

Pharmacy, internet and information literacy in the University of Kuopio

Creating Knowledge V
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Information literacy teaching in the University of Kuopio

- | Information retrieval courses since opening of the university in 1972
 - | Information-intensive fields in the beginning (medicine, natural sciences)
 - | Emphasis on independent studying, library as "learning laboratory"
 - | Graduates must learn how to keep their knowledge up to date in future
 - | Medical literature retrieval systems well-established in 1970's

Information literacy teaching in the University of Kuopio

I Present situation

- I Compulsory 1 ECTS information retrieval courses for all undergraduate students aiming at degree (in pharmacy 2 ECTS)
- I Offered in seven disciplines
- I Classroom courses and Moodle-based courses
- I Information Retrieval and Library Skills for International Students
- I Information Retrieval and Reference Management for Postgraduate Students (2.5 ECTS)

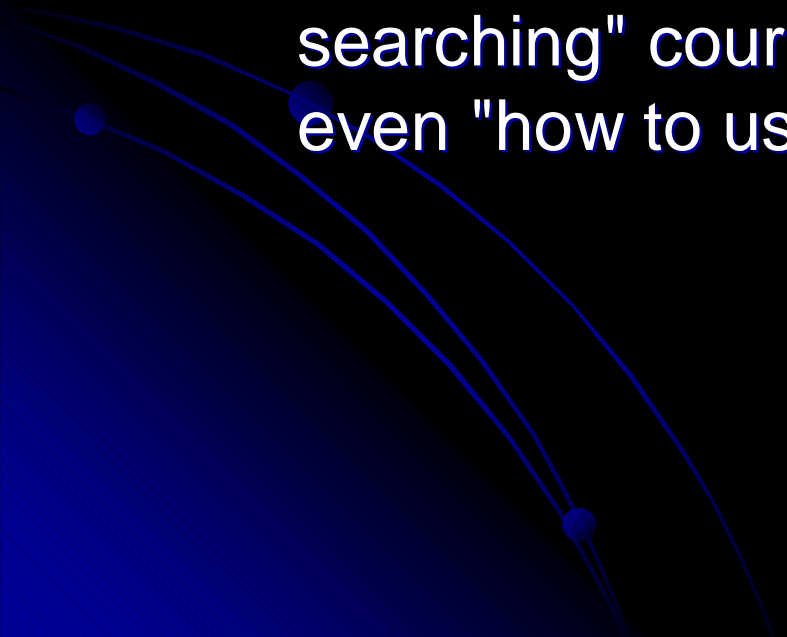
Challenges in teaching pharmaceutical information retrieval

I Course timing

- I Students have to use pharmaceutical information sources very soon after the start of their studies
- I Pharmacist's essay is written during second and third years
- I Different information needs during all student years

I Large number of students and busy tempo of studies

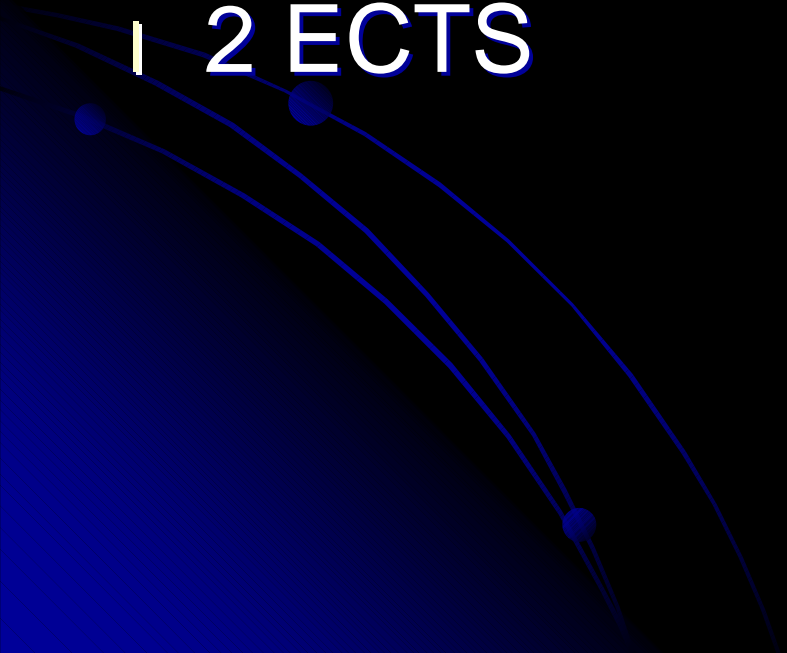
Challenges in teaching pharmaceutical information retrieval

- | Limited teaching resources in the library
 - | Motivation of students
 - | "I know how to search the Internet, so what's there for me?"
 - | Pharmaceutical information course, not "internet searching" course, "how to use computers" course or even "how to use the library" course
- 

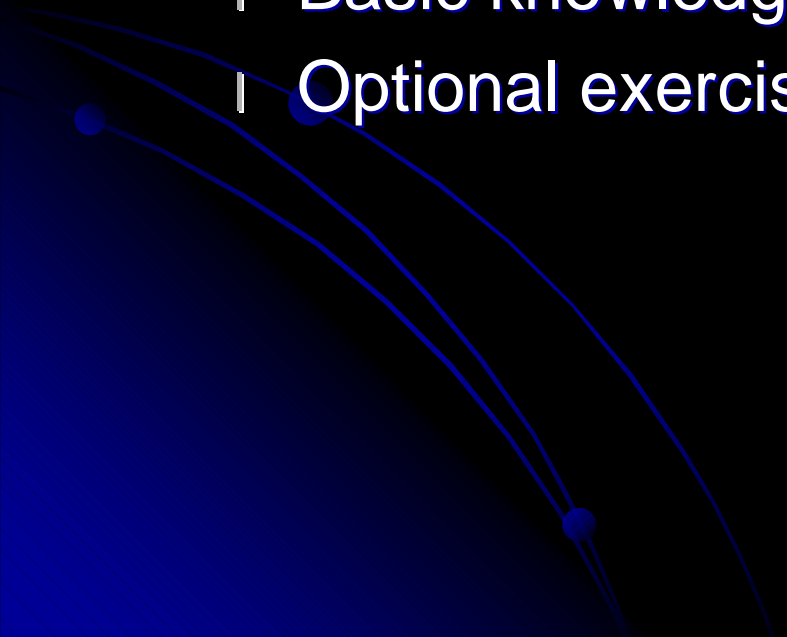
Distance Learning Course in Information Retrieval in Pharmacy

