

TEACHING INSTRUMENTATION: LEARNING WITH SPEED AND REPETITION

AST Educator Conference Phoenix Arizona 2019

Lora Smith

The background of the slide features a close-up, warm-toned photograph of a clock face and a calculator keypad. The clock face is partially visible on the left, showing numbers 2, 3, 4, and 5. The calculator keypad is on the right, with numbers 1 through 9 visible. A semi-transparent white circle is overlaid on the left side of the image, containing the title and a list item.

Set Goals for Productivity

- One of the biggest help request I receive from students is on the subject of time management. A lot of times students become surprised when I tell them, “don’t try to manage time, just try to be more productive”.

The Science
of
Productivity:
STOP MULTI-
TASKING



The Best Study Strategies Ranked

- **Distributed Practice:** Implementing a schedule of practice that spreads out study activities over time.
- **Practice testing:** Self-testing or taking practice tests over to-be-learned material.

High Utility

- Distributed practice
- Practice testing



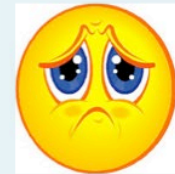
Moderate Utility

- Elaborative Interrogation
- Self-explanation
- Interleaved Practice



Low Utility

- Summarization
- Highlighting/underlining
- Keyword mnemonic
- Imagery use (for text learning)
- Rereading



Research finds
practicing retrieval is
best tool for learning

- *Purdue University*
- *Jeffrey D. Karpicke and Janell R. Blunt*
- “...practicing retrieval produces greater gains in meaningful learning than elaborative studying...”



The Original Memory[®]

Card Matching Game



Ages 4-10

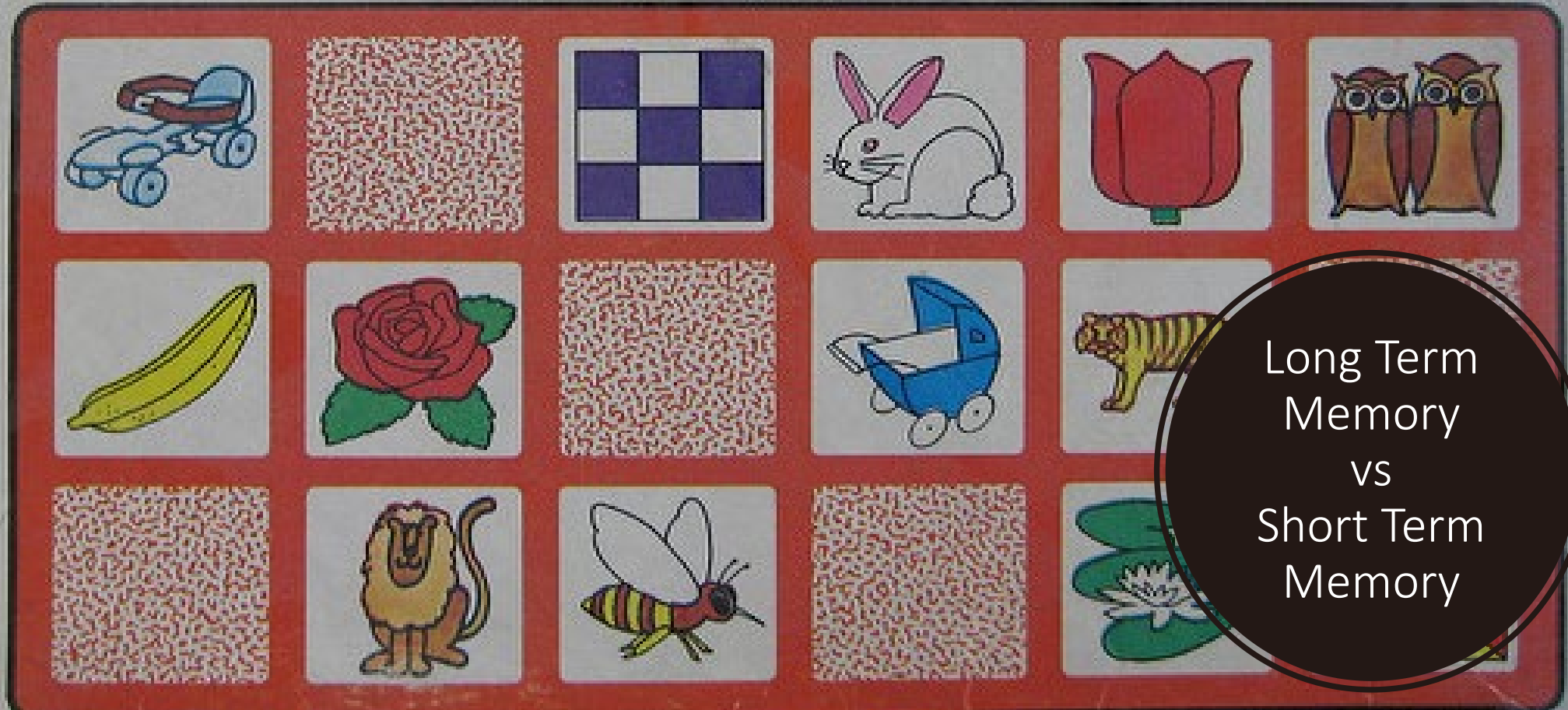
1 or more
players.

