into your instructional materials.
5. Hypothesize about the impact that incorporating adult learning may have on your typical audience.

Agenda

1. Introduction to Adult Learning
2. Promoters and Barriers to Adult Learning
3. Simple Instructional Design
4. Example
5. Questions

Poll question

What is your present knowledge about adult learning theory, instructional and evaluation methods?

- **Novice** (no to incomplete understanding)
- **Advanced Beginner** (working understanding)
- **Competent** (good working understanding, independently employs adult learning)
- **Proficient** (deep understanding and experience)
- **Expert** (authoritative understanding, incorporates methods intuitively, creates new knowledge)

Adult Learning is Personal: Reframing

$$SST = \sum X_i^2 - N\bar{X}^2$$

$$SSB = \sum N_k (\bar{X}_k - \bar{X})^2$$

$$SSW = SST - SSB$$

$$\text{Mean Square Within} = \frac{SSW}{dfw}$$

$$\text{Mean Square Between} = \frac{SSB}{dfb}$$

$$F = \frac{\text{Mean Square Between}}{\text{Mean Square Within}}$$



Reframing: What's the Relationship Between ED Business and Facebook Use?

Time	Admits	Total Waiting	Total in ED	Overall Total	Max Hrs Waiting Room	Edwin	Edwin/10	TimeonFB_sec	TimeonFB_min	Shift_1night_0day
24	15	21	40	61	6.2	5.79	0.58	5540	92	1
1	14	9	40	49	6.7	4.42	0.44	7310	122	1
2	10	5	33	38	1.8	2.82	0.28	2941	49	1
3	9	1	28	29	0	2.09	0.21	1279	21	1
4	6	2	15	17	0	1.12	0.11	635	11	1
5	6	2	12	14	0.1	0.92	0.09	2481	41	1
6	4	9	11	20	0	1.13	0.11	6497	108	1
7	2	13	11	24	2.3	0.30	0.03	749	12	0
8	2	10	16	26	2.67	1.10	0.11	0	0	0
9	1	12	22	34	3.23	0.30	0.03	0	0	0
10	1	18	25	43	2.11	0.40	0.04	0	0	0
11	2	19	34	53	2.62	0.80	0.08	0	0	0
12	4	20	39	59	3.14	1.20	0.12	0	0	0
13	11	21	42	63	4.52	2.20	0.22	0	0	0
14	11	24	43	67	3.11	3.20	0.32	0	0	0
15	12	19	44	63	3.08	2.60	0.26	0	0	0
16	11	18	43	61	2.9	2.50	0.25	0	0	0
17	12	15	45	60	2.97	2.30	0.23	0	0	0
18	9	17	45	62	2.68	2.70	0.27	0	0	0
19	11	19	43	62	2.95	3.00	0.30	0	0	1
20	13	17	44	61	3.21	4.00	0.40	0	0	1
21	10	17	41	58	2.68	2.20	0.22	0	0	1
22	15	18	43	61	3.71	2.70	0.27	0	0	1
23	16	12	47	59	3.79	1.80	0.18	1418	24	1
24	20	15	41	56	7.08	2.80	0.28	3861	64	1

Reframing:

$$SST = \sum X_i^2 - N\bar{X}^2$$

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Summary of Data				
	Treatments			
	1	2	Total	
N	12	12	24	
$\sum X$	31962	749	32711	
Mean	2663.5	62.4167	1362.958	
$\sum X^2$	160100662	561001	160661663	
Std.Dev.	2610.6404	216.2177	2246.5232	
Result Details				
Source	SS	df	MS	
Between-treatments	40593807	1	40593807.04	F = 11.83115
Within-treatments	75484125.9	22	3431096.633	p=.002
Total	116077933	23		



There is a difference between social media use during day and night shifts in the ED.

