Digital Dentistry and Teaching Operative Dentistry to a new generation

Integrating operative dentistry into the digital world

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This is today……

How did I get here?

A little about me and my school

- Born in 1986- making me a Millennial

- I always hated school

- Graduated Dental School in 2013

- Touro College of Dental Medicine opened in 2016
  - I began as a part time employee

- Became course director of DAO in 2017

- Became course director of Operative dentistry in 2018

DAO and my OSCE challenge

- You need a lot of teeth and a lot of time
  - The regulations about using real teeth are tedious
  - Teeth are fragile
  - Teeth break
  - Teeth are limited
  - Every student needs to see the same tooth
  - Teeth need to be handled with care

CDC
CENTERS FOR DISEASE™
CONTROL AND PREVENTION

Digital Dentistry

- At Touro College of Dental Medicine (TCDM) digital dental technology is paramount to achieve the desired educational goals.

Think in the box

- We had a selection of teeth but we could not use them
  - What if they break mid exam?
  - So many students need to rotate through the exam

- BUT what if we scanned them and printed them for use…

What did we actually print

- A few sets of each tooth to have student use in study sessions
  - Some at 100% size
  - Some at 400%
    - Allowed for better identification for anatomical differences
      - Cusp of Carabelli
      - Mesial groove on a Max first premolar

- 4 set of test teeth that are NOT seen by students until the day of the OSCE
  - We were able to give the whole exam in 45 minutes to over 100 students all at the same time

How did we do it?

- With very little cost to the school*********
- We used the 3-shape TRIOS intraoral scanner to create a three-dimensional model of previously extracted natural teeth.
- The three-dimensional model was then converted into an STL file to be imported into a print preparation software
  - At TCDM we use Formlabs PreForm software
- Once the file is properly prepared it is sent to a Formlabs Form 2 Printer to be printed

Tell me more…..

- SLA Printer (can be done a DLP Printer)
- Liquid resin
- 5-10 dollars for each big tooth
- 4-5 hours to print but can be quicker
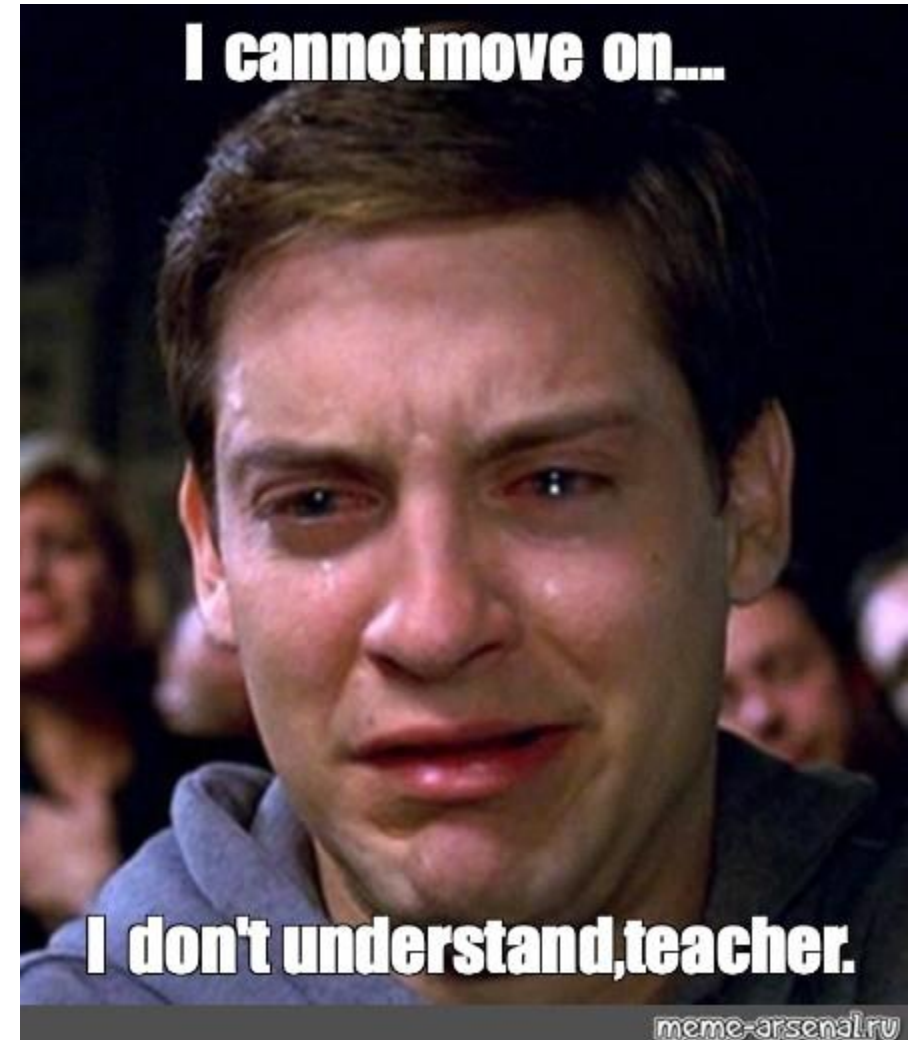
How does this help with Operative??