**MILTON
BRADLEY
Company**

SPRINGFIELD, MA 01101

Made in U.S.A.

4664



Long Term
Memory
vs
Short Term
Memory

1. **limited capacity** (only about 7 items can be stored at a time) Examples?

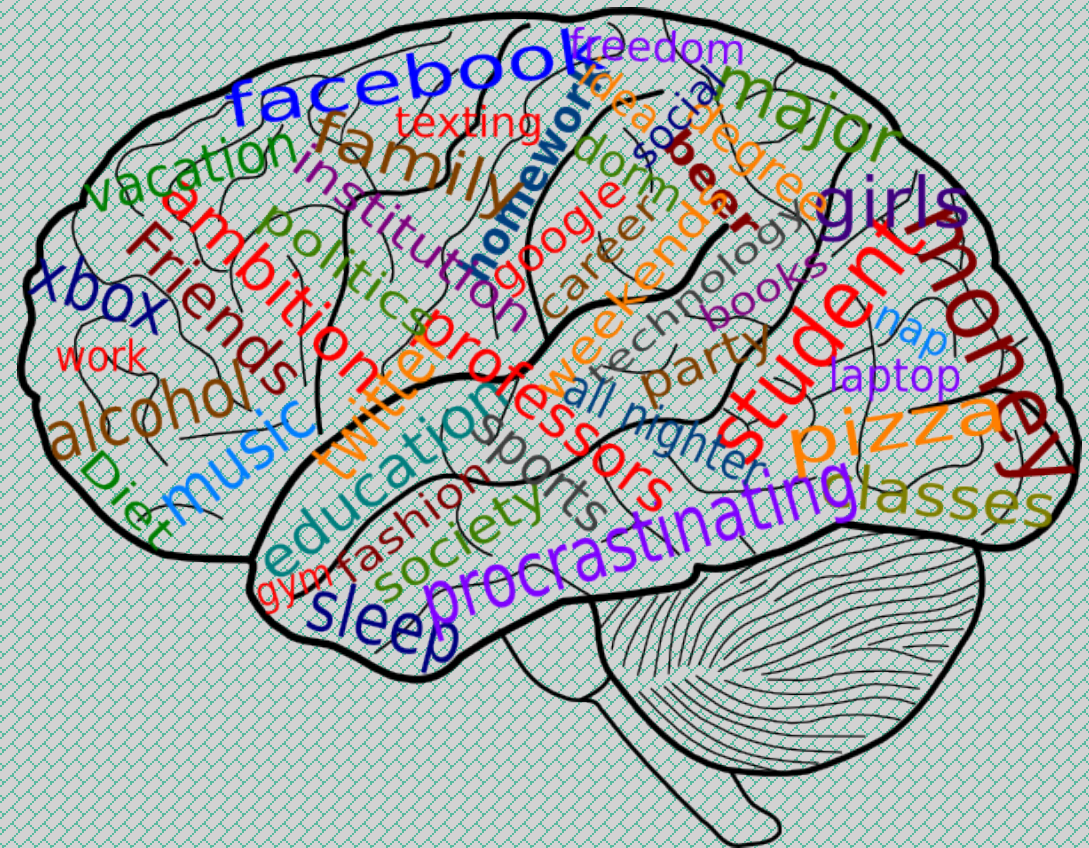
SHORT TERM MEMORY

seven

7

SHORT TERM MEMORY

- **2. limited duration** (storage is very fragile and information can be lost with distraction or passage of time)



SHORT TERM MEMORY

- 3. **encoding** (primarily acoustic, even translating visual information into sounds).
Example: Saying a person's name, or errand list out loud.



LONG TERM MEMORY

- I. **abstracting**-picking out important information from mass information. (ex. Main ideas, topics, categories, listening for clues like intonation and inflection in my voice)