Black E, Light J, Paradise Black N, Thompson L. Online Social Network Use by Health Care Providers in a High Traffic Patient Care Environment. J Med Internet Res 2013;15(5):e94

Adult Learning (Knowles, 1975;1984;1984)

1. Adults have a need to know why they should learn something.
2. Adults have a deep need to be self-directing.
3. Adults have a greater volume and different quality of experience than youth.
4. Adults become ready to learn when they experience in their life situations a need to know or be able to do in order to perform more effectively and satisfyingly.
5. Adults enter into a learning experience with a task-centered (or problem-centered or life-centered) orientation to learning.
6. Adults are motivated to learn by both extrinsic and intrinsic motivators.

Back to ANOVA

Why

Undergraduate disconnect. Was told this is fundamental. I needed to understand why it was fundamental.

Self-Directing Book learning wasn't cutting it. Mentor facilitated self-direction.

Experience Experience helped me understand that whys and self-direction were needed.

Need to Know Had a question, understood that that statistics is an important component of academia.

Problem Centered

I had a question/problem I was curious about.

Motivated

Extrinsic: Graduate school performance, mentor expectations, publication.

Intrinsic: Curiosity, sense of accomplishment.

Poll question

At what age do you consider an individual an adult?

- 18
- 21
- 30
- 35
- 36+

What is an adult?

Biological: One who has reached full sexual maturity.

Legally: One who has attained the age of majority, regarded as independent, self-sufficient, responsible.

Biopsychosocial: Adulthood is a culturally mediated social construct.

- Completion of education?
- Marriage?
- Parenthood?
- No longer on parent/guardian's health insurance?

Subjective markers of adulthood (Arnett & Tanner, 2006; Arnett, 2007).

1. Gaining a sense of responsibility for self.
2. Independent decision-making.
3. Financial independence.

Saint-Exupéry, A., Woods, K. (1943). *The Little Prince*.



I showed my masterpiece to the grown-ups and asked them if my drawing frightened them.

They answered: 'Why should anyone be frightened by a hat?' My drawing did not represent a hat. It was supposed to be a boa constrictor digesting an elephant. So I made another drawing of the inside of the boa constrictor to enable the grown-ups to understand. They always need explanations. My drawing No. 2 looked like this:



Adult learning promotoros

1. Trainer credibility

- Expertise (doesn't always mean post-nominal letters)
- Experience (specific to audience)
- Conviction

2. Authenticity

- Words match actions
- Apriori disclosure of expectations and criteria
- Personhood (authentic autobiographical examples)
- Responsive/adaptive to learner concerns
- Willing to admit error/fault

3. Space/Time/Place

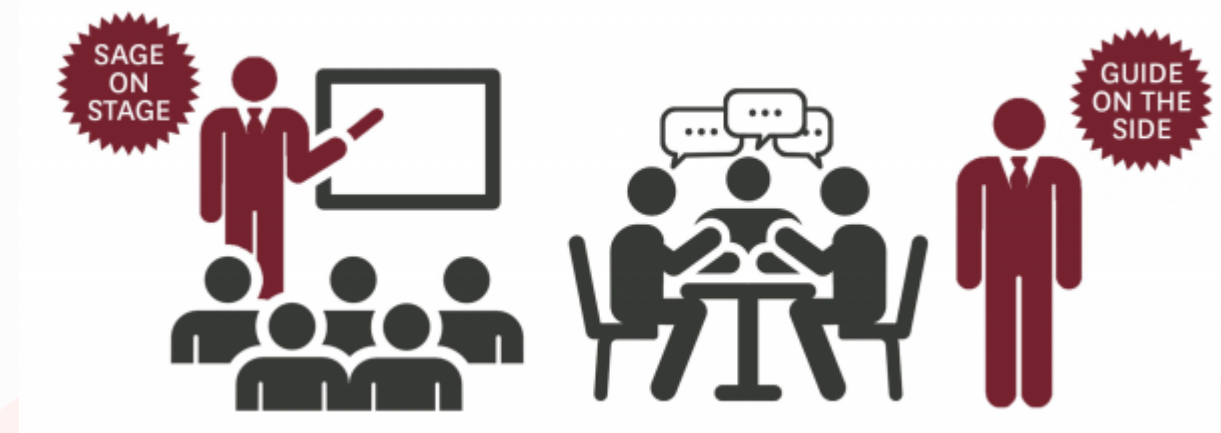
- Room design/materials that encourage collaboration
- Time for collaboration
- Informal and formal places for collaboration



