



Ten years with technology - innovative practice or incremental change ?

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Does ICT have the potential to revolutionise higher education?





Has it changed teaching & learning in higher education?





Really?

Master in Pharmacy
Molecular biology and Human Genetics 15 hp

Theory Videos Support

Startpage

- Molecular biology
 - 1.1 Introduction to the cell
 - 1.2 The bacterial DNA molecule**
 - 1.3 Mutations
 - 1.4 DNA repair
 - 1.5 Recombinat
 - 1.6 Plasmids
 - 1.7 Transformation
 - 1.8 Gene expression and regulation
 - 1.9 Plasmids as tools
 - 1.10 DNA cloning
 - 1.11 Bioinformatics and proteomics
 - 1.12 Practicals 1-5
- Human Genetics

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The bacterial DNA molecule

About the structure of DNA and RNA, Doublestranded DNA, the replication machinery

Redigera

Assignments

Covered in: Fundamental Bacterial genetics Chapter: 2

Read through the chapter and try to answer the questions at the end. These questions will be discussed in the Adobe connect meeting on Monday 24 January at 12.00 noon.

Good luck with your studies!

Redigera

Links

Adobe Connect

- <https://connect.sunet.se/hansum>

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Molecular Biology

1. Introduction
Hans Wolf-Watz (03 min 20 s)

This course is solely based on the text book by Trun and Trempey. The course will give you knowledge about the modern development of molecular biology such as gene regulation, bioinformatics and DNA manipulations. This cannot be accomplished without first making sure that the students understand DNA structure, its function, and events that have impact on this structure and function in a bacterial cell that is used as a model organism. Escherichia coli is used as model organism since this is the best studied and understood model organism in biology. The course starts from the very beginning and makes no assumptions. This means that there are no background requirements beside a general knowledge of basic chemistry and organic chemistry. You will first learn about the bacterial cell and its contents followed by the chemistry, structure and function of the DNA molecule. Thereafter you will learn about the things that can happen to the DNA molecule, both inside and outside the bacterial cell. This will be followed by a section where you learn about gene expression and gene regulation. These above blocks will provide you with a solid background to understand modern molecular techniques and DNA manipulations, DNA sequencing, gene-array, proteomics and bioinformatics.

The textbook

The text book contains a number of chapters that all end with a number of questions that can be answered by reading the preceding chapter. The idea behind this moment of the course is that you will be active and read about one chapter per day and then answer the questions accordingly. The answers and the solutions will first be discussed internally in groups that will contain 2-4 students. Each Monday we will have a common discussion about the chapter of the week (usually 4) and each group must provide written short answers to the questions that thereafter will be discussed by all students and a teacher. The written exam will be limited to a selected part of these questions.

NB! the chapters 1.1 to 1.11 indicate the chapters of the book that you should read.

Fundamental Bacterial genetics
Nancy Trun and Janine Trempey
ISBN 0-632-04448-0

Meetings

There will be an Adobe Connect meeting in "hansum" (see link below) every **Monday at 12.00 o'clock**.

You are divided into 3 study groups that must meet and discuss the questions prior to the Monday meeting:

- 1) Arnie Bagdasarian, Johenny Eriksson, Helena Gustafsson, Maria Lingas
- 2) Mårten Pazzlow, Mudja Saboor, Sirikka-Liisa Westerholm, Alan Talat
- 3) Eurus Belin, Mikaela Belin, Eilika Sahlin, Maximilian Wicen, Marineta Tusic, Rafman Towhidur



Research study

Many factors both extrinsic & intrinsic influence adoption of ICT by academics:

- Resources, infrastructure
- Organisation & structure of institution
- Support technical & pedagogical
- Teaching cultures (subject specific)

- Approaches to teaching & learning
- Attitudes to technology
- Approaches to teaching & learning with technology



Research study

In what way do teachers' beliefs and attitudes to teaching, learning and technology affect course design and ICT implementation? Does technology use facilitate pedagogical development





Umeå University



36,000 students

large number of
online/distance courses
(48 %)

Number of distance
students increasing (70%
of all new students are
online)

Umeå University, Faculty of Arts





Centre for Teaching & Learning

- Range of training activities for academic staff in the form of courses, seminars and workshops on various aspects of teaching.
- Consultation - design and implementation of ICT in teaching and learning.
- Strategic planning – advise university management





Bachelor in Pharmacy Programme

Three-year programme, started 2003 (Master in Pharmacy 2010)

- Course content & course administration use an LMS (Ping Pong)
 - virtual meetings via Adobe Connect
 - alternative ICT tools available as add-ons
 - obligatory meetings for laboratory work
 - local & virtual tutors
-
- 30 academic staff involved in the programme
 - CTL provide technical & pedagogical support



Technology or pedagogy?