- | Finnish university libraries' TieDot project in 2002
 - | To create several discipline-specific distance learning courses in information retrieval
- | Project group established in Univ. Kuopio to prepare pharmaceutical information retrieval course
 - | Information specialist from the library
 - | Teachers from the Faculty of Pharmacy
 - | Online education specialist

Distance Learning Course in Information Retrieval in Pharmacy

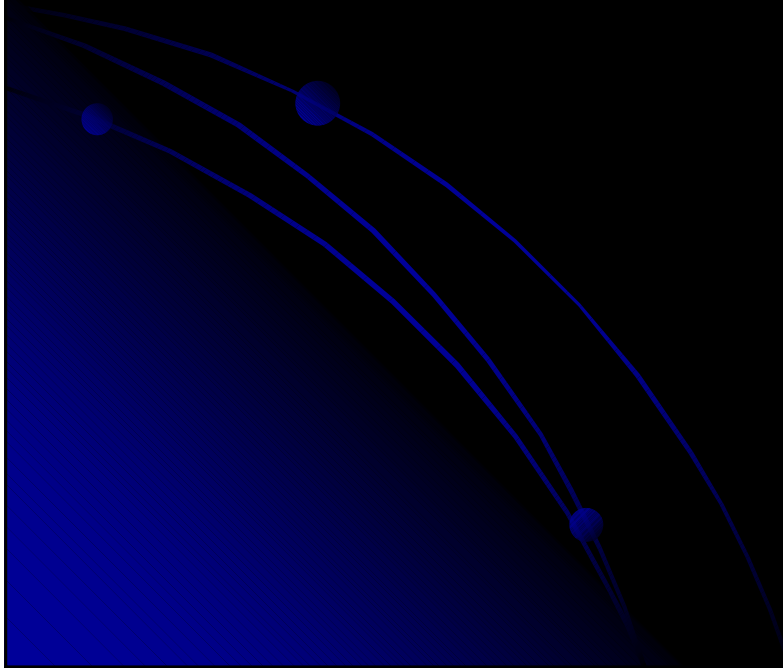
- | First version of course released on WebCT in 2003
 - | Present version on Moodle since 2006
 - | Compulsory for all pharmacy students
 - | 2 ECTS
- 

Distance Learning Course in Information Retrieval in Pharmacy

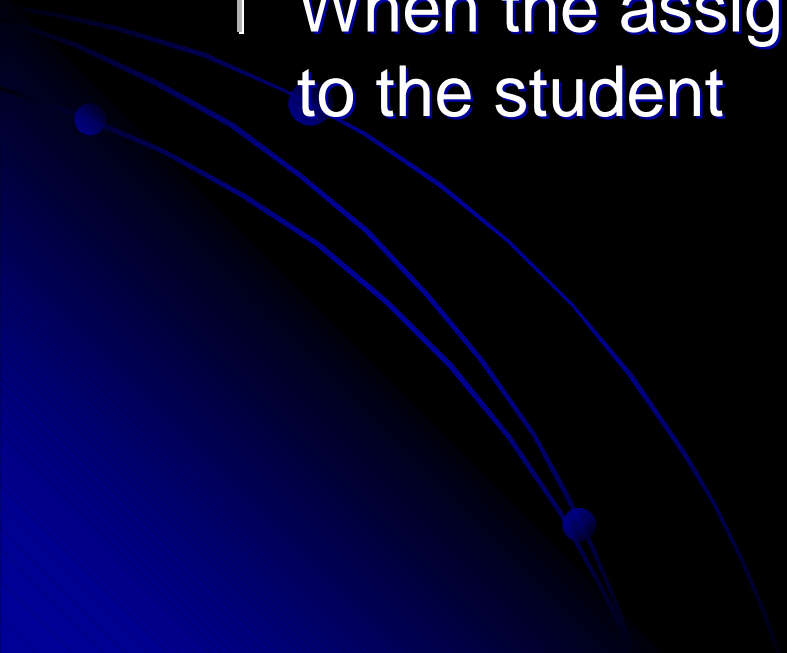
- | **Introductory classroom lecture during the first term**
 - | **First section** (during the first academic year)
 - | Scientific information and scientific publishing system
 - | Basic knowledge and skills in information retrieval
 - | Optional exercises of multiple choice, self test type
- 

Distance Learning Course in Information Retrieval in Pharmacy

- | **Second section** (at the beginning of the second year)
 - | Information sources in pharmacy
 - | Optional searching exercises, answers may be sent to course director



Distance Learning Course in Information Retrieval in Pharmacy


- | **Third section** (when students get their own essay topics)
 - | How to do comprehensive literature search
 - | Compulsory searching assignment based on essay topic
 - | When the assignment is approved, credits are issued to the student
- 

Lessons learned

- | Feedback from 180 course participants
- | Positive experiences
 - | Fulfilled expectations either well or very well (90%)
 - | Exercises were either useful or very useful (90%)
 - | Studying was either practical or very practical (86%)
 - | "Very good and useful course"
 - | "Without this course it is impossible to find reliable information"
 - | "A pleasant surprise"

Lessons learned

I Criticisms

- I Course layout was confusing (16%)
 - I Online studying was inconvenient (13%)
 - I "Learning material should be more concise"
 - I "More practical searching examples"
 - I "Classroom lessons should be included in the course"
- 

Information literacy - how best to equip students of pharmacy for the future?

Problems encountered

- 1) Pharmacy is a professional qualification in addition to a university degree -
 - constraints on what can and can't be taught

Information literacy - how best to equip students of pharmacy for the future?