IUPUI LE 104: <https://www.youtube.com/watch?v=0tMc0JY0978>

Adult learning inhibitors

- A lack of knowledge about audience (e.g. motivating factors)
- Failing to recognize audience expertise
- Rigidity
- Not facilitating dialogue
- Positioning the instructor as 'all knowing'



Szilas, C. (2018). TBL: <https://teche.mq.edu.au/2018/04/wtf-is-tbl/>

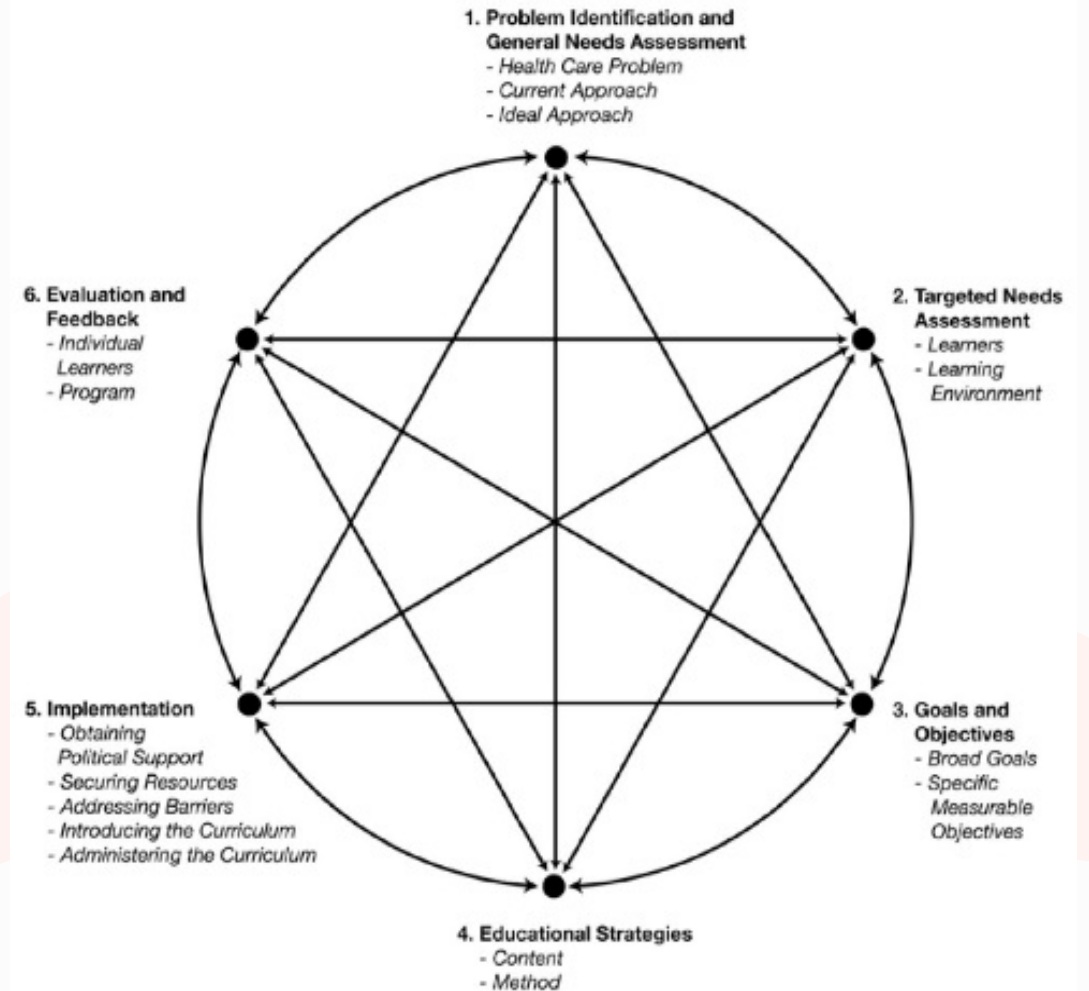
Adult learning theory in practice

- 1. Interactive instruction:** Group discussions, role playing, case studies
- 2. Individualization:** Individualization, guided self-direction
- 3. Experiential learning:** Job embedded training
- 4. Learner creation:** CarverPedia (Uiowa), open textbooks
- 5. Question banks:** Quizlet CPH, USMLE Question Banks
- 6. Just in time learning:** Khan Academy, LinkedIn Learning, StatsQuest

Instructional design: Kern's six step model

