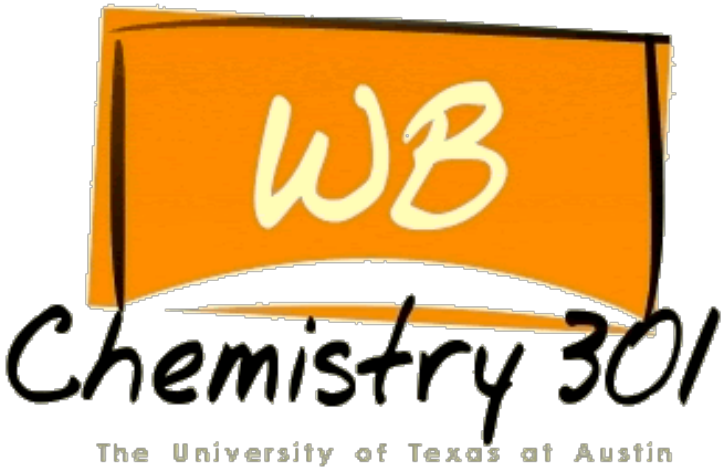
Web-based First-Year General Chemistry: Addressing the At-Risk Student

(and they are ALL at-risk students)



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Background

- ChemBridge Program in 2001-2005
- Desire to make it better…"what if?"
- Toyota Grant

The Problem

- High School preparation for our Chem301 course varies widely
- Traditional, large-lecture courses don't allow identification of students who are/will "fall through the cracks"
- Lack of a distance education course (and that market)
- Lack of a Dual-Credit course

Typical Online Courses

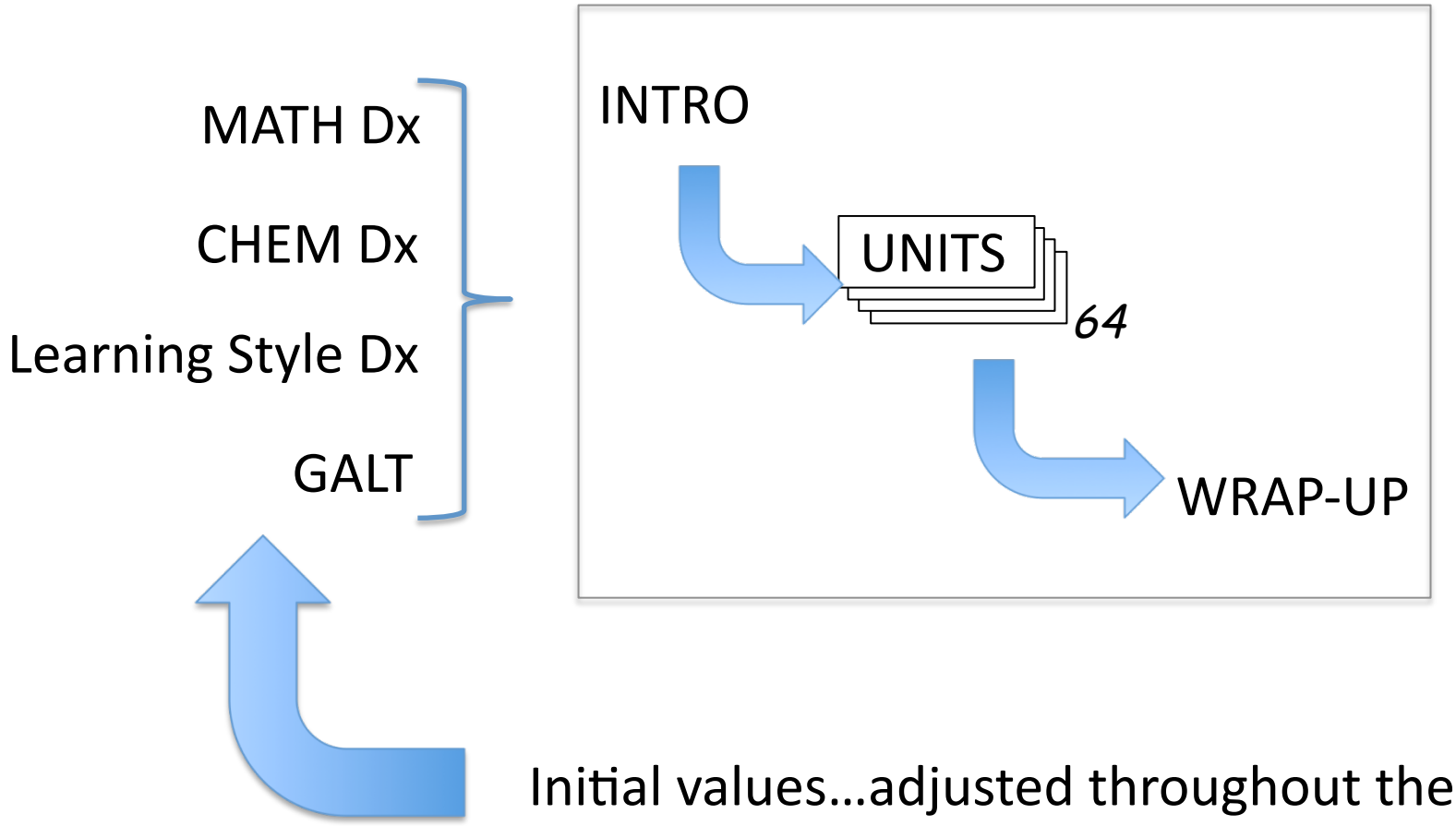
The lecture is presented as streaming video (i.e., MIT Open Courseware; UC Berkeley) or an edited podcast (i.e., Yale).

