



FACULTY OF  
**DENTAL  
TRAINERS**



ADVANCING EDUCATION  
AND ORAL HEALTH

Open consultation:

# **Review of the dental non-technical skills framework, DeNTS**

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Non-Technical skills are part of ‘human factors’ relating to the cognitive and social skills which are used to underpin performance. In relation to healthcare, they have been shown to be key skills in supporting good clinical performance and better patient outcomes.

Non-technical skills should not be confused with clinical skills - which are related to knowledge and experience - or technical performance, which is related to training and practice.

Investigations into adverse events have shown that as many as 80% are the result of issues relating to human factors, such as a breakdown in communication, the inability to reflect, or poor situation awareness.

The Faculty of Dental Trainers, RCSEd, published a dental non-technical skills framework in 2019 – and this is now being updated. The updated framework is presented throughout this document.

You are being invited to respond to these proposed changes through the online survey.

## Current taxonomy – DeNTS

The 2019 iteration consists of the following categories and elements:

Category	Elements
Situation Awareness	Gathering information Understanding information Anticipating the future situation
Decision Making	Considering options Selecting and communicating decisions Implementing and reviewing decisions
Teamwork and Communication	Exchanging information Co-ordinating activities Establishing a shared understanding
Task Management	Setting and maintaining standards Coping with pressure Supporting others

## Proposed taxonomy – Human Factors in Dentistry

The iteration that we are consulting on, consists of the categories and elements below. The major changes include:

- Additional elements that constitute non-technical skills (blue)
- Alterations to existing categories or elements (red)
- Coding of each element for easy reference
- A proposal of narratives for each category with notes, and example behavioural markers to help standardise observation of each skill

The survey will ask for your views on these changes, in turn – and you will have the opportunity to leave free text comments at each stage

**We anticipate the survey taking around 15 minutes to complete**

Category	Elements	Code(s)
Situation Awareness	Gathering information Understanding information <b>Recognising difference</b> Anticipating the future	SA1 SA2 SA3 SA4
Decision Making	Considering options <b>Making sound judgements</b> Selecting and communicating <b>options</b> Implementing and reviewing decisions	DM1 DM2 DM3 DM4
Teamwork and Communication	Exchanging information effectively <b>Establishing a shared understanding</b> <b>Co-ordinating team activities</b> <b>Giving and receiving effective feedback</b>	TC1 TC2 TC3 TC4
<b>Leadership and Management</b>	<b>Leading by example</b> Supporting <b>and motivating</b> others Setting and maintaining standards <b>Maintaining respect</b>	LM1 LM2 LM3 LM4
<b>Cognition</b>	Coping with pressure <b>and fatigue</b> <b>Maintaining focus</b> <b>Recognition of Self</b> <b>Reflective practice and action planning</b>	C1 C2 C3 C4

**Proposed taxonomy narratives:**

Category	Element	Notes	Example behavioural markers
Situation Awareness	Gathering information	<p>This element involves <i>selective attention</i> — the dentist must actively and effectively scan their working environment for relevant cues</p> <p>Observers should recognise that effective information gathering is not passive; it requires deliberate questioning and environmental scanning. A dentist who fails to look up or engage with the team may be missing critical cues</p>	<ul style="list-style-type: none"> <li>• Visual scanning of the patient</li> <li>• Visual scanning of instruments or the operative field</li> <li>• Visual scanning of the team rather than focusing narrowly on the operative field</li> <li>• Actively eliciting patient feedback (e.g., “Are you comfortable?”)</li> <li>• Monitoring for subtle non-verbal signals such as facial tension, hand movements, changes in vocal tone, or changes in breathing</li> </ul>
	Understanding information	<p>This element involves sense-making — integrating disparate signals into a coherent mental model</p> <p>Observers should note whether the dentist demonstrates cognitive integration. Misinterpretation (e.g., assuming silence equals comfort) is a common error that undermines situation awareness</p>	<ul style="list-style-type: none"> <li>• Dentist interprets patient behaviour correctly</li> <li>• Integrates clinical findings with patient feedback and team input</li> <li>• Explains reasoning to the team, showing that information has been processed and understood</li> </ul>
	Recognising difference	<p>Rooted in pattern recognition theory, this element involves detecting deviations from expected norms</p> <p>Observers should assess whether the dentist demonstrates adaptive noticing. Failure to recognise difference often leads to escalation of minor issues into safety risks</p>	<ul style="list-style-type: none"> <li>• Dentist notices when patient or team behaviour changes</li> <li>• Identifies discrepancies in equipment performance or procedural flow</li> <li>• Acknowledges differences explicitly, either verbally or through corrective action</li> </ul>
	Anticipating the future	<p>This element involves prospective cognition — the ability to mentally simulate possible outcomes</p> <p>Observers should evaluate whether the dentist demonstrates proactive foresight. Anticipation is not guesswork; it is informed by clinical knowledge and situational cues</p>	<ul style="list-style-type: none"> <li>• Dentist prepares for potential complications (e.g., suction ready before saliva build-up).</li> <li>• Warns team of possible patient reactions (e.g., “They may flinch when I apply pressure”).</li> <li>• Adjusts pace or sequence of tasks to mitigate foreseeable risks.</li> </ul>

