E. Kaldoudi, V. Vargemezis, K. Simopoulos

“Information & Communication Technologies in Medical Undergraduate Education”

Presented in:
2nd International Conference on Information Communication Technologies in Health: “Health Informatics & Health Telematics Foundations for High Quality of Care”, Samos, Greece, July 8-10, 2004
INFORMATION & COMMUNICATION TECHNOLOGIES IN MEDICAL UNDERGRADUATE EDUCATION

E. Kaldoudi, V. Vargemezis, K. Simopoulos

School of Medicine
Democritus University of Thrace - Greece
new technologies in education

- educational shift
  from “teaching” to “learning”

- active support and funding
  from EU and local governments
new technologies in medical education

facts:
- increasing amounts of information
- technological advances in medical tools & devices
- medical data are produced, stored & distributed digitally

challenges:
- continuing life-long education is mandatory
- patient’s quality of life awareness may limit clinical practicing
- clinical work often comes before teaching
supporting medical education

- electronic textbooks
- standalone educational software
- virtual and augmented reality environments
- internet & the web
- e-learning environments
main goals

- support and enhance (NOT replace)
  - theoretical instruction
  - clinical apprenticeship

- prepare medical students for the “filmless” and “paperless” hospital
medical education

information  ⇒  facts & data

knowledge  ⇒  structured information with a purpose

understanding  ⇒  conscious knowledge, achievement of explanation, expertise
information

- digital textbooks, atlases, databases, research journals, ...
  ⇔ search & discovery, semantic organizing, data mining

- clinical information in digital form
  ⇔ seamless data extraction & integration with the educational system
knowledge & understanding

- hypertext & multiple levels of information organization
  ⇒ relevant information, capture expert’s roadmap to knowledge

- training tools and environments
  ⇒ dynamic interaction with the real-world

- e-learning
  ⇒ enhance collaboration with user awareness
medical education at DUTH

2-year grant
to introduce new technologies in medical education

- instruct students about new technologies
- use new technologies to support teaching & apprenticeship
project outline

deploy an integrated e-learning environment based on:

- open source technologies
- off-the-shelf components

to support:

- pre-clinical instruction
- clinical apprenticeship
Medical School Intranet

Generic learning management system

Supporting tools

Clinical data

Medical information

Internet & the Web

Clinic

Surgery

Video & audio transmission

Healthcare information systems
medical content

- identify information that needs to be communicated via e-learning
- deploy the appropriate environment for educational content management
- make educational content re-usable independently of the environment

\[ \text{Sharable Content Object Reference Model (SCORM)} \]
integration with healthcare enterprise

major issues:

- extract educational information from legacy clinical information systems
- support dynamic real-time interaction
- provide added-value tools for clinical information processing & knowledge extraction
integration with healthcare enterprise

technical considerations:

- hide communication proprietary to the medical environment (DICOM, HL7)
- communicate educational information using commonplace standards
- adopt an open, extensible service oriented architecture
web service paradigm

- enable disparate systems to work together
- based on open, internet standards
- broad industry support
DICOM Image Management Web Service

web-based medical image viewer

DIM web service

XML/SOAP

DICOM servers

DICOM

E. Kaldoudi – ICICTH 2004
current work

- towards a cluster of web services
  - 1st tier: facades for legacy systems
  - 2nd tier: added value services: data mining & knowledge extraction

- dynamic interaction with and data retrieval from clinical information systems

- special purpose authoring & data processing tools
conclusion

- use educational standards to ensure seamless content use and re-use

- achieve synergy between the academic and healthcare environment

bao paradigmshift: find the most suitable way to augment medical education
acknowledgements

work carried out as part of the project
“Reforming Undergraduate Education
in the School of Medicine, DUTH”

funded by the:

Managing Authority of the
Operational Programme for
Education and Initial
Vocational Training

Greek Ministry of National Education
and Religious Affairs

European Community Co financing:
European Social Fund and European Regional Development Fund

E. Kaldoudi – ICICTH 2004
cite as