

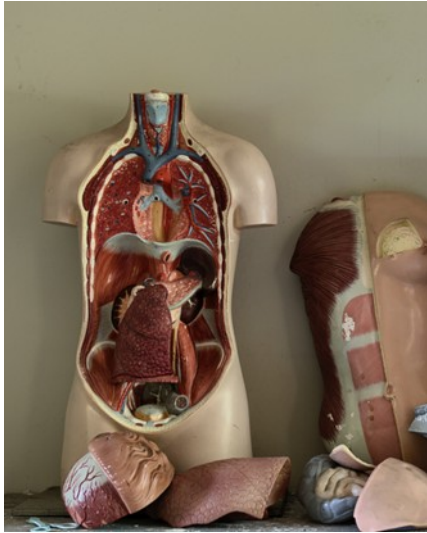
# NTNU Link

- A decentralized longitudinal integrated clerkship



ECTS, May 6, 2021

# Studying Medicine at NTNU:



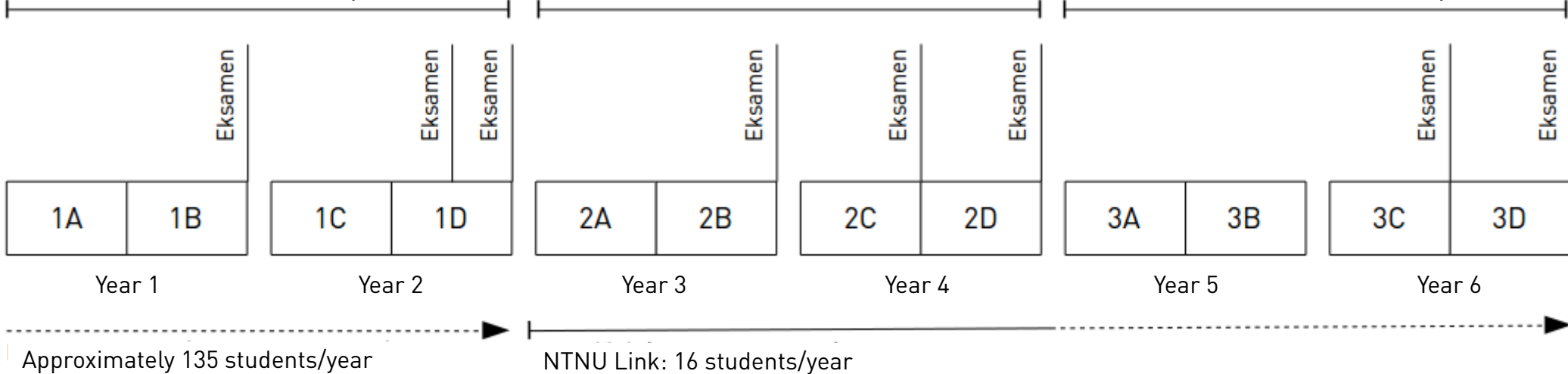
1: «The normal body»



2: «The diseases»



3: «Health care and society»





# Studying Medicine at NTNU:



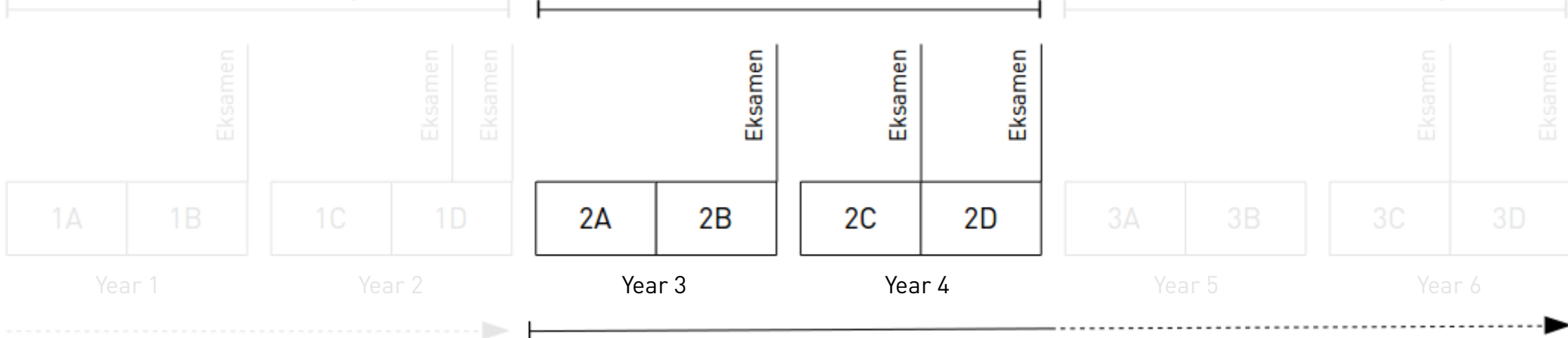
1: «The normal body»



2: «The diseases»



3: «Health care and society»



Approximately 135 students/year

NTNU Link: 16 students/year



- **decentralized:** combined local hospitals and community health care services
- **continuity:** care, curriculum and supervision
- **student active learning:** team-based learning, problem-based learning, simulation

# Longitudinal Integrated Clerkship (LIC)

= Langsgående INtegrert Klinisk tjeneste (LINK)

Sequential  
Discipline-specific



Longitudinal  
Integrated



Adapted from NEJM: Hirsh, D.A., Ogur, B., George E. Thibault, G.E., Cox, M. (2010). "Continuity" as an Organizing Principle for Clinical Education Reform.