Teaching Operative and its challenges

- Students not understanding terms
  - What is the axial wall?
- Students not understanding the outcome of a particular preparation
  - What should it look like?
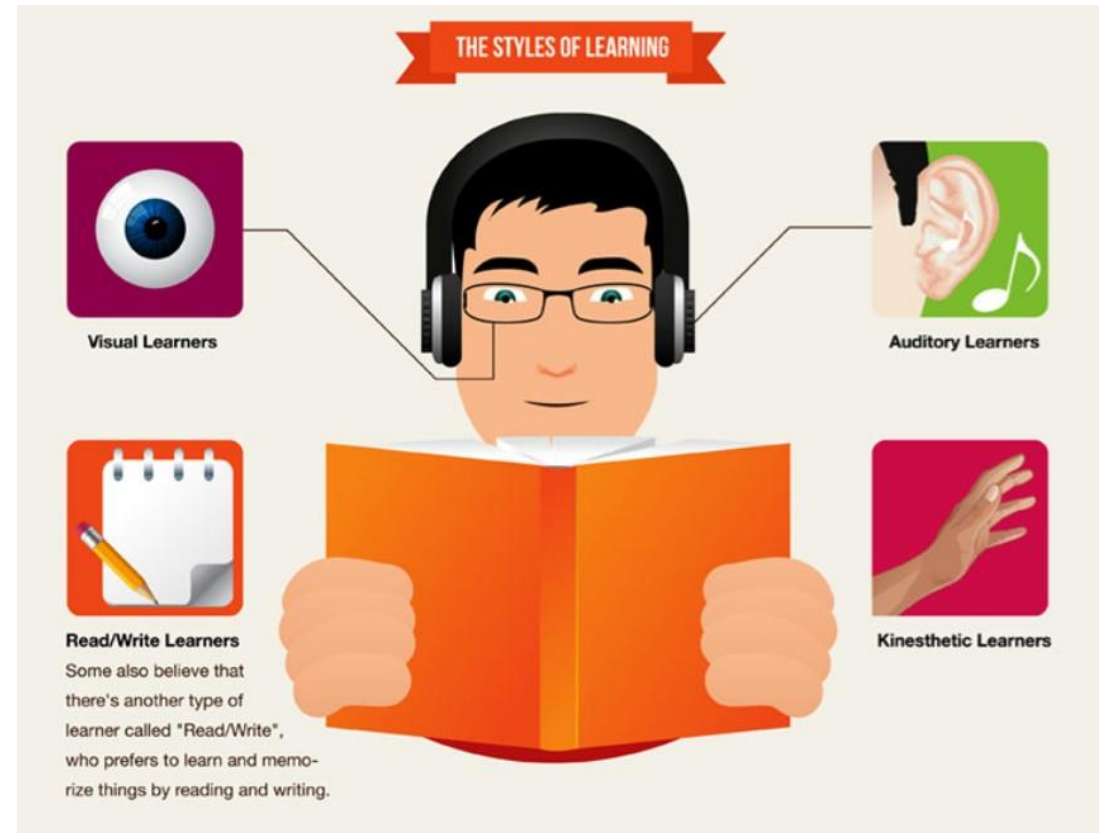- The powerpoint, the images, the lectures, the videos all were not enough
- Where was I going wrong??

How to accommodate everyone in the room

- Powerpoints with both descriptions and images
- Simlab exercises with rubrics and step by step instructions
- Video tutorials
- But it still was not enough....

Diff types of learners

- Auditory
- Visual
- Tactile/Kinesthetic

https://chicagorealtor.com/whats-learning-style/

http://www.educationplanner.org/students/self-assessments/learning-styles-styles.shtml

Auditory Learner

- **This is our straight forward student**

- If your student is an auditory learner, they will learn by hearing and listening.

- They understand and remember things they have heard.