- 50-minute lectures contain ~ 50-70% effective teaching time

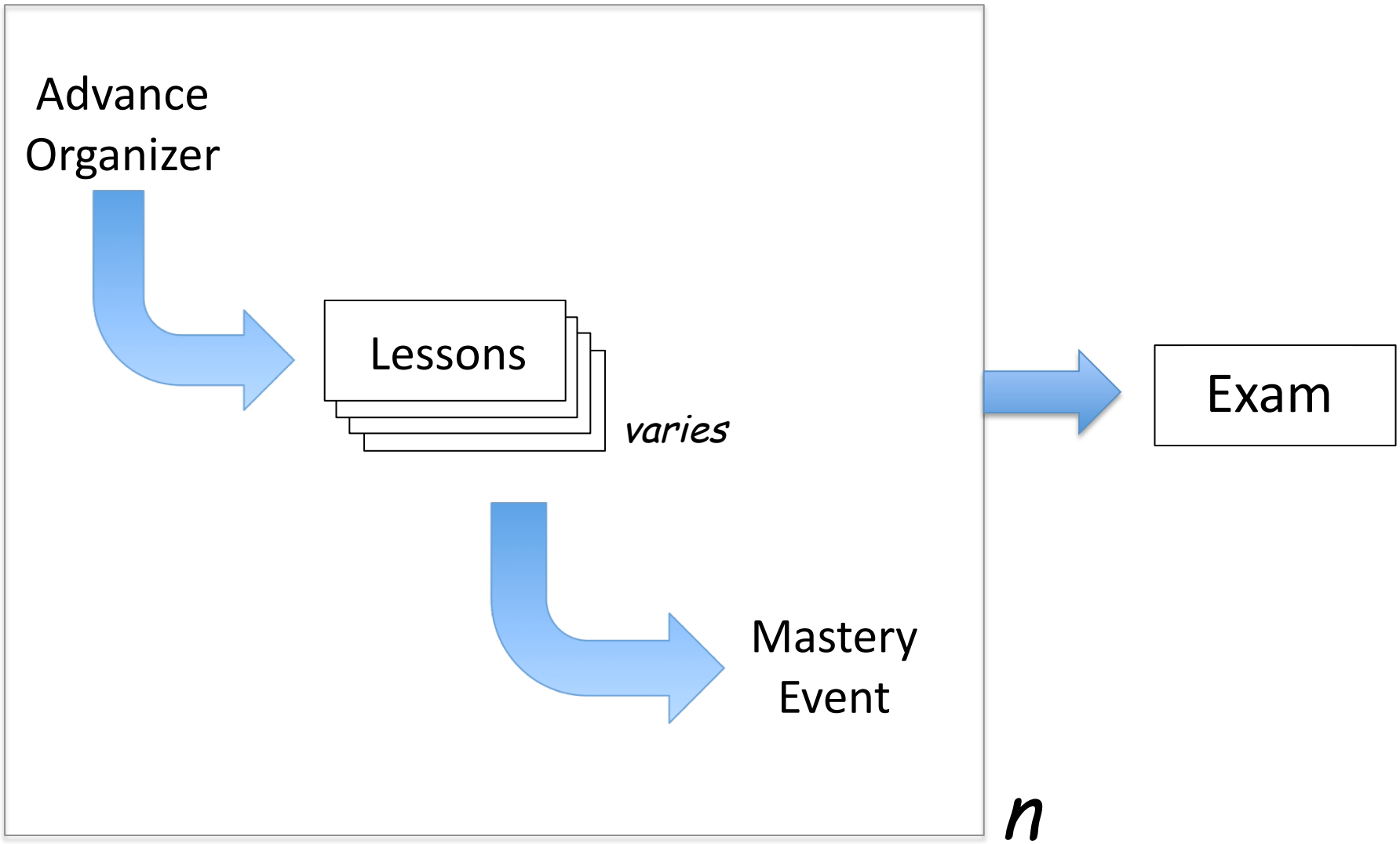
Premise of Chemistry 301 WB

All students are considered
"at-risk"
until THEY
prove otherwise

Design of Chemistry 301 WB



Design of Chemistry 301 WB



Design of Chemistry 301 WB

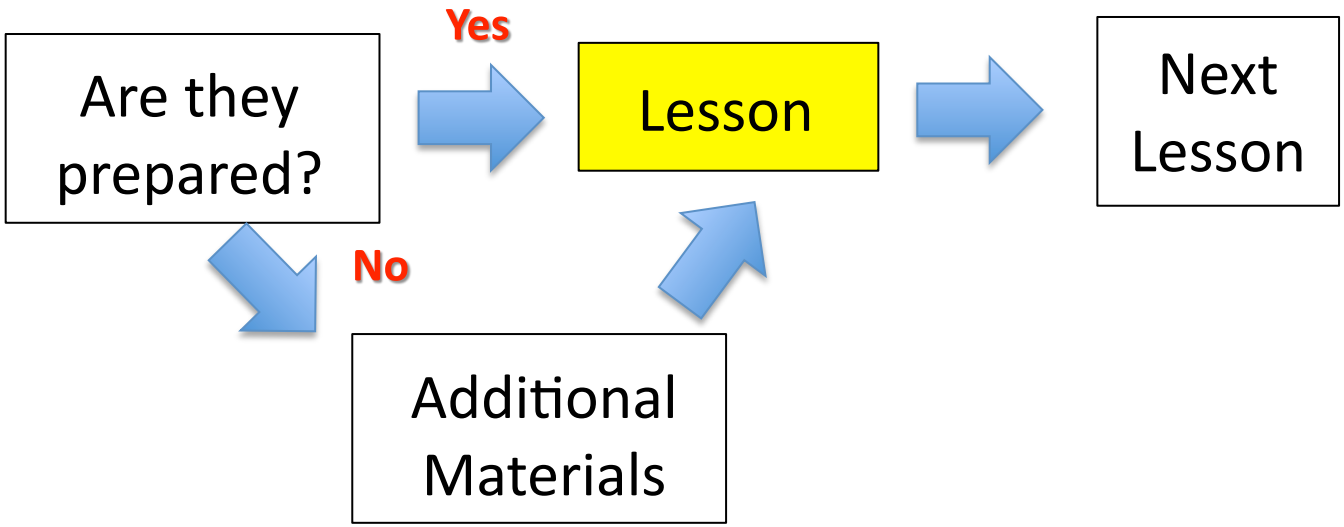
- New material MAY NOT BE STARTED until mastery of prerequisite materials is shown
- PROGRESSION in the course is not permitted until current materials are mastered

What *should* they receive?