## Common core elements of LICs:

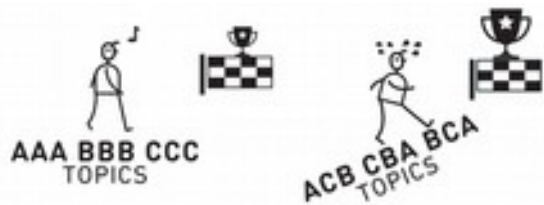
- students participate in the comprehensive care of patients over time
- students have continuing learning relationships with these patient's clinicians
- students meet, through these experiences, the majority of the year's core clinical competencies across multiple disciplines simultaneously.

# Longitudinal Integrated Clerkship (LIC)

Longitudinal:



Integrated:



Clerkship:



ACADEMIC MEDICINE | AM Last Page

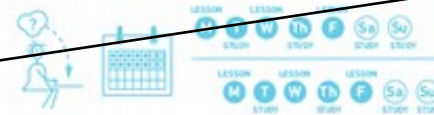
## Six Strategies for Effective Learning

Megan A. Sumeraick, PhD, assistant professor, Psychology Department, Rhode Island College, and Yana Weinstock, PhD, assistant professor, Psychology Department, University of Massachusetts Lowell

All of the strategies below have supporting evidence from cognitive psychology and are highly relevant to medical students who need to learn vast amounts of information. For each strategy, we explain how to do it and point to the relevant literature. For more information and resources, visit the The Learning Scientists website.<sup>1</sup>

### 1 PLAN OUT YOUR STUDY SESSIONS<sup>2</sup>

#### Spaced Practice



Space out your studying over time. Make a plan and stick to it!

#### Interleaving



Switch between ideas while you study. Don't study one idea too long!

### 2 DURING STUDY TIME, MAKE SURE YOU UNDERSTAND THE MATERIAL<sup>3</sup>

#### Elaborative Interrogation



Ask yourself questions while you study about how and why things work, and then find the answers. Also try this with a partner.

#### Concrete Examples



Collect examples of abstract ideas, and make the link between the idea you are studying and each example.

#### Dual Coding



Combine words and visuals, and compare the two formats.

### 3 PUT AWAY YOUR CLASS MATERIALS AND WRITE OR SKETCH WHAT YOU KNOW<sup>4</sup>

#### Retrieval Practice



Put away your class materials, and write or sketch everything you know. Be as thorough as possible. Then, check your class materials for accuracy and important points you missed. You can also practice retrieval by taking practice tests. Ask your instructor or make your own and swap with a peer.

#### References:

1. The Learning Scientists website. <http://www.learningscientists.org>. Accessed November 9, 2017.
2. Benjamin AS, Sullis J. What makes distributed practice effective? *Cogn Psychol*. 2010;61:228-247.
3. Pashler H, Bain PM, Roitge BA, et al. Organizing Instruction and Study to Improve Student Learning. IS Practice Guide. Washington, DC: Institute of Education Sciences; 2007.
4. Roediger HL III, Putnam AL, Smith MA. Ten benefits of testing and their applications to educational practice. In: Mestre J, Ross B, eds. *Psychology of Learning and Motivation: Cognition in Education*. Oxford, UK: Elsevier; 2011:1-36.

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Author contact: msomeracki@ric.edu, Twitter: @DrSumeraick

# The teacher's role



**1)** SENSE  
INFORMATION



**2)** MAKE SENSE  
OF INFORMATION

**Tradition**



Teacher

Focus: «Deliver information to students»

**NTNU Link**



Teacher

Focus: «Assessing what information/knowledge students have acquired»

