Why virtual reality in dental education?
Why change?

- Quality improvement
- Changing insights, concepts
- Einstein generation
- Practical considerations
- Economical considerations
- Environment
Why change?

Continuous desire for quality improvement

- Integration of problem solving, theory and practice.
- Process and outcome evaluation.
- Objective assessment.
- Intelligent feedback.
- No standard. Prep to problem based.
- Diversity of realistic clinical problems in preclinical training.
Dentistry at UWA

Come inside and have a look around!
Are our candidates well informed about the dental course?

- 52 of 56 students did not realise that they were expected to learn to make dentures when they started the course.
- They had no idea that ~ 60 % of the dental course was devoted to pre-clinical and clinical activities.
There is a need for informed consent to be a dental student!

- To assist in getting our message across, the career advisors were offered the chance to
  - try out the Simodonts
  - have an introduction to mixing alginate
  - taking an impression
Their thoughts after the practical session:

• 100% agreed that candidates should try out the Simodonts before they make their final decision to enroll into Dentistry

• 100% agreed that they now realised that there was a significant difference between the medical and dental courses

• 100% noted that drilling was harder than what they expected.

• The dental demonstration was rated as the best discipline presentation on the career day.
EDUCATING COGNITIVE SKILLS, DEXTERITY, DYNAMIC STEREOTYPIES AND ATTITUDE IN DENTAL MEDICINE

Vasile Burlui, Prof.PhD.
Carmen Stadoleanu, Prof.PhD.
Toni Andor Cigu, teaching assistant, Ph.D.Student
Maria Roman, Psychologist
Carmen Crimu, Balneophysiotherapist, teaching assistant
Andreea Oslobanu, Balneophysiotherapist, teaching assistant

Faculty of Dental Medicine, ”Apollonia” University of Iasi
Dexter manual
Year I DM
- Excellent performance: 41.6% (Precision 15% Speed 85%)
- Good performance: 56.6% (Precision 87% Speed 13%)
- Medium performance: 0%
- Poor performance: 1.8%

Dexter manual
Year II MD
- Excellent performance: 45% (Precision 25% Speed 75%)
- Good performance: 46% (Precision 84% Speed 16%)
- Medium performance: 2%
- Poor performance: 7%

Dexter manual
Year V DM
- Excellent performance: 34% (Precision 35% Speed 65%)
- Good performance: 26% (Precision-Speed)
- Medium performance: 38% (Precision 60% Speed 40%)
- Poor performance: 2%
electro-mechanical stimulators for preclinical disciplines – Cariology, LOC, EPIR, the method being extended to periodontology, implantology, dento-alveolar surgery, anaesthesiology, etc.

The Simodont simulators based on haptic technology have been created for the realization of various procedures of dental treatments for didactic purposes.

„Apollonia” University has been equipped, for the first time in East Europe, with 4 MOOG units, which permits to both students and graduates to exercise, under conditions similar to those of the oral cavity, many of the therapeutical manoeuvres in use and to receive an objective evaluation.
Evaluation of Augmented Virtual Reality Technology for Skills Assessment

Dr. Laura Darnell
Reality Simulation System for Porcelain Fused to Metal Crown Preparation at Tokyo Medical and Dental University
Kikuchi, 2013

• Group 1: DentSim with the instructor’s feedback (DSF) (n=15)
• Group 2: DentSim without the instructor’s feedback (DS) (n=15)
• Group 3: neither used features of DentSim nor received the instructor’s feedback (NDS) (n=13)
Average of total scores for PFM crown preparation in each weekly experiment in each experimental group
Conclusions

• Real-time error messages and instructions provided by DentSim during the preparation as well as the comparison with the standard preparation in the evaluation mode were adequate.

• Instructor feedback may accelerate the learning speed of students at the early stage of training by VRS

• Preparation times were shorter in non-DentSim group with significantly inferior outcomes. Shorter preparation times in these cases cannot be considered as an advantage.
How Real does the Virtual Reality have to be?

Barry Quinn  *BDS MSc LDS MRD FDS FFD*

*King’s College London Dental Institute*
Do novice students need to have fully immersive training devices?
Do Simple Simulators Train students
Do we need High Fidelity Virtual Simulators
So How Real does the Simulation have to be?

- Depends upon the user
  - novice v senior student v staff

- Depends upon the task being taught
  - eye/ hand control skills v surgical skills

- The skills are transferable to the clinic