Category	Element	Notes	Example behavioural markers
Decision Making	Considering Options	<p>Rooted in problem-solving theory, this element involves generating and weighing possible courses of action before committing. Effective decision makers avoid premature closure by exploring alternatives</p> <p>Observers should note whether the dentist demonstrates cognitive flexibility. A dentist who defaults to a single habitual solution without exploring alternatives may be limiting patient care</p>	<ul style="list-style-type: none"> <li>• Dentist pauses to consider multiple treatment approaches (e.g., restorative vs. extraction).</li> <li>• Seeks input from the dental team or patient before finalising</li> <li>• Verbalises pros and cons of different options</li> </ul>
	Making sound Judgements	<p>This element involves critical thinking — evaluating options against clinical evidence, patient needs, and ethical standards</p> <p>Observers should assess whether judgements are reasoned and defensible. A sound judgement is not just technically correct but also contextually appropriate for the patient’s wellbeing</p>	<ul style="list-style-type: none"> <li>• Dentist balances clinical data with patient preferences</li> <li>• Avoids bias or over-reliance on routine; decisions are evidence-based</li> <li>• Demonstrates awareness of risk vs. benefit</li> </ul>
	Selecting and Communicating Options	<p>This stage draws on shared decision-making models — the dentist must not only choose but also clearly communicate the chosen option.</p> <p>Observers should look for transparent communication. A dentist who selects an option but fails to explain it risks confusion, reduced patient trust, and team miscoordination</p>	<ul style="list-style-type: none"> <li>• Dentist explains chosen treatment in plain language, avoiding jargon</li> <li>• Checks patient understanding and invites questions</li> <li>• Communicates rationale to the dental team, ensuring alignment</li> </ul>
	Implementing and Reviewing Decisions	<p>This element involves reflective practice and action monitoring. It is not enough to choose an option — the dentist must carry it out effectively, then evaluate whether the decision achieved the intended outcome. This aligns with behavioural models of feedback loops in professional practice</p> <p>Observers should assess whether the dentist demonstrates adaptive execution. A strong decision maker not only acts but also reflects, learning from the process. Failure to review decisions can lead to repeated errors or missed opportunities for improvement.</p>	<ul style="list-style-type: none"> <li>• Dentist initiates the chosen treatment plan promptly and efficiently.</li> <li>• Provides clear instructions to the team during implementation, ensuring coordinated action.</li> <li>• Monitors patient responses and adapts if the decision is not producing the expected results.</li> <li>• Reviews the outcome afterwards, either verbally (e.g., “That worked well, but next time we could...”) or through reflective adjustment in practice</li> </ul>