Topic: Instruments

Categories: Scrub Students Can
Definitely Remember Many Groups

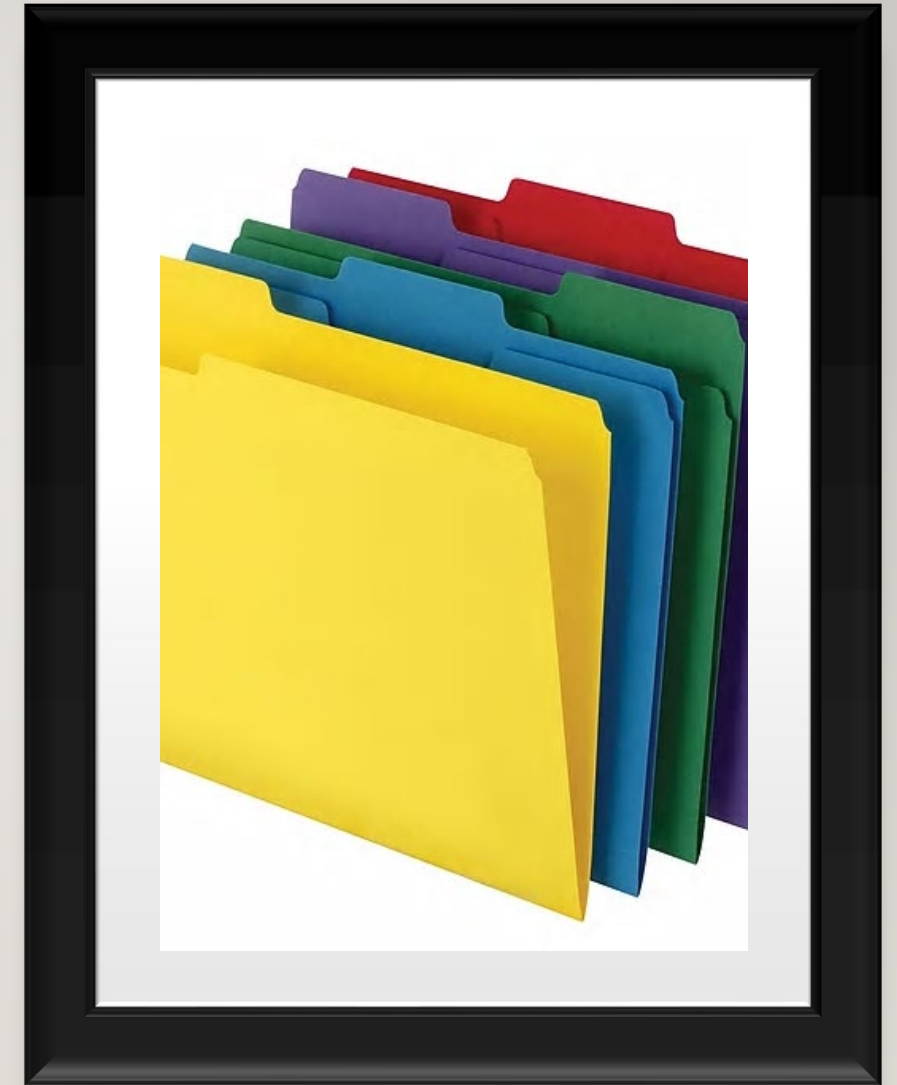


LONG TERM MEMORY

2. **schematizing**-get information into “folders” schema (ex. At home plates are in a particular cupboard, shirts are in a particular drawer/closet.

Examples:

1. **Definitions/descriptions**
2. **Cause and Effect**
3. **Compare and Contrast**
4. **Sequences**



LONG TERM MEMORY

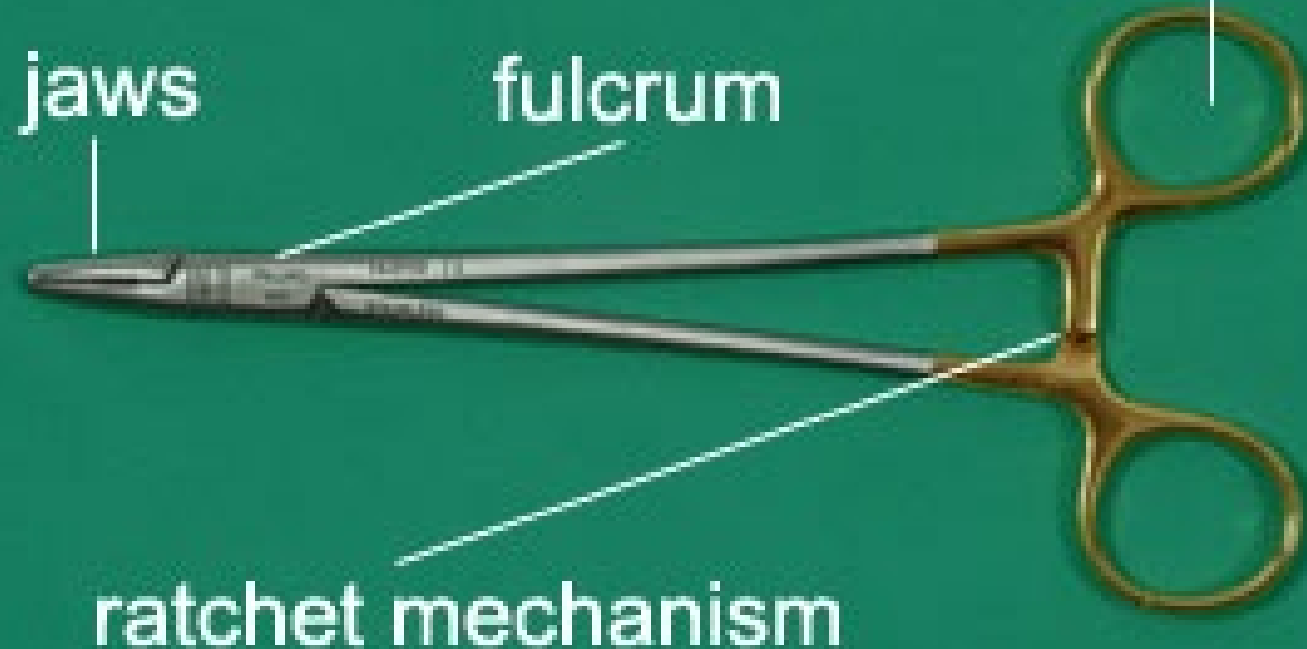
3. elaborating- attaching to prior knowledge, putting into own words, KEY to retrieving info is using an example to remember for retrieval.