Data

- Archived course material (course content, structure and discussion boards),
- Stimulated recall – initial course design, course design now or at revision points
- Interviews with teachers, ATI inventory
- Student evaluations, student results,
- Program evaluations



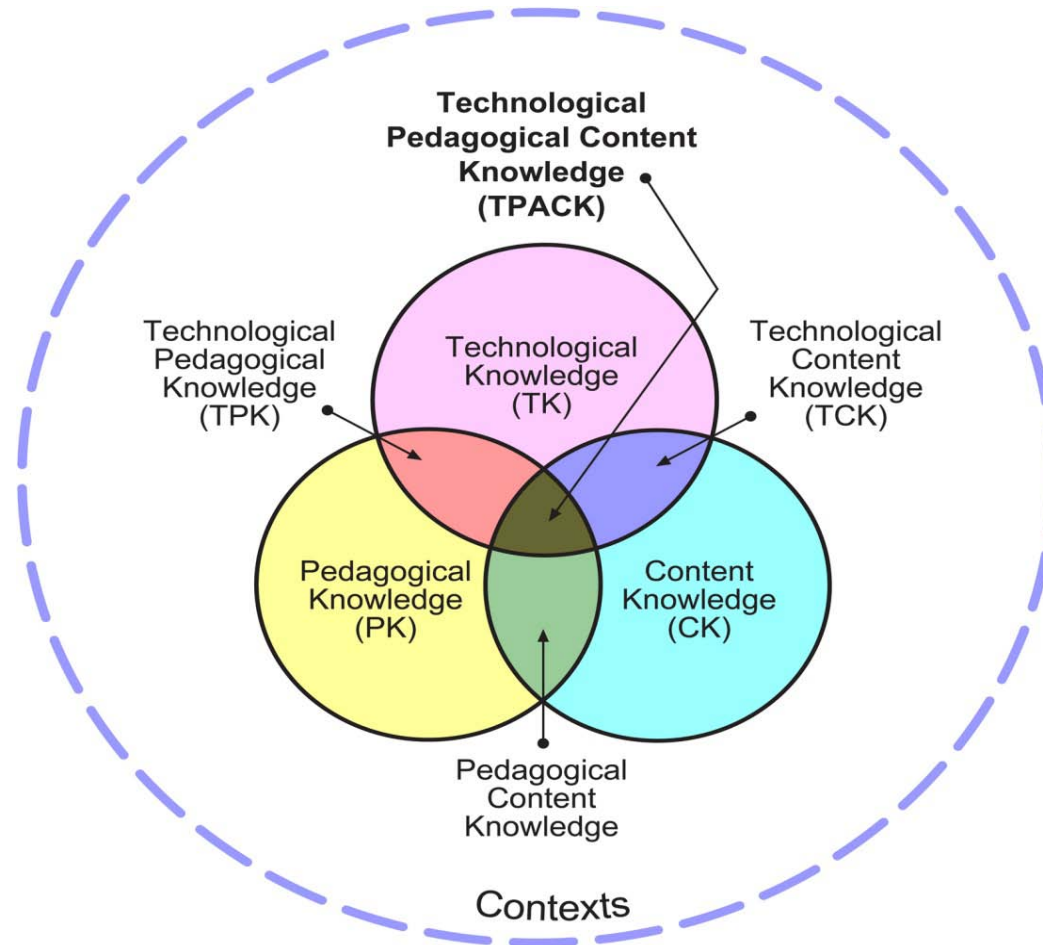


Preliminary results

- 25% innovative use of ICT tools – blogs, wikis, simulations and second life. PBL, case etc. New methods of assessment
- 65% showed incremental change, use of new tools for 'traditional' teaching. Add ons...
- 10 % showed no change.....



TPACK





Preliminary conclusions

- Technology *can* contribute to pedagogical change/innovation.
- ICT use spread to other courses & programmes
- Teachers need to reflect on and make visible their teaching beliefs – with or without technology.
- Professional Communities
- Change takes time/needs resources – must be backed by management committed to change/quality development!



Thank you!

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