Problems encountered

- 2) "Schizophrenic" course - first three years have large student numbers (170+ students); last two years small class sizes (approx. 10 students).
- "Horses for courses" - tailor-made courses with different goals

Description of two "information literacy" courses

- 1) **Pharmacology on the Internet** - provided to third year students (optional course); taken by about 100 students every year
- 2) **Critical Journal Club** - for fourth year students (compulsory); taken by about ten students every year

Pharmacology on the Internet

- 1) All work done on-line; no face-to-face teaching
- 2) Started ten years ago (making it probably the grandfather of all web-based courses in our university)
- 3) Initial goals were to make students aware of the wealth of material available on-line but also the perils of relying on the Internet
- 4) As course has evolved, more and more emphasis on critical evaluation of web-based material

Pharmacology on the Internet - example exercise

- 1) Students read the page, compare the uses listed there with "approved" use
- 2) List major drug interactions with deprenyl NOT stated on the page
- 3) Assess the credentials of the author - James South M.A.
- 4) State one other drug/group of drugs where there is abundance of mis-information

The screenshot shows a Windows Internet Explorer browser window. The address bar displays the URL <http://smart-drugs.com/deprenyl-IAS.htm>. The page title is "deprenyl (smart drug) article by James South". The website header features a logo with a figure holding a caduceus and the text "Offshore Pharmacy". Navigation links include "Product info", "Home", "To Order", "IAS Terms", "Health Articles", and "FAQ". A McAfee SECURE logo is visible, indicating the site was tested on 11-AUG. The article title is "Deprenyl - extending lifespan" by James South MA. The text of the article begins: "Deprenyl is a drug that was discovered around 1964-65 by Dr. Joseph Knoll and colleagues. It was originally developed as a 'psychic energizer,' designed to integrate some amphetamine-like brain effects with antidepressant effects. (1) Also known as L-deprenyl, (-)-deprenyl, and selegiline, deprenyl has been intensively researched over the past 36 years - many hundreds of research papers on deprenyl have been published. Knoll has stated that deprenyl is an exceptionally lucky

Pharmacology on the Internet - impact of the course

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Evaluation of a web-based course teaching information literacy to third year pharmacy students in the University of Kuopio, Finland



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Abstract

We used the WebCT platform to develop a short (1.5 ECTS) on-line course entitled "Pharmacology on the Internet". Though one aim of the course was to make students aware of the wealth of pharmacological information available on-line, a second aim was to increase students' critical awareness of web-based information, i.e. to teach information literacy.

We have found that this short course does provide students with a grasp of information literacy; after the course, they are less intimidated by databases like PubMed. Furthermore, the course was popular with students, they rate it as between very good and excellent and over 95% of students stated that they would recommend it to other students.

These findings demonstrate that web-based teaching can achieve quite advanced pedagogic goals in a student-friendly manner.

Keywords: Information literacy; pharmacology; web-based teaching; WebCT

Pharmacology on the Internet - impact of the course

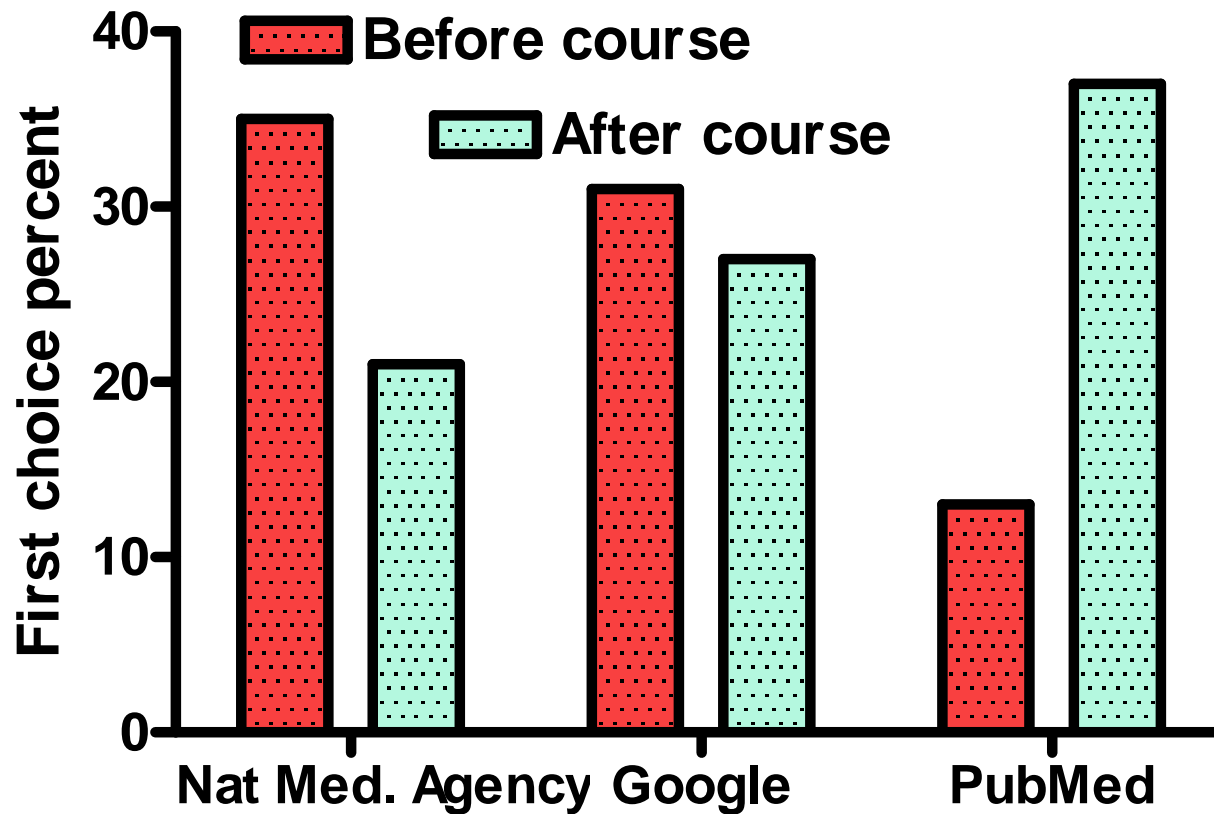
The article described the results of two short questionnaires - one at the very start of the course, the other (identical questions) at the end.

The questions asked about where they would start to look for information about four drug-related problems.

