E-learning in Dentistry:

The role of ICT in dental education

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What is our definition of information technology (IT) as related to dentistry?

- From a pedagogic point of view, what is described as computer-assisted instruction (CAI), computer-assisted learning (CAL) or e-learning is learning conducted via electronic media, typically on the internet
- It involves a wide array of instructional methodologies and tools.
- The use of e-learning has increased rapidly in dental education over the past decade.

Group Discussion on what is role of ICT (information communication technology) in dental education

1. e-learning,
2. distance learning,
3. simulations,
4. computer-based assessment
5. patient management software,
6. digital X-ray

IT-related activities

1. Teleconference applications (audio/videoconference, Web-based or not).

2. Standalone CAL applications (CD-ROMs, didactic Web pages, in general applications that limit interaction between user and interface).

3. Simulations (Web-based or not) Simulation of skills, decision making, authentic scenarios, virtual patients, etc.

4. e-learning platforms (Web-based collaborative learning environments, learning content management software, virtual learning environments, etc.).

IT-related activities

5. Consumer electronics and related new technologies (i-Pod, mobile telephones, palm pilots, etc.).

6. Administration and learning management systems (managing the logistics of the learning process, tracking and documentation of progress).

7. Tools for the retrieval and management of information (Web-based databases such as Medline, reference management software, etc.).

8. Computer-based assessment (tools and strategies for the use of IT in the student assessment).

Why IT?

Group discussion

As society is changing, our education methods cannot remain static but must be dynamic and responsive to the wider social environment.

Benefits of ICT in dental education

Convenience

Cost effectiveness

Repeatability

Media rich content

Easy to monitor

Consistency

Specific educational applications

For foundational knowledge acquisition (theoretical)

Tools for the retrieval and management of information (Web-based databases such as PubMed, reference management software, etc.).

Standalone CAI applications (CD-ROMs, didactic web pages, in general applications that limit interaction between user and interface).

e-learning platforms (Web-based collaborative learning environments, learning content management software, virtual learning environments, etc.).

Consumer electronics and related new technologies (i-Pod, mobile telephones, palm pilots, etc.).

Specific educational applications

For acquisition of skills (pre-clinical and clinical)

Simulations, web-based or not, two-(2D) or three-dimensional (3D) simulation of skills, decision making, authentic scenarios, virtual patients, etc. For patient care and decision making

Tools for the retrieval and management of information (Web-based databases such as PubMed, reference management software, etc.).

Teleconference applications (audio/videoconference, Webbased or not).

Specific educational applications

For formative and summative assessment

Administration and learning management systems (managing the logistics of the learning process, tracking and documentation of progress).

Computer-based assessment (tools and strategies for the use of IT in student assessment).

Computer-based reflective logs, diaries, portfolios, etc.

Specific educational applications

For information sharing

Teleconference applications (audio/videoconference, Web-based or not),

collaborative working environments, file share applications.

How to implement quality assurance with both content and structure of electronic learning environment

1. e learning effectiveness of the product,
2. usefulness to faculty and students,
3. the quality of the content and its technical quality

Recommendations as to how the IT tools and strategies might be used to improve the quality of the following

- Instructional methodologies and learning outcome
- Assessment

Information technology should be used to:

1. Enrich instructional interaction.
2. Allow flexibility of structures and support individual learning paths.
3. Support the building of association and development of networks.
4. Enable reflection, self- and peer-assessment.
5. Promote the development of life-long learning attitudes.
6. Encourage active learning, collaborative and peer learning.
7. Support face-to-face teaching through blended learning environments.

To secure effectiveness and efficiency, implementation of IT instruction should include:

1. Existing research evidence and best practices.

2. Faculty development programmes.

3. Students' active involvement.

4. Global collaborations in the development and sharing of content and methods.

5. A modular philosophy of development, which allows easy, sharing, update and redesign of the content.

6. Platform independence in terms of technology, which would allow for maximal applicability of the content.

Summary

The use of information technology (IT) in dentistry is far ranging.

Institutional strategies and support together with strong leaderships is needed when implementing e-learning into a dental school.

Its important for the dental educator to understand the methods where IT can assist in the education and competence development of dental students and dentists (e.g. e-learning, distance learning, simulations and computer-based assessment)