Category	Element	Notes	Example behavioural markers
Team work and Communication	Exchanging Information Effectively	<p>Grounded in interpersonal communication theory, this element emphasises clarity, accuracy, and timeliness of information exchange. Effective communication reduces cognitive load and prevents errors.</p> <p>Observers should assess whether communication is two-way and purposeful. A dentist who speaks clearly but fails to listen is not truly exchanging information.</p>	<ul style="list-style-type: none"> <li>• Dentist provides clear, concise instructions to the team</li> <li>• Uses appropriate language for the patient, avoiding jargon</li> <li>• Actively listens and acknowledges input from others</li> <li>• Ensures information is delivered at the right time (e.g., before a procedure begins)</li> </ul>
	Establishing a Shared Understanding	<p>This element reflects mutual mental models — the team must align on goals, roles, and expectations. Shared understanding prevents misinterpretation and fosters coordinated action.</p> <p>Observers should note whether the dentist actively builds consensus. Shared understanding is demonstrated when the team can articulate the plan consistently.</p>	<p>Dentist checks comprehension by asking team members to confirm instructions</p> <ul style="list-style-type: none"> <li>• Summarises patient needs or treatment plans to ensure everyone is aligned</li> <li>• Encourages questions to clarify uncertainties</li> </ul>
	Coordinating Team Activities	<p>Based on team dynamics theory, coordination requires synchronising actions and adapting to changing circumstances.</p> <p>Observers should look for visible orchestration. Effective coordination is evident when the team operates seamlessly, with minimal confusion or duplication of effort.</p>	<ul style="list-style-type: none"> <li>• Dentist delegates tasks clearly and ensures roles are understood</li> <li>• Adjusts sequencing of activities to maintain smooth workflow</li> <li>• Monitors team performance and intervenes if coordination falters</li> </ul>
	Giving and Receiving Effective Feedback	<p>Rooted in feedback and learning theory, this element ensures continuous improvement and psychological safety. Feedback must be constructive, timely, and reciprocal.</p> <p>Observers should assess whether feedback is embedded in practice. Effective feedback loops strengthen team learning and resilience.</p>	<ul style="list-style-type: none"> <li>• Dentist provides specific, actionable feedback to team members</li> <li>• Receives feedback openly without defensiveness</li> <li>• Uses feedback to adjust behaviour or technique</li> </ul>

Category	Element	Notes	Example behavioural markers
Leadership and Management	Leading By Example	<p>Rooted in social learning theory, leaders influence behaviour by modelling professionalism and clinical standards. Colleagues often mirror the conduct they observe</p> <p>Observers should assess whether the dentist's actions embody the standards expected of others. Leadership by example is most effective when behaviours are visible and consistent</p>	<ul style="list-style-type: none"> <li>• Dentist demonstrates calm, professional behaviour even under pressure</li> <li>• Adheres to infection control and safety protocols consistently</li> <li>• Shows punctuality and preparedness, setting the tone for the team</li> </ul>
	Supporting and Motivating Others	<p>Grounded in motivational theory (e.g., self-determination theory), effective leaders foster autonomy, competence, and relatedness in their team</p> <p>Observers should note whether the dentist actively uplifts and empowers others. Motivation is not only verbal but also demonstrated through empathy and constructive support</p>	<ul style="list-style-type: none"> <li>• Dentist offers encouragement and recognises team contributions</li> <li>• Provides guidance or coaching when team members struggle</li> <li>• Creates a positive atmosphere that reduces stress and builds confidence</li> </ul>
	Setting and Maintaining Standards	<p>This reflects normative leadership — establishing clear expectations and ensuring compliance. Standards anchor team behaviour and safeguard patient care</p> <p>Observers should assess whether the dentist demonstrates firm but fair enforcement. Standards must be explicit, consistently applied, and linked to patient safety and quality care</p>	<ul style="list-style-type: none"> <li>• Dentist communicates clear expectations for clinical and professional conduct</li> <li>• Monitors adherence to protocols and corrects deviations promptly</li> <li>• Reinforces standards consistently, without bias or favouritism</li> </ul>
	Maintaining Respect	<p>Based on transformational leadership and psychological safety, respect is the foundation of trust and collaboration. Leaders must balance authority with empathy</p> <p>Observers should evaluate whether respect is mutual and sustained. A respectful leader creates an environment where individuals feel safe to speak up, which directly enhances patient safety and team performance</p>	<ul style="list-style-type: none"> <li>• Dentist treats all team members and patients with dignity, regardless of role or background</li> <li>• Listens attentively and values contributions from others</li> <li>• Manages conflict constructively, without belittling or dismissing</li> </ul>