Instructional design methods are simple, so simple, we often leave out steps.

1. Problem identification & **needs assessment**
2. Targeted **needs assessment**
3. Goals & objectives
4. Educational strategies
5. Implementation
6. Evaluation & feedback
7. Repeat



Tariq M, Shamim M, Subhan A, , et al. 2017, 'Re-structuring a University Hospital's Internship Program Using Kern's Six-Step Model of Instructional Design', *MedEdPublish*, 6, [1], 38, <https://doi.org/10.15694/mep.2017.000038>

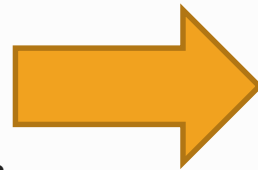
Needs assessments (poll)

Do all pediatric residents in North Central Florida need to receive instruction about the congenital transmission of Chagas disease?

- Yes
- No
- Maybe

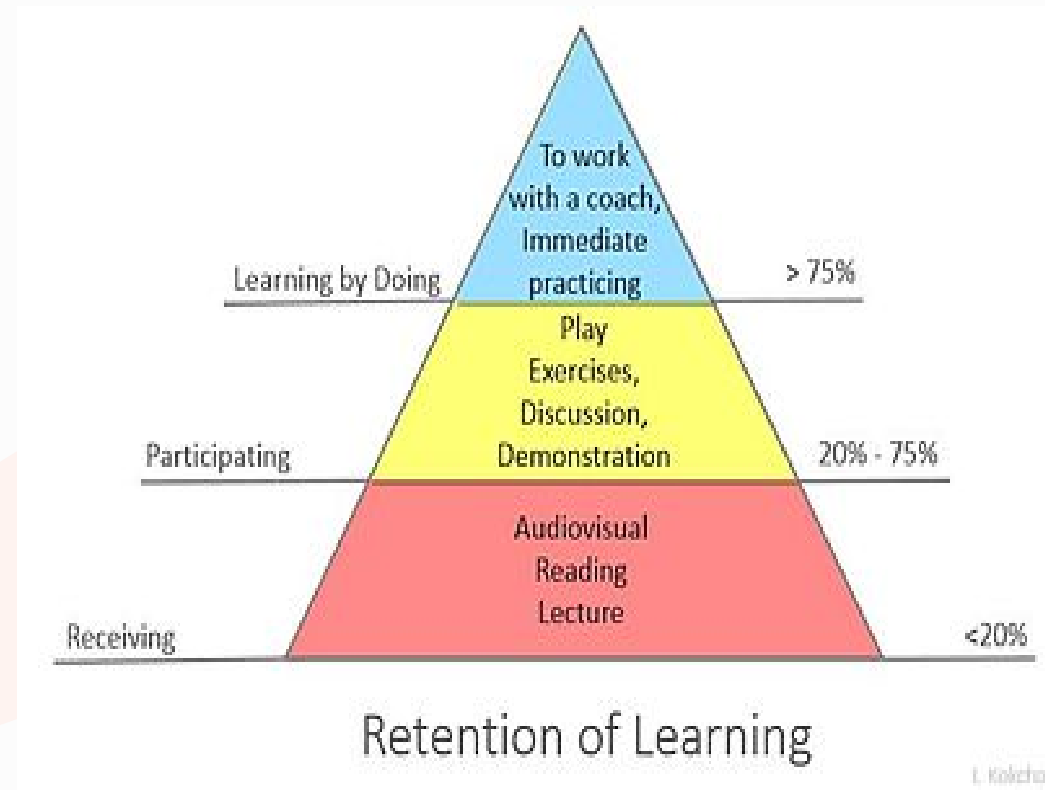
Example of a non-radical redesign to promote engagement using adult learning