Poole Suction



Sawyer Rectal Retractor



LONG TERM MEMORY

- 4. **organizing**- Putting info into form/order. Visualization: Diagrams, charts, pictures, **flashcards**

SHORT TERM MEMORY VS LONG TERM MEMORY

SHORT TERM MEMORY

Short term memory has three key aspects:

- 1. limited capacity (only about 7 items can be stored at a time)**
- 2. limited duration (storage is very fragile and information can be lost with distraction or passage of time)**
- 3. encoding (primarily acoustic, even translating visual information into sounds). Ex. Saying a person's name, or errand list out loud.**

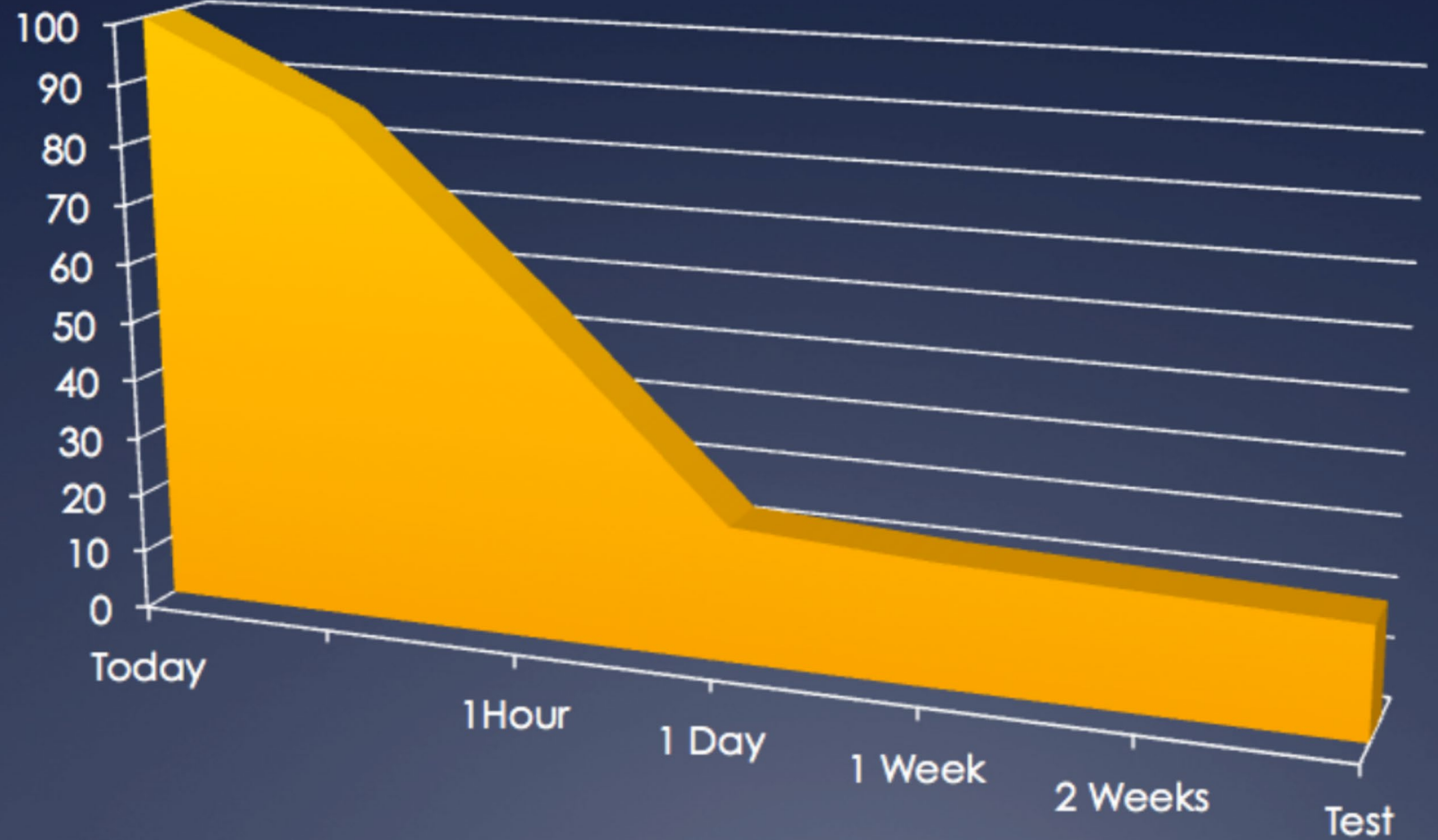
LONG TERM MEMORY


Long term memory has 4 key aspects:

- 1. abstracting-picking out important information from mass information. (ex. Main ideas, topics, categories, listening for clues like intonation and inflection in my voice) Retractors vs Scissors**
- 2. schematizing-get information into "folders" schema (ex. At home plates are in a particular cupboard, shirts are in a particular drawer/closet. This is a general, gyn, orth instrument...**
- 3. elaborating- attaching to prior knowledge, putting into own words, KEY to retrieving info is using an example to remember for retrieval.**
- 4. organizing- Putting info into form/order. Visualization: Diagrams, charts, pictures, flashcards**

WILL YOU
REMEMBER THIS
TOMORROW?