Differences were noted in the last two questions - the most problematic - after the course, the students were more likely to go to primary sources via PubMed

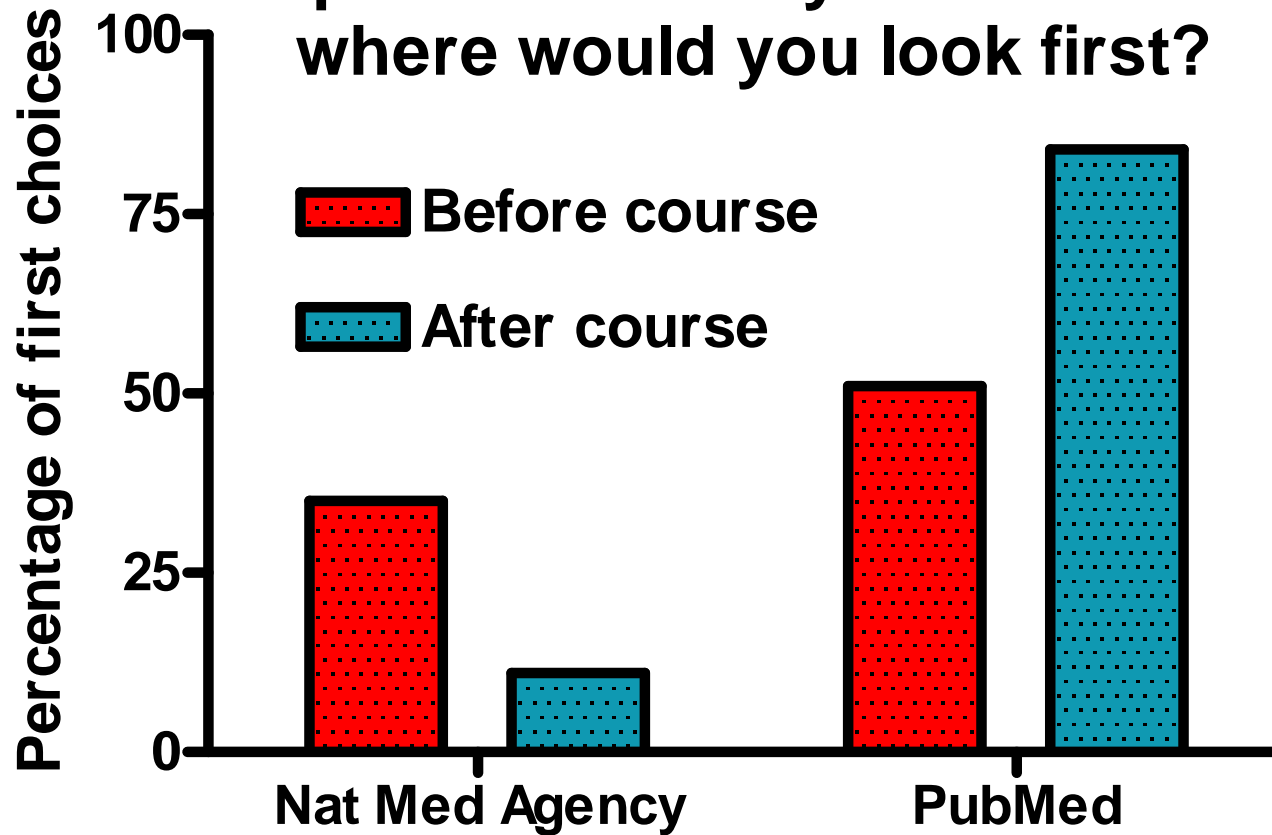
Pharmacology on the Internet - impact of the course (updated results)

**You need to find reliable information on a plant based medicine (e.g. St John's Wort)
- where would you look first?**



Pharmacology on the Internet - impact of the course (updated results)

You need to find reliable information on a new compound with only a code name - where would you look first?



Pharmacology on the Internet

Conclusions

It is possible to devise an on-line course that not only makes students aware of the perils of web-based material but also nudges them in the direction of using primary sources from the peer-reviewed scientific literature accessed via PubMed.

The next stage - Critical Journal Club

Learning outcomes: To have developed a *critical* appreciation of current scientific literature in the field of experimental and clinical pharmacology.

Content: Students give a presentation on a recently published scientific article and listen to the presentations of others.

Learning Material: Recently published articles

Critical Journal Club - for more information



LIBER QUARTERLY

The Journal of European Research Libraries

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[PDF VERSION](#)

ARTICLE CONTENTS

Introduction

Why is it so important that our students receive training in information literacy?

Critical journal club

Traditional journals versus open access – open communication and peer-reviewing

Discussion

References

Learning from Other's Mistakes - One Approach to teaching Information Literacy

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INTRODUCTION

Everyone in the academic community is today confronted with an unprecedented problem. One click of the mouse can provide a student with enough source material to construct a doctoral thesis. Thus, the problem is no longer to locate the relevant material, today the difficulty is in separating the wheat from the chaff, or a more apt analogy, finding the few gold nuggets in the mountains of dross. The information literate student has to be able to evaluate web-based material which may be opinion disguised as fact. In this article we describe a short course entitled 'Critical Journal Club' and how after participating in this course, students become more critical, more sceptical and more information literate.

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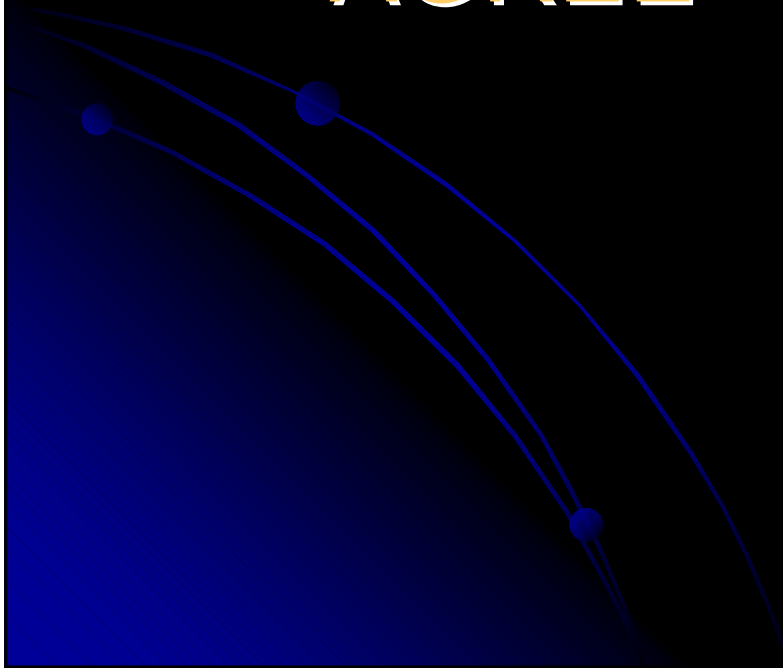
[Contact](#)