Category	Element	Notes	Example behavioural markers
Cognition	Coping with Pressure and Fatigue	<p>Grounded in stress management theory and cognitive load models, this element reflects the dentist's ability to regulate performance under demanding conditions</p> <p>Observers should assess whether the dentist demonstrates resilience and regulation. Coping is not about eliminating stress but managing it constructively to sustain safe practice</p>	<ul style="list-style-type: none"> <li>• Dentist maintains composure during complex or prolonged procedures</li> <li>• Uses adaptive strategies (e.g., pausing briefly, delegating tasks) when fatigued</li> <li>• Avoids letting stress spill into communication with patients or team</li> </ul>
	Maintaining Focus	<p>Based on attention control theory, maintaining focus requires resisting distractions and sustaining concentration on critical tasks</p> <p>Observers should note whether the dentist demonstrates attentional discipline. Loss of focus often manifests as repeated errors or missed cues, which compromise patient safety</p>	<ul style="list-style-type: none"> <li>• Dentist remains attentive to the operative field despite background noise or interruptions</li> <li>• Prioritises tasks effectively, avoiding multitasking that compromises accuracy</li> <li>• Quickly re-centres attention after a distraction</li> </ul>
	Recognition of Self	<p>Rooted in metacognition and emotional intelligence, this element involves awareness of one's own strengths, limitations, and emotional state</p> <p>Observers should evaluate whether the dentist demonstrates self-awareness and humility. Recognition of self is critical for safe practice, as denial of limitations can escalate risk</p>	<ul style="list-style-type: none"> <li>• Dentist acknowledges when they need assistance or a second opinion</li> <li>• Demonstrates awareness of personal stress levels and their impact on performance</li> <li>• Adjusts behaviour when recognising fatigue, anxiety, or overconfidence</li> </ul>
	Reflective Practice and Action Planning	<p>Based on Kolb's experiential learning cycle and reflective practice theory, this element ensures continuous improvement through structured reflection and planning</p> <p>Observers should assess whether reflection leads to tangible learning and adaptation. Reflection without action is incomplete; effective practitioners close the loop by planning behavioural change</p>	<ul style="list-style-type: none"> <li>• Dentist reviews outcomes after procedures, identifying what went well and what could improve</li> <li>• Engages in structured reflection (e.g., case discussions, debriefs)</li> <li>• Develops concrete action plans for future improvement</li> </ul>

## Reference Appendix: Theoretical Foundations for DeNTS

This appendix provides a structured reference list with explanatory notes linking each source to the domains of non-technical skills:

- Situation Awareness
- Decision Making
- Teamwork & Communication
- Leadership & Management
- Cognition

### Dentistry-Specific Frameworks

Royal College of Surgeons of Edinburgh, Faculty of Dental Trainers. (2019). Existing Dental Non-Technical Skills (DeNTS) Framework. Edinburgh: RCSEd.

- *Application:* Provides the basic structure to the taxonomy and behavioural markers for dentists' non-technical skills. Directly informs all domains

General Dental Council. (2013). Standards for the dental team. London: GDC.

- *Application:* Establishes professional standards underpinning element relating to leadership, communication, and reflective practice

### Human Factors & Healthcare Models

Flin, R., O'Connor, P., & Crichton, M. (2008). Safety at the sharp end: A guide to non-technical skills

- *Application:* Foundational text on non-technical skills in high-risk industries. Informs elements relating to situation awareness, decision making, and teamwork

Salas, E., Wilson, K. A., Burke, C. S., & Wightman, D. C. (2006). Does crew resource management training work? *Human Factors*, 48(2), 392–412.

- *Application:* Evidence base for Crew Resource Management (CRM), adapted into dentistry for the element of teamwork and communication

Vincent, C., & Amalberti, R. (2016). Safer healthcare: Strategies for the real world. Springer.

- *Application:* Provides strategies for embedding human factors into healthcare systems, relevant to the elements relating to leadership and cognition

### Psychological & Educational Theories

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*

- *Application:* Frames reflective practice and action planning within the cognition category

Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science*, 12(2), 257–285.

- *Application:* Explains coping with pressure and fatigue, and maintaining focus

Bandura, A. (1977). Social Learning Theory

- *Application:* Underpins leadership by example

Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, 44(2), 350–383.

- *Application:* Supports teamwork, communication, and leadership categories, especially maintaining respect and feedback culture

Elwyn, G., Frosch, D., Thomson, R., Joseph-Williams, N., Lloyd, A., Kinnersley, P., Barry, M. (2012). Shared decision making: A model for clinical practice. *Journal of General Internal Medicine*, 27(10), 1361–1367.

- *Application:* Informs decision making elements — considering options, making sound judgements, and communicating choices