The Forgetting Curve





HOW DO WE
KNOW THAT
OUR
STUDENTS
HAVE
LEARNED?



TYPES OF SUMMATIVE ASSESSMENT:

- End-of-term or midterm exams
- Cumulative work over an extended period such as a final project or creative portfolio
- End-of-unit or chapter tests
- Standardized tests that demonstrate school accountability are used for pupil admissions; SATs, GCSEs and A-Levels

FORMATIVE ASSESSMENT



Encompasses teacher observation, classroom discussion, and analysis of student work, including homework and tests.



make necessary instructional adjustments, such as reteaching, trying alternative instructional approaches, or offering more opportunities for practice



Studies show that students involved in the feedback of formative assessment helps learners become aware of gaps that exist between their desired goal and their current knowledge guiding them through actions necessary to obtain their goal.



Student involvement encourages students focus their attention on the task rather than simply getting the correct answer.

ASSESSMENTS

FORMATIVE

All activities that teachers and students undertake to get information that can be used diagnostically to alter teaching and learning.

Types of formative assessments:

Observations

Wait time

Think, Pair, Share

See one, do one, teach one

Discussions

Quizzes

SUMMATIVE

Summative assessment evaluate student learning and academic achievement at the end of a term, year or semester by comparing it against a universal standard or school benchmark. Summative assessments often have a high point value, take place under controlled conditions, and therefore have more visibility.

Types of summative assessment:

End-of-term or midterm exams

Cumulative work over an extended period such as a final project or creative portfolio

End-of-unit or chapter tests

Standardized tests that demonstrate school accountability are used for pupil admissions; SATs...

STUDENTS PLAY VIDEO GAMES

VIDEO GAMES

WHO plays
video games?



HOW MUCH TIME
is being spent playing video games?

6.3 hours per week

25.2 hours per month

327.6 hours per year

TOP 5
video games

- 1 Mortal Kombat X
- 2 Grand Theft Auto V
- 3 Battlefield: Hardline
- 4 Call of Duty: Advanced Warfare
- 5 Batman: Arkham Knight

HEALTH RISKS
from video games

- 1 Carpal Tunnel Syndrome
- 2 Migraines

MONEY SPENT
on video games
\$22.41 billion

Made by Nicole Overman, Class of 2016

**LET'S USE SELF-
ASSESSMENT IN
THE CLASSROOM!!**



NAME:

<u>Week #</u>	<u>Goal (expected # of Cards)</u>	<u>Time (Min.)</u>	<u>Actual # of cards correct</u>	<u>Actual # of cards correct</u>
2	10	1		
3	20	2		
4	30	3		
5	50	5		
6	65	5		
7	85	7		
8	105	7		
9	125	7		
10	150	8		
11	175	8		
12	190	9		
13	210	10		
14	230	10		
15	249	10		

[illegible]

- Surgical Instruments
- General
- Orthopedics
- OB/GYN
- MIS
- Robotics
- Medical Terminology
- Prefixes
- Suffixes
- Root words

SURG TECH 184: Med Term GRAPH

NAME: Kaitlyn

Week #	Goal (expected # of Cards)	Time (Min.)	Actual # of cards correct	Actual # of cards correct
2	10	1	13	25 25
3	20	2	26 25	66 65
4	30	3	111	131
5	50	5	141	145 145
6	66	5	175	206 206
7	85	7	249 249	270
8	105	7	279 279	289 289
9	125	7	305	324 324
10	150	8	34	349 349
11	173	8	360 360	388
12	190	9		
13	210	10		
14	230	10		
15	249	10		