Critical Journal Club - factors determining reliability

Question: If the material is published in a peer-reviewed journal then the results are factual and reliable

AGREE

DISAGREE



Critical Journal Club - factors determining reliability

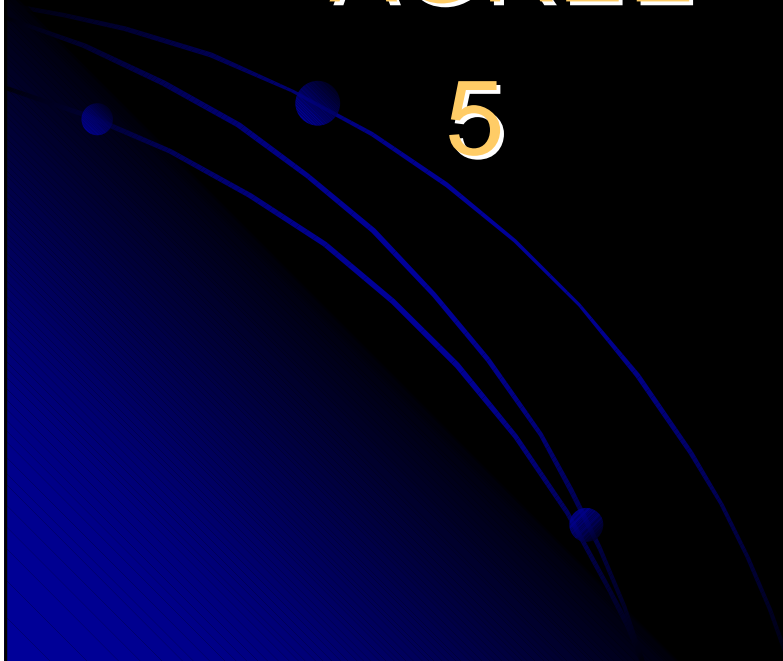
Question: If the material is published in a peer-reviewed journal then the results are factual and reliable

AGREE

5

DISAGREE

13

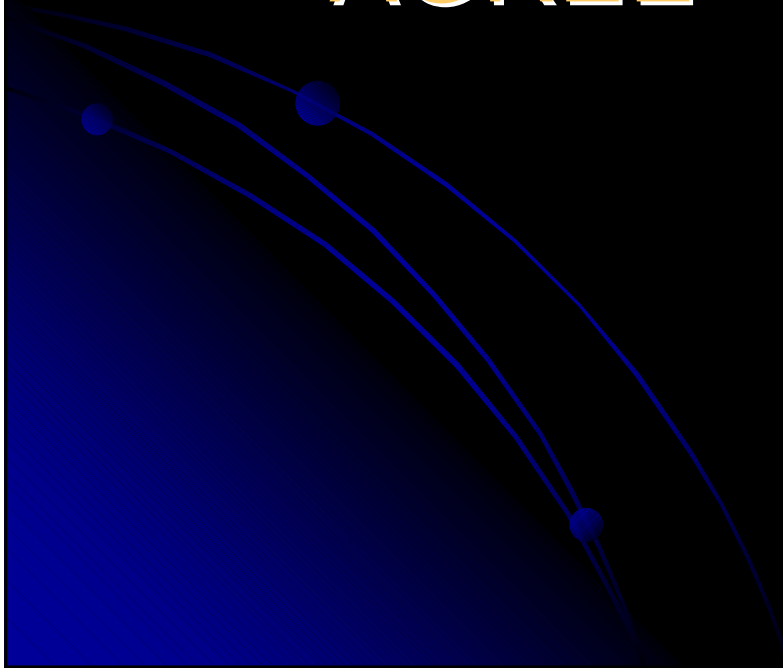


Critical Journal Club - factors determining reliability

Question: If the authors have described in detail how the experiment was done, then you can rely on the results

AGREE

DISAGREE



Critical Journal Club - factors determining reliability

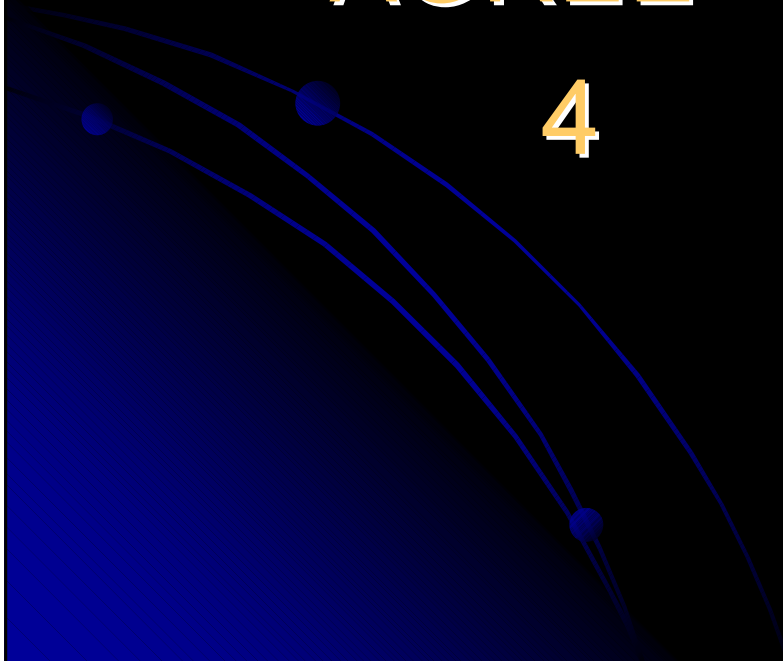
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AGREE

