Teaching Innovations in the Anatomical Sciences: Results from the Basic Science Survey Series (BSSS) for Dentistry

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Basic Science Survey Series (BSSS) for Dentistry

Educational research project to assess how the basic (biomedical) sciences are taught in North American - ADEA Project Pool Grant - 8 Web-based surveys - sent to course directors - 67 schools participated - papers being published:

1) anatomy
2) histology/embryology – published: JDE
3) neuroscience – published: JDE
4) pharmacology – published: JDE
5) physiology – in press: JDE
6) biochemistry/nutrition
7) microbiology/immunology
General questions we wanted to assess concerning dental basic science instruction?

1) What are the specific topics and content areas being presented?
2) Who are the faculty teaching these courses?
3) How much experience do faculty have teaching the basic sciences & teaching dental students?
4) How are the courses being taught?
5) How many student contact hours are needed to teach these courses?
6) Are the dental students taught with other professional students?
7) Are the dental students taught in a laboratory setting?
8) Has your school undergone curriculum changes which have affected the teaching of the basic sciences?
9) Are we preparing the dental students for their board examinations?
10) Do the faculty use computer-assisted instruction (CAI) applications?
# Use of Computer-Assisted Instruction (CAI) Tools within the Anatomical Sciences

<table>
<thead>
<tr>
<th>Course</th>
<th>Schools using CAI tools</th>
<th>Percentage of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>neuroscience</td>
<td>31/65</td>
<td>47.7%</td>
</tr>
<tr>
<td>anatomy</td>
<td>42/67</td>
<td>60.6%</td>
</tr>
<tr>
<td>histology and embryology</td>
<td>47/56</td>
<td>83.9%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>120/188</strong></td>
<td><strong>63.8%</strong></td>
</tr>
</tbody>
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Histology leads usage of CAI tools - virtual microscopy!

Embryology - short videos (Symbro & Embryo Images)

Anatomy – online dissectors and atlases

Neuroscience – interactive brain atlases
Innovations in Histology – Virtual Microscopy

Virtual microscopy is the most popular innovation in histology and enables students to view histological images within an instructor-led format.

Other examples of CAI tools utilized included: 1) using online content in a course management system; 2) delivering static, annotated digital images via CD-ROM or Web-based applications; 3) assigning students to view external websites, such as MedEdPortal® content\(^\text{17}\); and 4) creating computer-based tutorials.

Innovations in Embryology – Short Videos

Embryology courses use short, animated video clips to deliver course content to North American dental students.

Examples of CAI tools utilized included: 1) using online content in a course management system; 2) assigning students to view external websites, such as MedEdPortal® content\textsuperscript{17}; 3) viewing short animated films, such as Simbryo, which was developed at Stanford University\textsuperscript{18}; and 4) utilizing established websites, such as Embryo Images.

https://syllabus.med.unc.edu/coursesware/embryo_images/unit-welcome/welcome_htms/akgs.htm
Anatomy Innovations – Online dissector/atlas

Most dental anatomy courses have computers located within their dissection facilities enabling the use of CAI tools, such as online atlases & dissectors.

Examples of CAI tools utilized included: 1) using online content in a course management system; 2) assigning students to view external websites, such as MedEdPortal® content¹⁷; 3) viewing dissection videos (in-house or commercial, Acland’s Atlas); 4) using online atlases and dissectors.

Mentioned in survey
VH Dissector Pro
Acland’s Videos
Netter’s Atlas
Primal Pictures
Summary of innovations in the anatomical sciences

• Use of computer-assisted instruction (CAI) tools within the anatomical sciences were over-reported within the BSSS for Dentistry project, but histology courses lead the way!
• Results are being published in JDE
• Creative uses of CAI tools are highlighted by virtual microscopy, online dissectors and atlases, short animated videos to deliver course content within the anatomical sciences.

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