11/29/16

SURG TECH 184: Med Term GRAPH

PRE, SUFF, ROOT

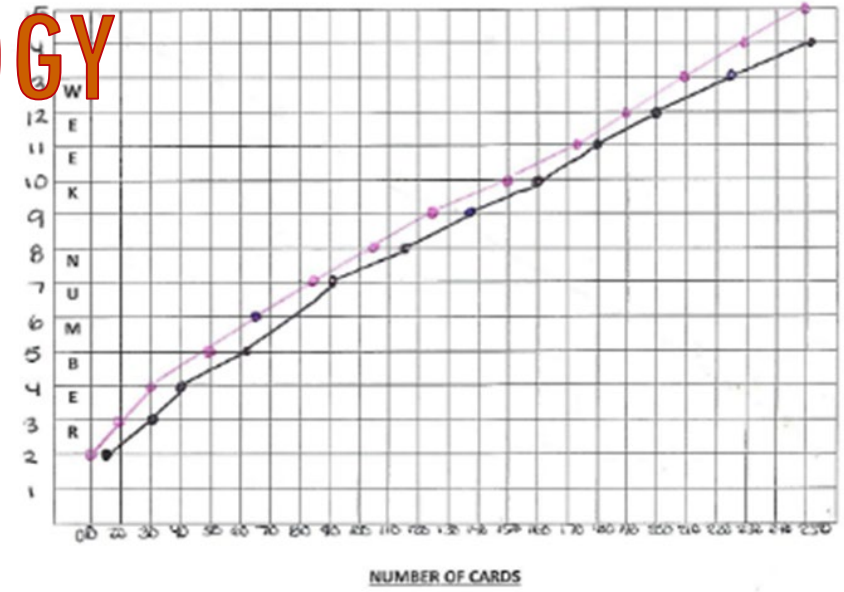
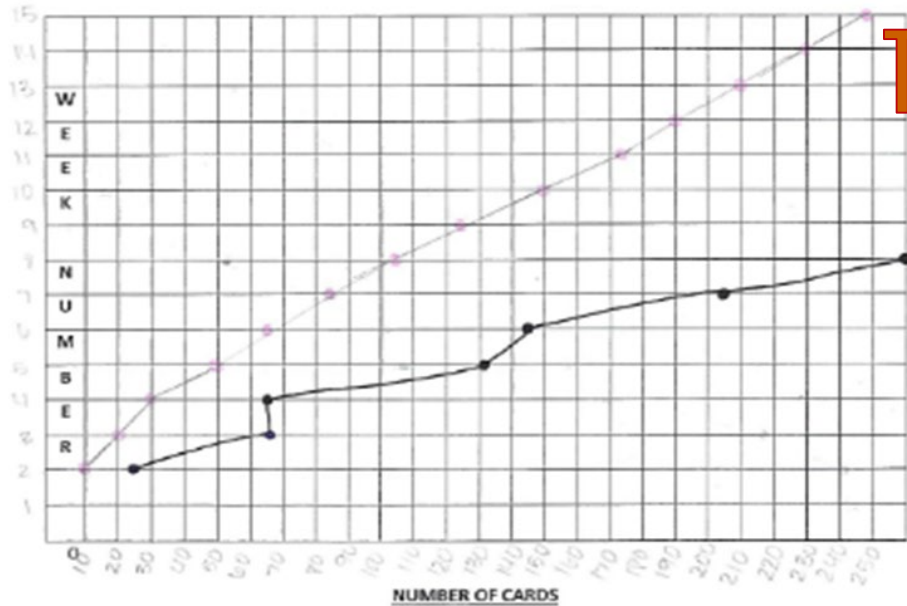
NAME:

Week #	Goal (expected # of Cards)	Time (Min.)	Actual # of cards correct	Actual # of cards correct
2	10	1	15	15 15
3	20	2	30 30	6
4	30	3	40 40	55
5	50	5	66	66 66
6	66	5	85	90 90
7	85	7	105	115 115
8	105	7	121	138 138
9	125	7	178	160 160
10	150	8	214	180 180
11	173	8		200 200
12	190	9		227 227
13	210	10		254
14	230	10		
15	249	10		