4

DISAGREE

14

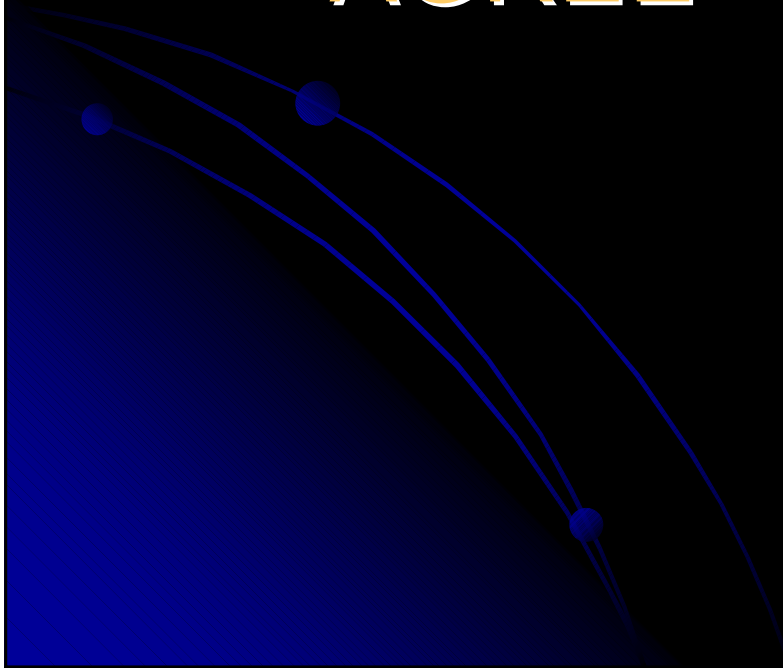


Critical Journal Club - factors determining reliability

Question: A reliable scientific article will always contain enough data that you can calculate the results for yourself

AGREE

DISAGREE



Critical Journal Club - factors determining reliability

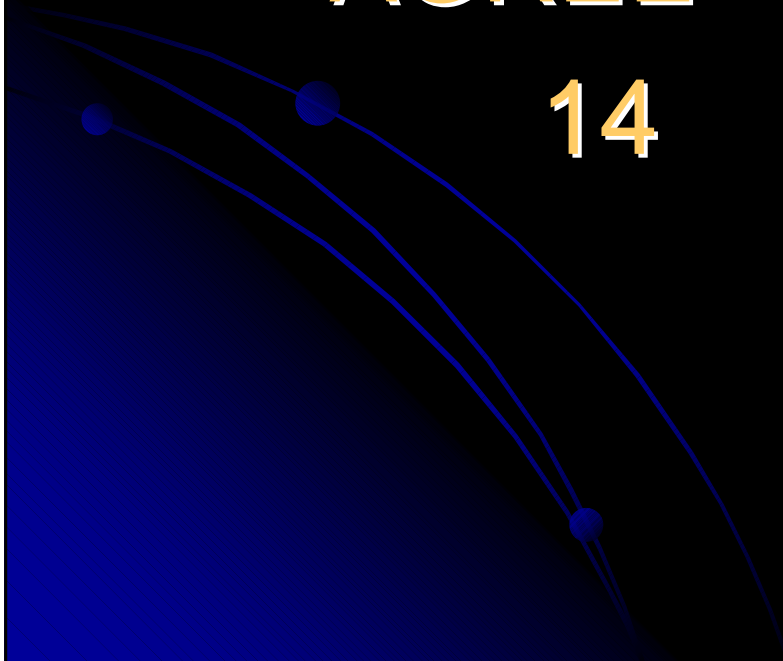
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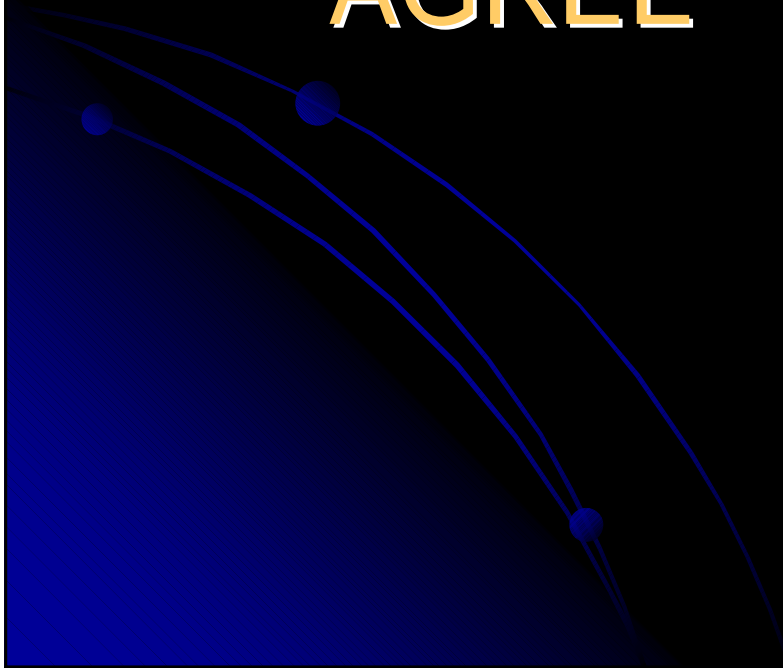


Critical Journal Club - factors determining reliability

Question: The authors' interpretation of their results is the best possible

AGREE

DISAGREE



Critical Journal Club - factors determining reliability

Question: The authors' interpretation of their results is the best possible

AGREE

4

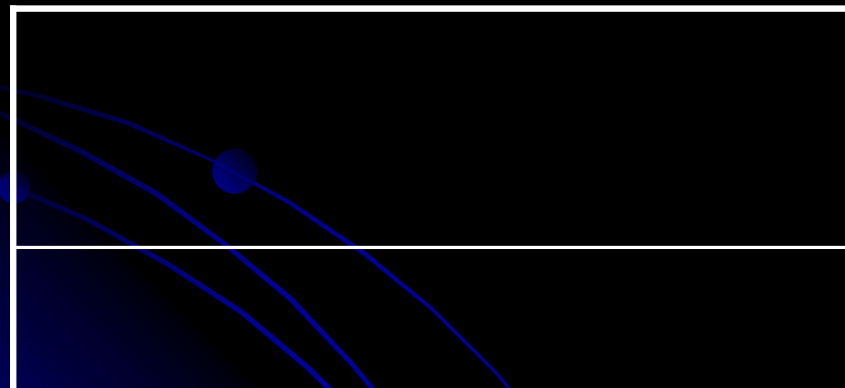
DISAGREE

14



Critical Journal Club - factors determining reliability

What factors would certainly influence how reliable you believe the information in a scientific article to be?



