AALBORG UNIVERSITY

Building health informatics capacity - educating the workforce

Marianne Sørensen, Christian Nøhr
Virtual Centre for Health Informatics
Aalborg University
Denmark

Master programme in Health Informatics at Aalborg University

- Started in 1994
- 3 year programme – 30 ECTS / year (part time study)
- 243 masters have earned their degree
- 35 students admitted every year
- Drop out < 20% mainly during 1. year
- 100 active students at any time
- 53% Nurses, 13% Lab techn., 11% MD, 23% other Bachelor degrees
- Age of the students 28 – 50 years
- Recruiting from all Scandinavia

4 key characteristics of the program

- Problem based
  (interdisciplinary)
- Project organised
  50% project work
  50% course work
- Team work
- Distance and
  face to face learning

Problem-based project work

Each year focus on health informatics from different perspectives:

1. year: an analytical perspective
2. year: a design perspective
3. year: a scientific research perspective

The project work can be divided into 4 phases

1. Formulation of the problem
2. Investigation research
3. Production writing/editing process
4. Evaluation process

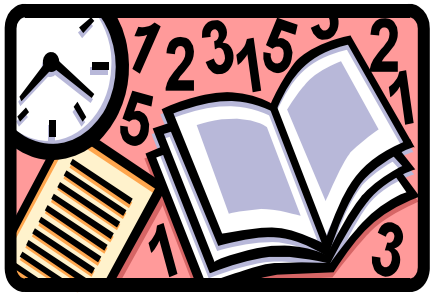
Students bring their own problems – faculty does not suggest problems

Coursework

A course is a systematic representation of a discipline

The purpose is to provide the student with sufficient disciplinary knowledge to cope with interdisciplinary problems

Courses are introduced at the weekend seminars and the students guided on a conference system (FirstClass)



Organization of the courses

The courses are organized in four tracks, and within each track there is a learning progression through the three years

	From data to decision	System and context	Technology change	Methods for data collection and analysis
3.Yr	Systems for decision support	User interaction with health information systems	Technical and organizational change	Quantitative and qualitative analytical methods
2.Yr	Advanced health information management	Health information system modeling	Technology assessment and evaluation of	Descriptive quantitative and qualitative methods
1.Yr	Basic data collection, -transport, -storage and decision making	Health information system's requirements	Organizations and project management	Methodology for project work and basic literature search

Evaluating the capacity build

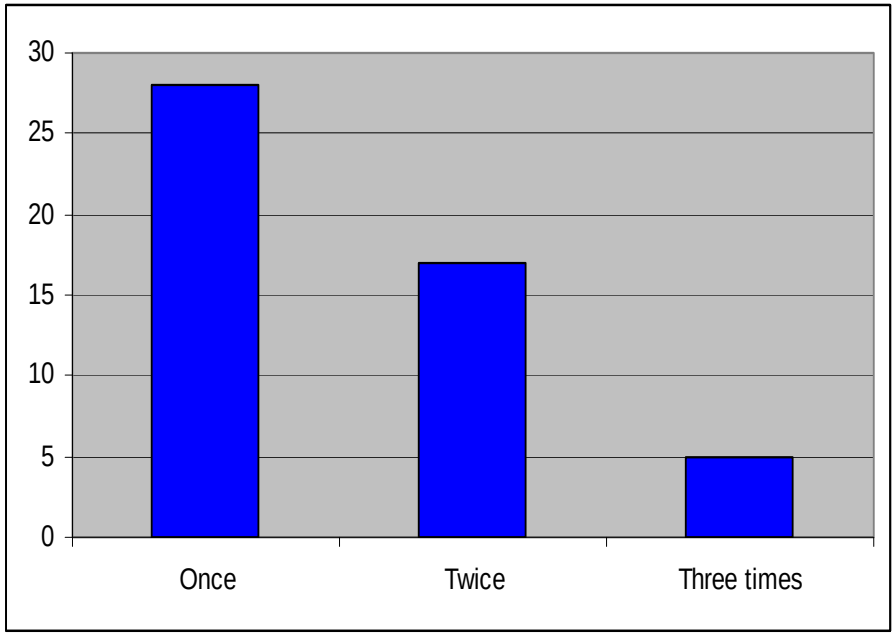
In order to evaluate how the students contribute to the health informatics capacity, and to monitor how the program is able to prepare the students for their future job we have investigated the student's job situation after graduation. The survey was done in 2004.

A cover letter pointing to a web-based questionnaire containing 45 questions was sent to the 147 students who had graduated from the program. 69% responded. The questionnaires were analyzed anonymously. Descriptive statistics were applied to the standardized answers.

Results: Change of jobs

76% of the graduates are working within health informatics. 8% are working with IT outside the health area, mainly IT- or pharmaceutical industry. 15% do not work with IT at all, the majority is either working in clinical positions (nurse or physician) or in managerial positions within the hospital.

Half of the students change job after graduation. The figure shows how many students have changed their job once, twice or three times since they graduated.



Results: Employment before and after graduation

The students were asked where they were employed before they entered the program and where they were employed three month or more after graduation.

Employment	Before	After	Migration
Hospital - clinic/laboratory	36	16	-20
Nursing school	11	11	0
Regional institution/administration	5	10	5
Hospital - administration	11	9	-2
University or research institution	3	8	5
Hardware/software industry	3	8	5
Hospital IT-department	10	7	-3
Other	7	6	-1
Ministry or government institution	1	4	3
Municipal institution	3	4	1
Other public institution	2	3	1
Other health informatics industry	0	2	2
Consultancy	1	2	1
Homecare	4	1	-3
Pharmaceutical industry	0	1	1
Own company	1	0	-1
Missing	3	9	6
total	101	101	

Results: Work function

Work function	
Implementation of it-systems	57
Education	47
Project management	45
Quality assurance	40
Consultancy	35
* for hospitals	33
Management/organisation	29
General administrative tasks	20
* for primary care	13
Decision support	13
Multimedia, internet, intranet	13
* for municipality health care/administration	12
Telemedicin	10
Research and development	8
* for education	7
Medical image analysis	4
* for public health	3
Pervasive computing	3

There are many different work tasks fulfilled by the masters, and the majority fulfills more than one task in their job. The masters were asked to check as many as necessary to describe their current work function on which they spend more than 10% of their time, and the result is shown in the table.

* = Development/purchase of systems for ….

Discussion

In the contrary to the programs at Heidelberg University [3] and University of Utah [5] the majority (76%) of the graduates from Aalborg University work with health informatics after graduation and 92% remain within the health care sector. An immediate explanation is that nearly all the students at the point of entering the program already have a job in health care.

At Heidelberg University more than half of the graduates worked outside of medical informatics, which in their opinion underlined the quality of the informatics oriented part of education, because the medical informatics graduate can compete with those from general computer science [3]. We find it rather supporting for the quality of our program that the graduates are able to find jobs within health informatics – the area in which they are specialized to function in and that they can contribute with high level knowledge about very complex problems.

The survey has been essential to further development of the curriculum.

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