▪ 8:00- 8:30	Registration	• 8:00- 8:30	Registration – just in time brief knowledge assessment – Attendee assignment to tables
▪ 8:30-8:45	Welcome	• 8:30-8:45	Welcome
▪ 8:45-9:30	Epidemiology of TB–50 slides	• 8:45-9:00	Icebreaker within small groups (<9)
▪ 9:30-10:30	Latent TB 101 Treatment & <u>Discussion</u> – 68 slides	• 9:30-10:30	State Epidemiology of TB – 40 slides
▪ 10:30-10:45	Break	• 10:30-10:45	Break
▪ 10:45-11:45	Active TB 101 with Treatment & <u>Discussion</u> – 80 Slides	• 10:45-11:45	Latent TB 101 with Treatment <u>Case-Based Discussion</u> – 30 slides
▪ 11:45-12:00	Lunch and CDC Videos	• 11:45-12:15	Lunch – Muddiest point assessment
▪ 12:00-12:30	Panel Q & A	• 12:15-1:15	Active TB 101 with Treatment <u>Case-Based Discussion</u> – 30 slides
▪ 12:30-1:30	Overview of TB Testing/ TB Lab	• 1:15-1:45	Panel Q & A
▪ 1:30-1:45	Break	• 1:45-2:45	Overview of TB Testing/ TB Lab 101/Molecular Diagnosis – 63 slides
▪ 1:45-3:00	Case Review / Managing TB in the Community	• 2:45-2:55	Break
▪ 3:00-4:00	Extrapulmonary TB – 38 slides	• 2:55-3:25	Case-Based Discussion/ Managing TB in the Community
		• 3:25-3:45	Extrapulmonary TB – 20- slides
		• 3:45-4:00	Just in time brief knowledge assessment, concluding remarks