	Absolutely no effect	Some effect	Definite effect

Critical Journal Club - factors determining reliability

What factors would certainly influence how reliable you believe the information in a scientific article to be?

	Absolutely no effect	Some effect	Definite effect
Nationality of authors			

Critical Journal Club - factors determining reliability

What factors would certainly influence how reliable you believe the information in a scientific article to be?

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Nationality of authors	4	14	0

Critical Journal Club - factors determining reliability

What factors would certainly influence how reliable you believe the information in a scientific article to be?

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Length of paper			

Critical Journal Club - factors determining reliability

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Nationality of authors	4	14	0
Length of paper	11	3	0

Critical Journal Club - factors determining reliability

What factors would certainly influence how reliable you believe the information in a scientific article to be?

	Absolutely no effect	Some effect	Definite effect
Nationality of authors	4	14	0
Length of paper	11	6	0
Presentation of data			

Critical Journal Club - factors determining reliability

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Critical Journal Club - factors determining reliability

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Presentation of data	0	4	14
Authors' address (university/ industry)			

Critical Journal Club - factors determining reliability

What factors would certainly influence how reliable you believe the information in a scientific article to be?

	Absolutely no effect	Some effect	Definite effect
Nationality of authors	4	14	0
Length of paper	11	6	0
Presentation of data	0	4	14
Authors' address (university/ industry)	0	10	8

Critical Journal Club - information literacy aspects

Question: Reading the abstract in PubMed is enough - you don't need to read the entire article to understand its conclusion

AGREE



DISAGREE

Critical Journal Club - information literacy aspects

Question: Reading the abstract in PubMed is
enough - you don't need to read the entire
article to understand its conclusion

AGREE

2

DISAGREE

16

Critical Journal Club - information literacy aspects

Question: You can't access the article but you have seen it cited in the discussion of a second article - you can put the first article into your list of references



AGREE

DISAGREE

Critical Journal Club - information literacy aspects

Question: You can't access the article but you have seen it cited in the discussion of a second article - you can put the first article into your list of references



AGREE

1

DISAGREE

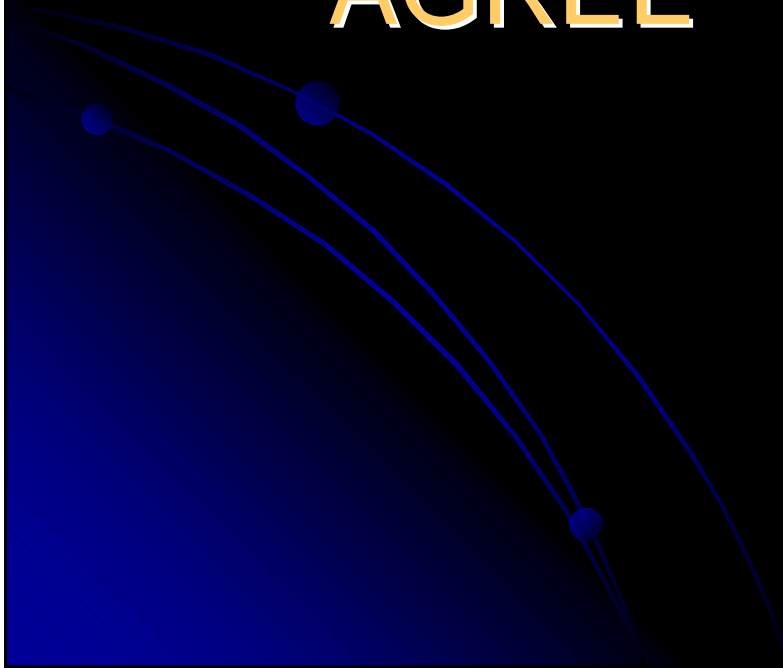
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Critical Journal Club - course objectives

Question: This course has made me more
critical of the scientific literature

AGREE

DISAGREE



Critical Journal Club - course objectives

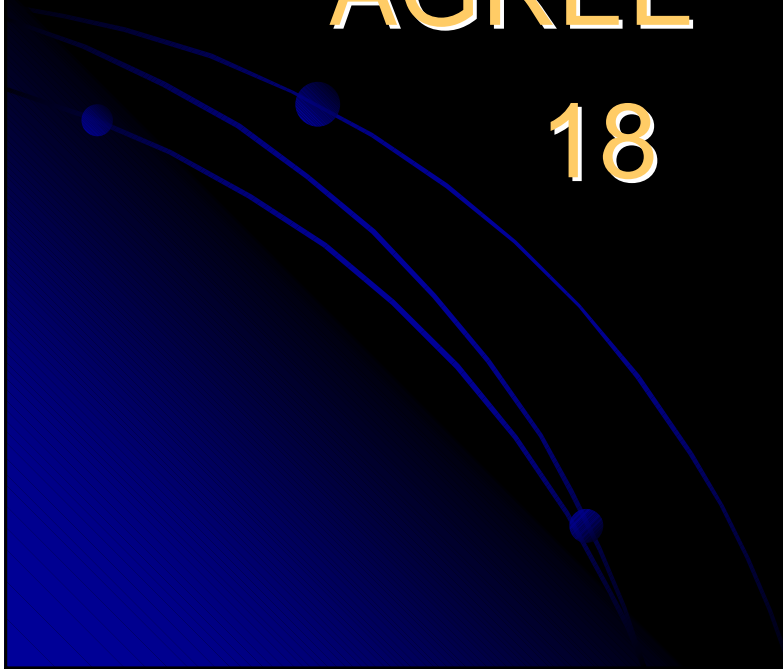
Question: This course has made me more
critical of the scientific literature

AGREE

18

DISAGREE

0



Critical Journal Club - quotes from students

"I believe it was good to be reminded that we can't automatically trust all we read."

