

DenTeach™

DT-Rightway™ Dental Articulator

DT-PrepScanner™



TACTILE ROBOTICS
Feel the Intangible



TACTILE ROBOTICS

Tactile Robotics is a **Canadian technology development** and consulting company in the field of Industry 4.0.

We employ haptic, robotics, AI, IoT, and instrumentation technologies to develop **sensory-based instruments** for:

- medicine (IoMT)
- dentistry (IoDT)
- physiotherapy (IoPT)
- rehabilitation therapy (IoRT)
- engineering, industrial IoT (IIoT)

Anywhere-Based Learning

IN-CLASS EXPERIENCE

- Enhance Video, Audio, Feel, and Posture (VAFP)
- Quantitative and continuous feedback

LEARNING ANYWHERE

- On-demand live recording of teaching sessions
- Recorded practice materials anytime and anywhere

CONFIDENT DENTAL PROFESSIONAL

- Ability to practice independently
- Uninterrupted education



DT-PrepScanner™

DT-Student™

DenTeach™

DT-Rightway™ Dental Articulator

DT-PrepScanner™

(Patents Pending)

DenTeach™ is an **advanced teaching-learning platform** that complements traditional methods by utilizing industry 4.0 technology, seamlessly integrating and synchronizing the VAF and patient's poster between the instructor and the student in real-time by using DT-Rightway™ Dental Articulator.

DT-PrepScanner™ allows students and instructors to automatically measure required dimensions of a dental prep.



DT-Instructor™

Video—4 video feeds are integrated into each DT-Student™, DenTeach™ desktop application

Audio—The instructor's voice is transmitted, stored, and played via DT-Student™ desktop

Feel—The student's RealFeel™ drill is synchronized with the instructor's dental drill

Posture—The student's DT-Rightway™ articulator synchronizes with the orientation of the instructor's articulator



Why Choose Us

	Traditional	Traditional + DenTeach™	Advantages of the DenTeach™ system
Physical Workstation	Traditional Student Workstation (Tabletop, Dental Unit, Video Monitor)	Traditional Student Workstation Portable DenTeach™ Unit	Enhanced Student Learning Industry 4.0 Technology Portable
Instructor Software	None	DT-Class Manager™ (Student Selection, Performance Manager)	Objective Performance Assessments
Student Software	None	DT-Performer™ (Video Integration, Augmented Reality, DT-PrepScanner Module)	Integrated Video Augmented Reality RT Performance Assessment
Video Feeds	1 Camera View (Top View Only)	4 Integrated Cameras (Top, Inside, and Side Views)	360 View Using HD Cameras
Instructor Drill	Real Drill	Real Drill RealFeel™ Sensor Advanced Measurement Kit	Drill Vibrations and Forces Synchronized to the Student
Student Drill	Real Drill	RealFeel™ Drill (Synchronized to Instructor in Teaching Mode)	Drill Vibrations and Forces Synchronized to the Instructor Experience Actual VAF
Student Practice	Typodont (Tabletop)	DT-Rightway™ DentalArticulator Adult & Pedo Typodonts	Patients Posture Synchronized to the Instructor Workstation
Prep measurement	Done by the instructor	Conducted automatically using a robotized and sensorized system	DT-PrepScanner™ scans the prep automatically Provides the user with a 3D/2D model of the

Pandemic Impact

During these unprecedented times, dental schools are left wondering how they will be able to deliver course materials while communities need to maintain social distancing. We all need smartways to keep learning dental science. DenTeach™, DT-Rightway™ articulator and DT-PrepScanner™ allow for dental instructors to deliver courses while complying to pandemic norms and staying safe.

Benefits for Dental Colleges

- A strategic investment that uses the advanced concept of IoDT
- Reduce the impact of unpredictable events, such as COVID-19 on the quality of learning
- Establish a better curriculum and grade more objectively by using fact-based metrics
- Objective student assessments (grades)
- Link technology to current and future platforms
- Continuously improving their relative accreditation index
- New teaching technology
- Expanded outreach
- Enhance traditional methods
- Differentiated programming
- End to end methodology
- Faculty resource multiplier
- Remote teaching/portability

Benefits for Dental Students

- Enhance the hands-on experience and use technology to improve performance
- Demonstrating objective assessment techniques (metrics)
- Finding new ways to reduce subjectivity
- Utilizing new methods that mimic real-life scenarios for teaching
- Emulating a real dental clinic through patient posture and real environment
- Enhanced teaching and learning using sight, sound and touch
- Improved skill refinement
- Long term asset that can be utilized in their practice
- Standardized marking & methodology
- Remote learning/portability
- Access unlimited practice time



Key Performance Indicators (KPIs)

MODE	KPI CATEGORY	S	I	D	ASSESSMENT PURPOSE
Teaching & Shadowing & Practice	Tool handling angulation - Axial rotation of the tool - Side-to-side rotation of the tool - Back-to-front rotation of the tool - Overall tool handling skill	✓	✓	✓	Assessment of the effort put by the student
		✓	✓	✓	20 KPIs for Student; 20 KPIs for Instructor; 20 KPIs Showing Difference
	Tool handling smoothness - Axial speed of the tool - Side-to-side speed of the tool - Back-to-front speed of the tool - Overall smoothness in tool handling	✓	✓	✓	Assessment of the smoothness factor student's tool handling skill
		✓	✓	✓	20 KPIs for Student; 20 KPIs for Instructor; 20 KPIs Showing Difference
Practice	Haptic sensation - Longitudinal haptic feeling - Lateral haptic feeling - Vertical haptic feeling - Spatial haptic feeling	✓	✓	✓	Assessment of haptic feeling, <i>i.e.</i> , pressure applied to the tooth
		✓	✓	✓	20 KPIs for Student; 20 KPIs for Instructor; 20 KPIs Showing Difference
	Tool handling steadiness - Longitudinal jerk index of the tool - Lateral jerk index of the tool - Vertical jerk index of the tool Spatial smoothness in tool handling	✓	✓	✓	Assessment of the steadiness factor student's tool handling skill
		✓	✓	✓	20 KPIs for Student; 20 KPIs for Instructor; 20 KPIs Showing Difference
	Task completion time	✓	✓	✓	1 KPI for Student; 1 KPI for Instructor; 1 KPI Showing Difference
	Interruption index	✓	✓	✓	1 KPI for Student; 1 KPI for Instructor; 1 KPI Showing Difference

S: Student; I: Instructor; D: Differences between each student's KPI and the instructor's KPI

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