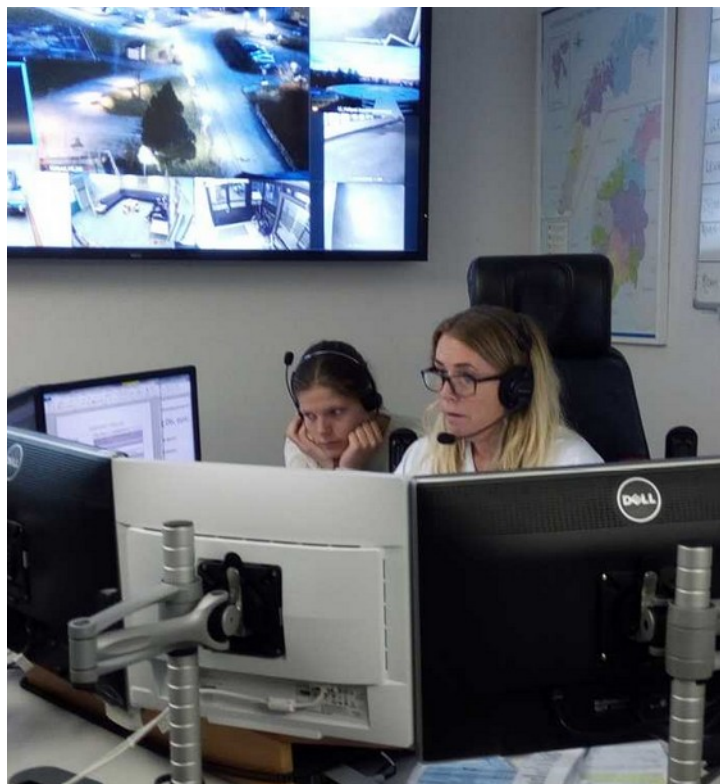


























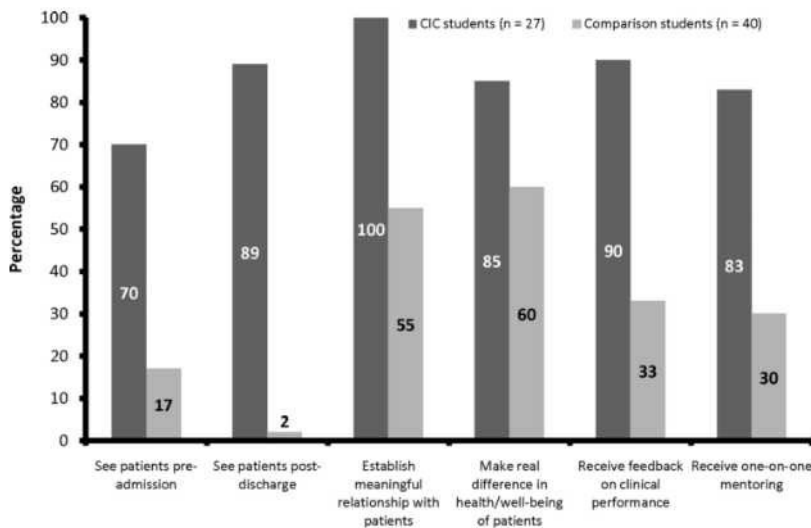
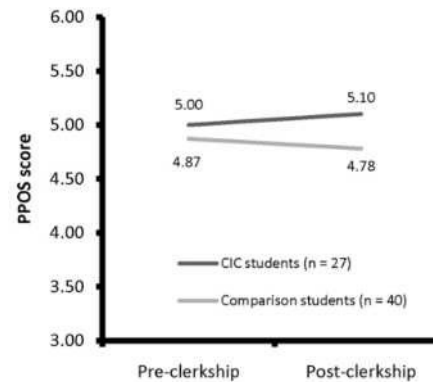


# Longitudinal integrated clerkship (LIC)

## Langsgående integrert klinisk tjeneste (LINK)

Hirsh et al (2012). Educational outcomes of the Harvard Medical School-Cambridge integrated clerkship: a way forward for medical education. *Academic Medicine*, 87(5), 643–650.

Students' descriptions of clerkship	27 CIC students	40 comparison students	P value
Satisfying	5.41	4.67	<.005
Confidence building	4.96	3.87	<.005
Rewarding	5.78	4.77	<.001
Humanizing	5.44	3.88	<.001
Transformational	5.44	4.62	<.01
Boring	1.44	1.90	<.05
Marginalizing	1.89	3.43	<.001
Hectic	5.37	4.65	<.005
Stressful	5.26	4.62	<.005
Frustrating	3.63	3.75	.709



Assessment measure	27 CIC students	45 comparison students	P value
<b>National Board of Medical Examiners subject exams*</b>			
Obstetrics-gynecology	73.70	71.73	.377
Pediatrics	80.62	74.79	<.01
Surgery	76.85	73.33	.099
Psychiatry	80.22	71.86	<.05
Harvard Medical School Comprehensive Objective Structured Clinical Exam†	68.13	64.34	<.05
National Board of Medical Examiners Step II Clinical Knowledge Exam*	240.63	234.14	.232



# «Competent physicians with a lifelong commitment to pursuing excellence»



- High level of student involvement and activity (*effective learning*)
- Integration of theory and practice (*conceptual understanding of clinical competence*)
- Meaningful relations to patients (*professional development*)
- Longitudinal relations to teachers (*continuous support and challenge*)



More about NTNU **Link**:

**Blog** | <https://www.ntnu.no/blogger/link/>

**Instagram** | [https://www.instagram.com/ntnu\\_link/](https://www.instagram.com/ntnu_link/)