

DIGITAL IMAGE EDUCATION LIBRARY (DIEL)

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AIM: To provide a multimedia, conceptual, case-based web solution to assist in educating the next generation of health professionals

METHODS: We created the Digital Image Education Library (DIEL), a set of Java modules that include a four-tier architecture for terminology services with Java server pages in a web browser on the front end, a web server as a middleware tier, a RMI server, and a relational database server as the back end. We also developed an image import function with annotations, a case import function, a method of binding images to one or more cases, and a method for concept-based searching of the digital image warehouse.

RESULTS: Approximately 250 cases have been entered into DIEL along with 1,000 clinical images. Images are cataloged using text, and the metadata is mapped to controlled health terminologies. Educators are then able to use the search mechanisms to locate images and associate them with a given case or cases, making the development of teaching compendia easy and rewarding. These cases can then be accessed randomly as well as by topic or by specific search criteria using Boolean operators augmented by explicit uncertainty. The system records each student's responses, which can provide further summary data to educators. This capability also allows the system to present learners only with new cases. As the images and cases can be reused, this system also represents a powerful teaching tool which allows educators access to an increasing wealth of material with which to challenge and formally test their students.

CONCLUSION: DIEL is a powerful and flexible architecture in support of concept-driven, case-based learning that incorporates both dynamic visual content and textual metadata to enhance the educational experience.

Keyword: digital library, case-based learning, digital image management