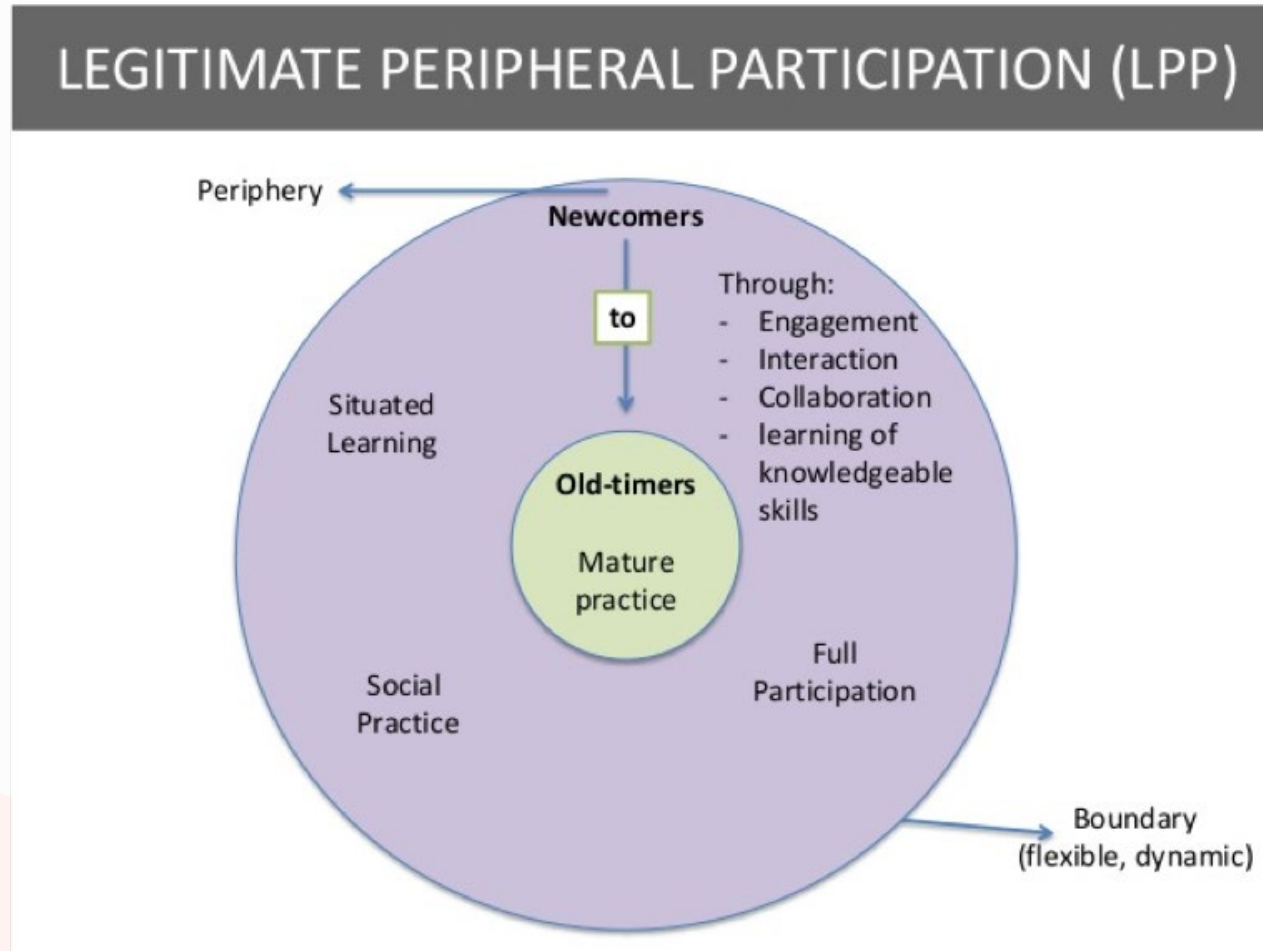


Eliminate slides? Just in time vs. Just in case

1. What are the goals and objectives of the training?
 - a. If a presentation does not promote one or more goals/objectives, why is it there?
 - b. How much can we realistically expect learners to retain in one day?
2. What are the goals and objectives of the presentation?
 - a. If a slide does not promote one or more goals/objectives, why is it there?
 - b. Introductory materials *should* be able to be broken down into 3-4 main ideas.



Why Icebreakers? This isn't summer camp.



Gagne – Effective instruction

1. Gain attention
2. Inform learners of objectives
3. Stimulate recall of prior learning
4. Present the content
5. Provide “learning guidance”
6. Elicit performance (practice)
7. Provide feedback
8. Assess performance
9. Enhance retention and transfer to the job

Where's the data on effectiveness?

Dunst, Trivette & Hamby's 2010 Meta-analysis included 58 RCTs (N=2095 interventions, N=2213 controls):

Adult methods produced more positive outcomes (attitudinal, cognitive, behavioral, self-efficacy, mastery) than traditional instructional methods.

Incorporating more adult learning principles increases learning outcomes.

More data...

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Summary

Adult learning:

Why, self-direction, experience, need to know, task/problem/life-centered, motivation.

Adulthood:

A cultural construct. Know your audience.

Accelerators:

Trainer credibility, authenticity, space/time/place

Inhibitors:

Lack of audience knowledge, not recognizing audience expertise, instructor rigidity, not facilitating dialogue, instructor as 'all knowing'

Summary Continued

Instructional design: A recipe for successful outcomes.

Needs assessments: Often overlooked, very necessary

Curriculum redesign: Recursive process

Goals and objectives: Must align with materials and assessment

Why: Better outcomes

Questions & Answers

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