Augmented Reality is shaping the future of dentistry

By Sandeep Agrawal   19 Aug 2014

Clinical dentistry is a complex area of medical practice. Dentists need to have exceptional problem-solving abilities in order to combine the information obtained from patients and their experience for proper diagnosis. Now, identifying specific dental ailments and conducting surgeries turns out to be extremely challenging for dentists. This is where Augmented Reality can add value into their practice.

For all those who are new to this technology, Augmented Reality involves overlaying digital information on real-world objects in your surrounding environment. The idea is to help you have a better understanding and new perspective of the world around you.

How does it work?

You project an app-enabled smartphone towards an object or marker, and it triggers multimedia content in the form of 3D models, animation, video or audio overlay. Augmented reality gives control in your hands so that you can engage with the items around you in an entirely different way.

Augmented Reality applications for smartphones, tablets and wearables like Google Glass are already transforming the healthcare and medical landscape including dentistry.

Surgeries

Oral and maxillofacial surgeries often require reconstruction of the head and neck. Here multidisciplinary communication is extremely important. A slight mistake can create several complications in surgery. Augmented Reality can help surgeons perform virtual surgery wherein they can know exactly where cuts are to be made. This can then be replicated in the operating room for greater precision and accuracy.

Also, surgeons feel anxious when they have to operate on an oral cavity while looking at surgical monitors. Such difficulties can be overcome by augmented reality applications for Google Glass. These applications directly overlay information onto the real-view of the surgeon.

Oral implantology

For oral implantology, doctors often have to reconstruct 2D images mentally. Doctors need to imagine how exactly a 2D image (concerning patient's data) looks in 3D format. Now, this mental reconstruction is not easy. This, in turn, makes treatment planning all the more difficult.

Augmented Reality is redefining how dentists plan treatment by offering three-dimensional view in real-time. The technology is improving diagnosis, too, by giving insights on the exact orientation and position of implants in 3D.

What's more, it even offers dentists the opportunity to move and interact with a patient's anatomy with three degrees of freedom. The design and placement of implants can be interactively simulated and controlled in real-time. The results can be seen immediately and corrected accordingly.

Furthermore, inappropriate implants can be detected with regards to the quantity and quality of a patient's bone.

Student training

Imparting dentistry education isn't easy! Augmented Reality can help students quickly gain dental anatomy skills in less time. Right from learning about drilling instruments to conducting drilling procedures properly, AR facilitates the acquiring of skills.

3D oral cavity models can be overlayed on markers or within textbook chapters to have a better understanding. Students can also conduct virtual surgeries within an oral cavity to learn the use of drilling tools. All this is possible with 3D simulation.

Similarly, students can be taught about how to use rotary cutting instruments, mirror, explorer and high-speed hand pieces correctly using augmented reality.

Wrap up

Augmented Reality is turning out to be revolutionary for clinical dentistry. It is helping dentists get a real-world view of a

patient's dental anatomy to diagnose problems and conduct surgeries in a more clear-cut way. Besides, it's also making dentistry training interesting and facilitating skills acquisition.

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