- The initial presentation is based on their diagnostic tests (Math Dx, Chem Dx, Learning Style)

- As they prove themselves (homework, mastery quiz, exam scores) review/ preparation materials are tailored to their demonstrated needs and performance – to include NOT presenting material

Design of Chemistry 301 WB



Design of Chemistry 301 WB

- New material MAY NOT BE STARTED until mastery of prerequisite materials is shown
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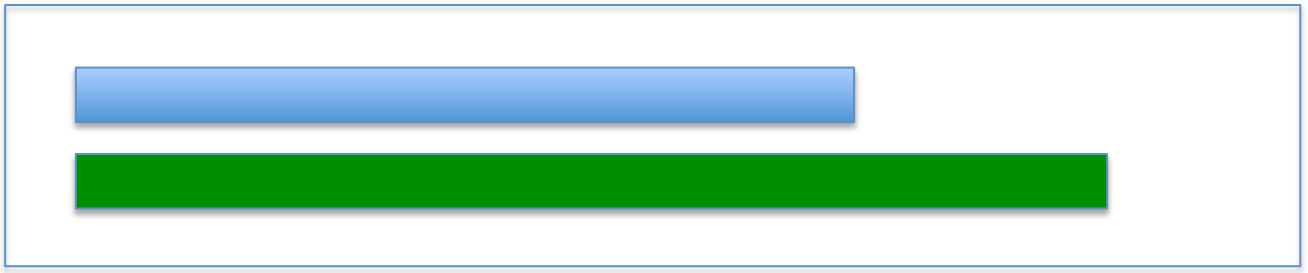
- Position in the course is always known