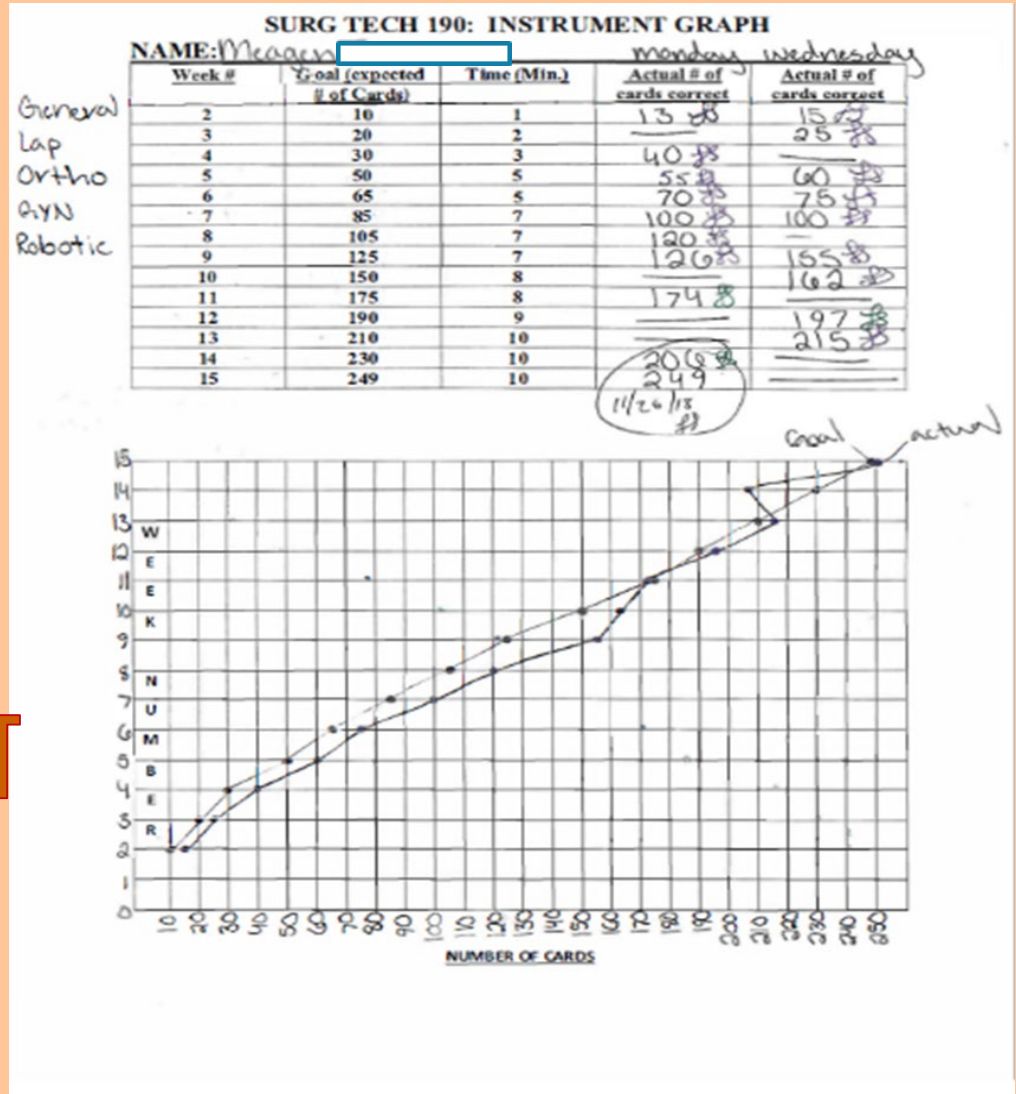
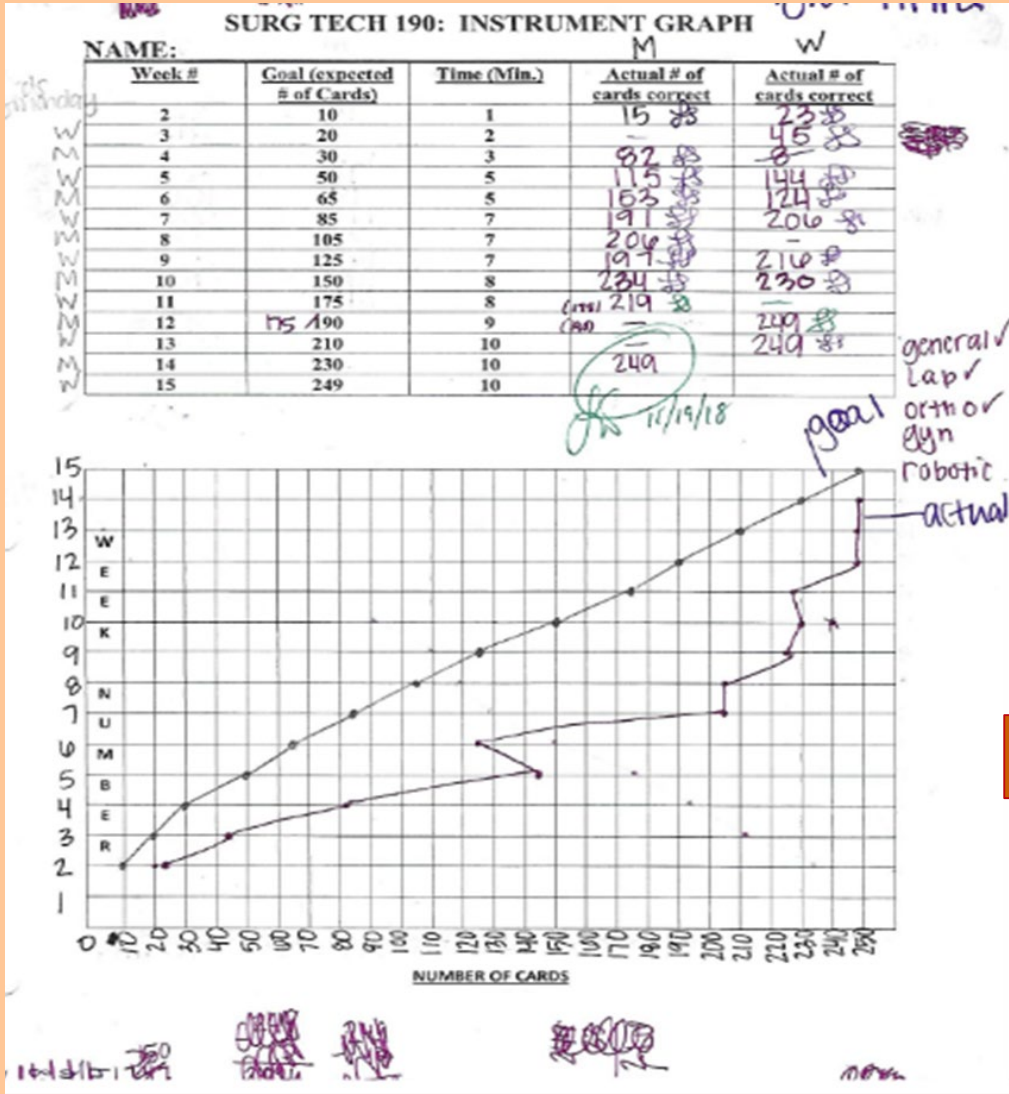
86
115
180
200
220