- They store information by the way it sounds, and they have an easier time understanding spoken instructions than written ones.
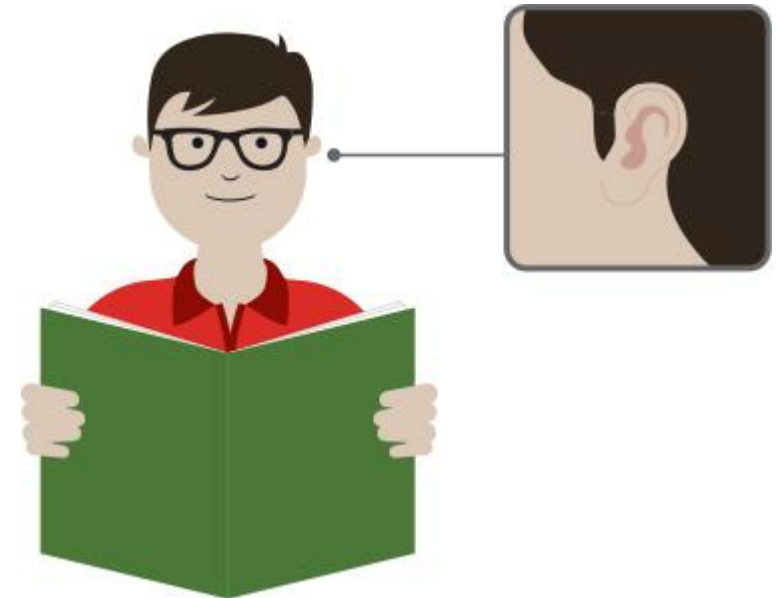
Visual Learner

- They learn by reading or seeing pictures
- They understand and remember things by sight
- They can picture what you are learning in your head, and they learn best by using methods that are primarily visual.
- You like to see what you are learning.
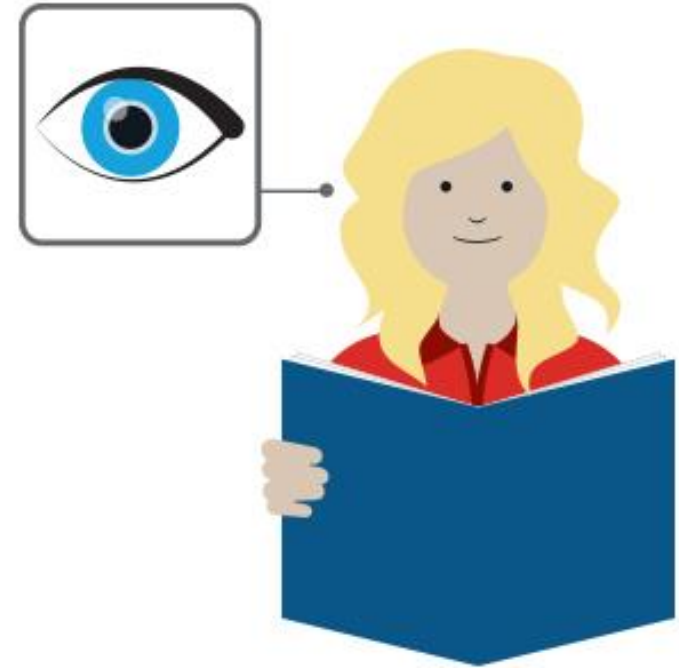
Tactile Learner

- They learn by touching and doing.

- They understand and remember things through physical movement.

- They are a "hands-on" learner who prefers to touch, move, build, or draw what they learn, and they tend to learn better when some type of physical activity is involved.

- They need to be active and take frequent breaks, they often speak with their hands and with gestures, and they may have difficulty sitting still.

Our Consumer- The Gen Zer

- First generation to have grown up with access to the internet
- They are called "digital natives," even if not digitally literate
- A Gen Zer will spend more time on electronic devices and less time reading books

Integrate into Operative

- What if I took everything from DAO and integrated it somehow into my Operative course?

- What if I could show students a 3D scan of those preparations?

- What if I can then print teeth with ideal preps?

- What if, as an educator, I was able to cater to all my learners??

The Goal

- Every preparation is prepared and approved by the Course Director

- The tooth is then scanned in two ways
  - Out of the mouth
  - In the mouth

- Every preparation is printed in 100% real size.
  - This allows for the student to see what the actual end product should look like

- BUT also, blown up 400%
  - This allows for dialogue and testing of the information

- Students have a folder on their desktop of every preparation
  - This allows them to be better prepared for SimLab

- Every student should be able to learn in the way they learn best

Name	Date modified	Type
▷ #3 MO-OL In The Mouth (1)	2/24/2021 9:41 AM	Different
▷ #3 MO-OL Out Of Mouth (1)	2/24/2021 9:41 AM	Different
▷ #4 DO In The Mouth	3/3/2021 1:49 PM	Different
▷ #4 DO Out Of Mouth	3/3/2021 1:49 PM	Different
▷ #5 DO In The Mouth	3/3/2021 1:49 PM	Different
▷ #5 DO Out Of Mouth	3/3/2021 1:50 PM	Different
▷ #14 MO-OL In The Mouth	2/24/2021 8:11 AM	Different
▷ #14 MO-OL Out Of Mouth	2/24/2021 8:11 AM	Different
▷ #19 DO Out of Mouth	2/10/2021 12:51 PM	Different
▷ #19 DO In Mouth	2/10/2021 12:51 PM	Different
▷ #30 DO In Mouth	2/11/2021 12:23 PM	Different
▷ #30 DO Out Of Mouth	2/11/2021 12:23 PM	Different

Thank you!
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