“Friendly” Reminders…NAG’s



“Good”

“Bad”

Design of Chemistry 301 WB

- New material MAY NOT BE STARTED until mastery of prerequisite materials is shown
- PROGRESSION in the course is not permitted until current materials are mastered
- Position in the course is always known
- Attention span is less than 5 minutes: thus "lessons" are 3-6 minutes each

Design of Chemistry 301 WB

- No textbook for the course
- Units have Advance Organizers
- Instruments given before course start:
  - Chemistry Diagnostic
  - Math Diagnostic
  - Learning style survey
  - GALT
- We present only materials necessary for the topic at hand

Preparation for Chemistry I

High School	College

The desired or expected continuity from
High School to College

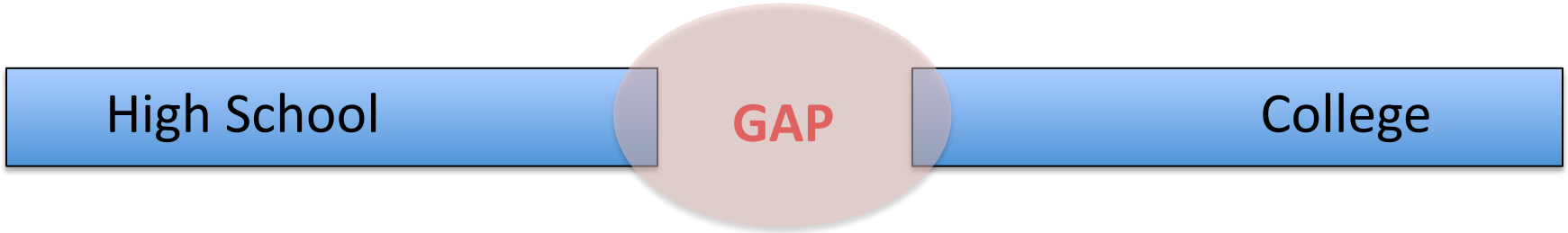
Preparation for Chemistry I

High School

College

The actual or observed continuity from
High School to College

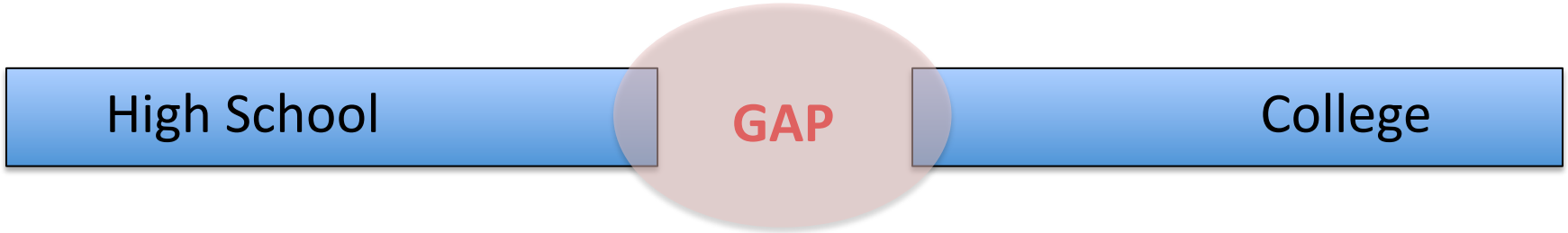
Preparation for Chemistry I



The actual or observed continuity from
High School to College

The observed gap varies in degree

Preparation for Chemistry I



Choices to "fix" the gap:

- Take time out of your course to bring them up to speed
- Impose an additional expense for prep courses, such as ALEKS
- Put the onus on them to get up to speed; such as with Atkins/ Jones "Fundamentals"
- Our 'gap' filler

Preparation for Chemistry I

High School	Prep	College

Give them the prep materials prior to the beginning of the course

Pro's:

--Easy to administer

Con's:

--Won't remember any of it later in the course

Preparation for Chemistry I

Instead, give them the prep materials prior to needing it

Pro's:

--Easy to administer

--Fresh in their minds as they are presented new material

Con's:

--None

Other Uses

- Preparation for continuation courses
  - Chem I to Chem II (the great equalizer?)
  - Chem II to Organic

- Lab Preparation
  - Pre-lab work
  - Post-lab work

Other uses

- "Remedial" (preparatory) courses
  - math prep for calculus and/or physics
  - mirror application for physics, biology, geology, anatomy, astronomy, etc

- Outside uses
  - medical and mid-wife training/recertification in Afghanistan

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The University of Texas at Austin

For additional information:

www.chem301wb.com

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