43
140
127

GOAL

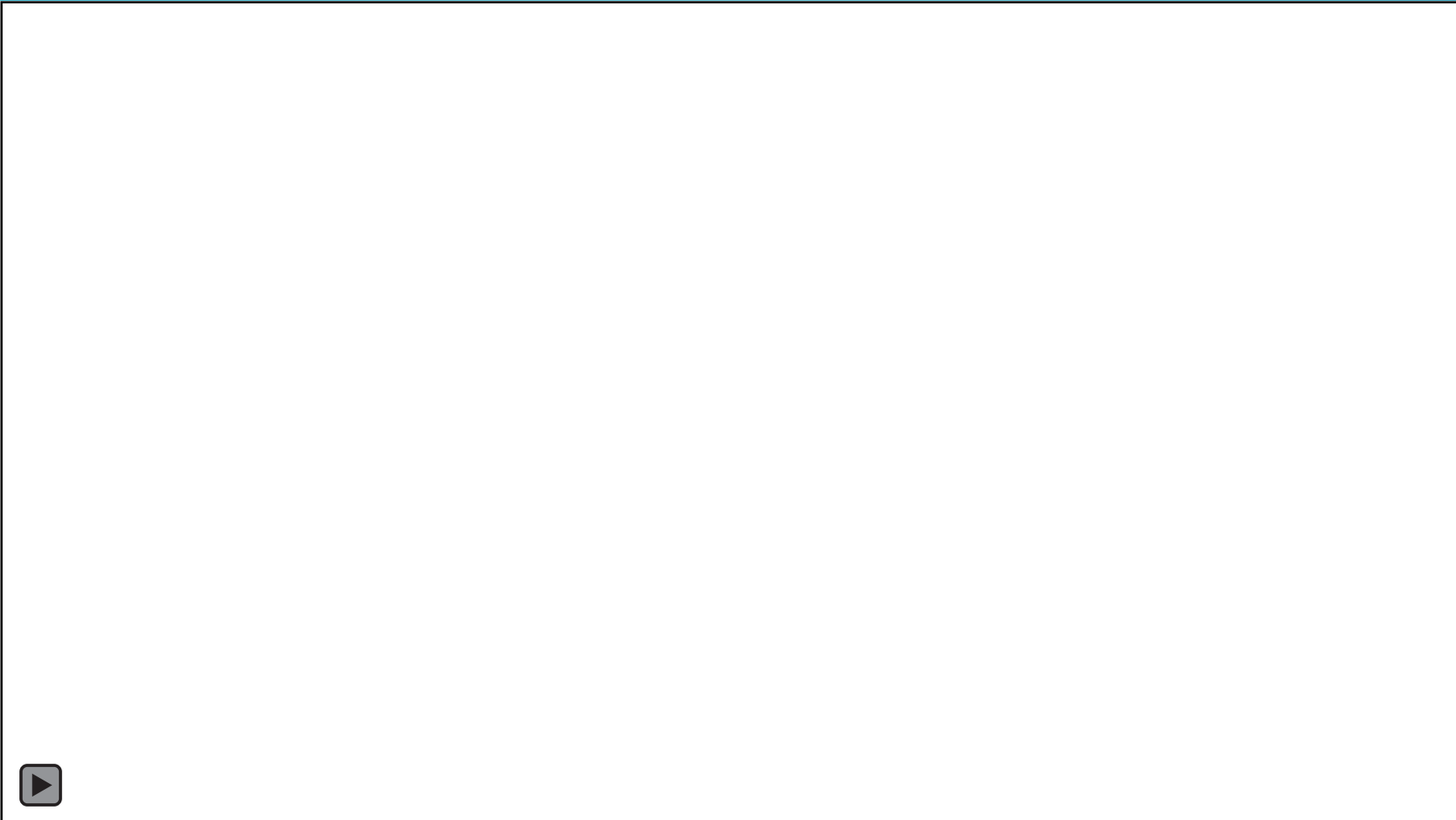


MEDICAL TERMINOLOGY GRAPHS 2016



SURGICAL INSTRUMENT GRAPHS 2018

NOVEMBER 5, 2018
COMPLETED 3 WEEKS AHEAD OF SCHEDULE
8 MIN 45 SEC: 249 SURGICAL INSTRUMENT CARDS



STUDENT INVOLVED ASSESSMENT FOR LEARNING:SELF- ASSESSMENTS

ATTENDENCE

ACCOUNTABILITY

BUILD CONFIDENCE

SPEED

ACCURACY

RETRIEVAL

COMPETITION

AUTOMATICITY

SYNTAX-LEARN HOW TO USE WORDS

SYMANTICS-MEANING OF WORDS

LEARNING

SUCCESS



ask

QUESTIONS

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LONG TERM MEMORY; [HTTPS://DENNISLEARNINGCENTER.OSU.EDU/LONG-TERM-MEMORY/](https://dennislearningcenter.osu.edu/long-term-memory/) RETRIEVED 01/2019

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