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European Dental  
Students' Association

# ARTIFICIAL INTELLIGENCE IN DENTISTRY

European Dental Students' Association

2025



European Dental Students' Association  
International Office - Dublin Dental University Hospital  
Trinity College Dublin, The University of Dublin  
Lincoln Place Dublin 2  
Ireland D02 F859

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## INTRODUCTION

The healthcare sector, along with all other fields, now accepts Artificial Intelligence (AI) as its new technological partner. AI technology enhances operational performance, information retrieval speed, and accuracy, while enabling better knowledge sharing and precise resource location for general healthcare needs and dental practice operations (1).

Despite differing opinions on the implementation of AI in education and dental practice, it is undeniable that its advantages, such as enhanced operational speed, improved patient relations, faster diagnosis, and more precise treatment planning for surgical procedures, have a positive influence on everyday workflow and accuracy (2, 3). Currently, European dental schools teach AI competencies at different levels, and some programs do not include AI education in their curricula (4, 5). It is crucial for educational institutions to recognise the dual nature of AI, see it as a technological tool and embrace its potential to transform teaching methods, while addressing essential questions about educational fairness, moral standards, and educational progress (6).

The European Dental Students' Association (EDSA) supports the integration of AI into dental education to enhance student knowledge and promotes the ethical use of AI in dental practice (2, 5). AI literacy requires students to learn technical skills and develop skills for enduring technological changes and educational method transformations.

## BACKGROUND & PROBLEM STATEMENT

The European dental faculties lack standardisation when it comes to AI implementation in their dental education programs. The majority of universities teach digital competencies, but their AI literacy programs remain insufficient to prepare students for modern digital healthcare workflows and healthcare system transformations (4, 5).

The World Health Organisation, FDI and CED, state the need of evidence-based patient-centred AI implementation methods for development of oral healthcare in dental practices (2, 4, 6). Additionally, UNESCO provides valuable insights into how AI transforms education, raising new questions about educational fairness, learning accessibility, and human involvement in teaching processes (7).

The European dental education system requires immediate action to develop structured AI training programs, as this will enable future dentists to utilise AI responsibly for improved patient care and digital transformation trust (4, 5).

## SCOPE

This policy applies to:

- Dental students at undergraduate and postgraduate levels across Europe.
- All EDSA member organisations, campaigns, and platforms.
- The scope includes curriculum design, research, and broader advocacy for system-level educational reforms.

## DEFINITIONS

**Artificial Intelligence (AI):** software used to perform tasks or produce output previously thought to require human intelligence, especially by using machine learning to extrapolate from large collections of data.

**Machine Learning (ML):** the process of computers improving their own ability to carry out tasks by analysing new data, without a human needing to give instructions in the form of a program, or the study of creating and using computer systems that can do this.

**Deep Learning (DL):** a type of machine learning that uses many layers of data processing.

**Clinical Decision Support System (CDSS):** a software that helps clinicians and patients by matching individual patient data with a computerised medical knowledge base to provide personalised assessments or recommendations at the point of care.

## **POLICY STATEMENT**

### **1. Promotion of AI Literacy in Dental Curricula**

- Foundational AI modules should be incorporated at undergraduate and postgraduate levels.
- Students should be familiarised with the use of AI in dental practice in an ethical, transparent, clinically validated and learning-enhancing way.
- To ensure favourable treatment outcomes, students should be sensitised towards critical thinking and their own responsibility while using AI tools in dental practice, as well as be educated on data protection and patient information and education about AI.
- Dental faculties should emphasise crucial reflection on the ethical dilemmas and potential biases introduced by AI, such as algorithmic bias or dependence on automation.

### **2. Ensure Student Participation in AI Governance**

- EDSA supports the inclusion of dental students in discussions at institutional and national levels on the implementation of AI technologies in dental education and practice.
- Student perspectives should be considered in decision-making processes related to ethics, patient safety, and curricular design.
- Participatory engagement of dental students in AI Governance is a determining factor in shaping future curricula to ensure transparency, equity, and shared responsibility in the adoption of AI.
- EDSA is there to promote and offer capacity-building activities such as Policy Café to empower students to engage confidently with AI-related policy and governance discussions.

### 3. Support Educational Stakeholders and Policy Alignment

- EDSA is willing to collaborate with educational stakeholders by giving students' perspectives to develop structured modules on AI literacy for the Dental curricula that are followed in European universities.
- EDSA supports the integration of AI as a modern tool to improve learning as well as teaching.
- Align EDSA recommendations with WHO, FDI, CED, and UNESCO positions on:
  - i. Digital health and education, including the integration of teledentistry and digital competencies into dental curricula (5, 2, 6)
  - ii. Ethical and patient-centred innovation, emphasising transparency, data protection, algorithmic explainability, and clear liability frameworks for AI tools (2, 3, 6)
  - iii. Evidence-based implementation and workforce preparation, calling for multi-centre validation studies, harmonised competencies, and adequate training and support for dental professionals, while recognising the need for future-oriented and inclusive pedagogical approaches (1, 4, 6, 7).

## ROLES AND RESPONSIBILITIES

- EDSA Board and Policy Officers: endorse discussions on the implementation of AI in dental curricula and represent students' interests by promoting up-to-date education models.
- Faculty and Clinical Staff: encourage critical thinking among dental students and prepare them for a modern and developing professional environment.
- Students and Unions: participate in discussions about AI and actively partake in shaping new dental curricula.

## STRATEGIC ALIGNMENT

1. Schwendicke, F., Samek, W., & Krois, J. (2022). Artificial intelligence for caries detection: Value of data and information. *Journal of Dental Research*, 101(12), 1266–1274. <https://doi.org/10.1177/00220345221074695>
2. FDI World Dental Federation. (2021). *Policy statement: Artificial intelligence in dentistry*. Adopted by the FDI General Assembly, September 2021.
3. FDI World Dental Federation. (2021). *White paper: Artificial intelligence in dentistry – Ethics, regulation, and education*.
4. FDI World Dental Federation. (2021). *Vision 2030: Delivering optimal oral health for all*. Geneva: FDI World Dental Federation.
5. World Health Organization. (2023). *Global Oral Health Action Plan 2023–2030*. Geneva: WHO. (Actions 2.3 and 3.3 on Digital Education & Teledentistry).
6. Council of European Dentists. (2020). *Resolution: Artificial Intelligence in Dentistry*.
7. UNESCO. (2025). *AI and the futures of education: Disruptions, dilemmas, and directions*. Paris: UNESCO.

## FREQUENTLY ASKED QUESTIONS (FAQS)

If you have any further inquiries regarding this policy, please contact the EDSA Policy Officer at [policy\\_officer@edsaweb.org](mailto:policy_officer@edsaweb.org).

## POLICY REVIEW

This policy will be reviewed every two years by the current Policy Officer of EDSA. It will be aligned with global health priorities and will incorporate feedback from professionals, stakeholders, and the community.



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