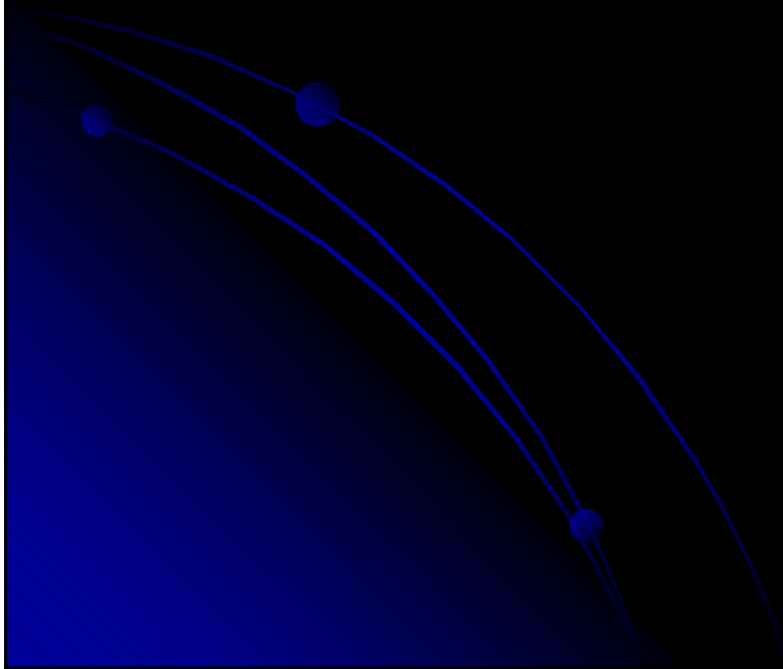
Susanna Forsén (with permission)

"Now, we mainly criticise articles that were somehow lousy. Maybe, in the future everyone should read one good and one unsatisfying article. This course made me very cynical: I believe that there isn't such a thing as a good article."

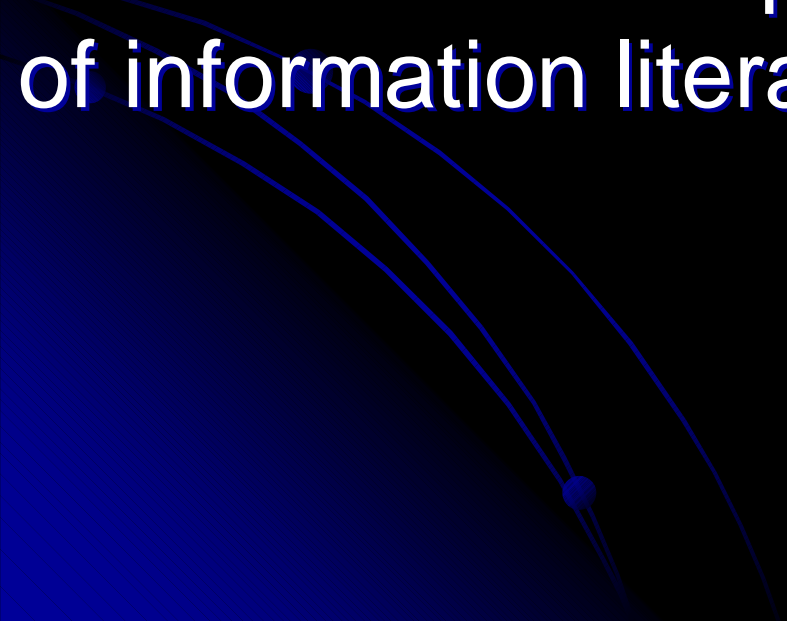
Anonymous comment

Conclusions (from MacDonald & Saarti 2007)

1) It is important that students are taught that even articles published in eminent journals may contain errors; they cannot be taken at face value



Conclusions (from MacDonald & Saarti 2007)

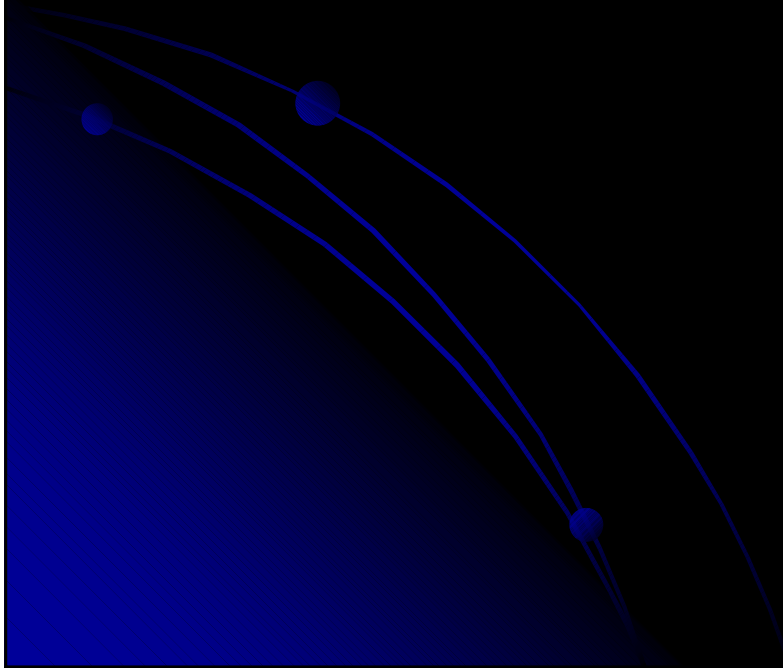
- 1) It is important that students are taught that even articles published in eminent journals may contain errors; they cannot be taken at face value
 - 2) All those involved in educating university students must emphasize and integrate the aims of information literacy into their own tuition.
- 

Conclusions (from MacDonald & Saarti 2007)

- 1) It is important that students are taught that even articles published in eminent journals may contain errors; they cannot be taken at face value
- 2) All those involved in educating university students must emphasize and integrate the aims of information literacy into their own tuition.
- 3) One new goal for all higher education should be how to endow students with critical knowledge management skills during the four or five years they are on campus.

Conclusions (from MacDonald & Saarti 2007)

4) Today's pharmacy students have to be taught to be life-long learners, their profession is changing at a rapid pace and they need to keep up-to-date with the latest advances by monitoring the professional literature.



Conclusions (from MacDonald & Saarti 2007)

4) Today's pharmacy students have to be taught to be life-long learners, their profession is changing at a rapid pace and they need to keep up-to-date with the latest advances by monitoring the professional literature.

5) The claims of therapeutic advances published in the press need to be viewed with caution; at the very least the original article needs to be read before one can satisfy oneself about the authenticity of such claims.