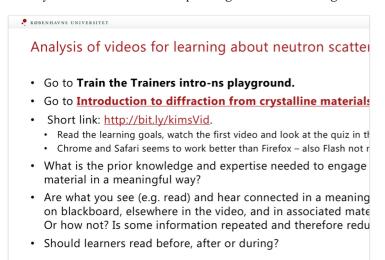# Analysis of multimedia learning activity

JESPER BRUUN   MAR 23, 2021 10:52AM

Instructions

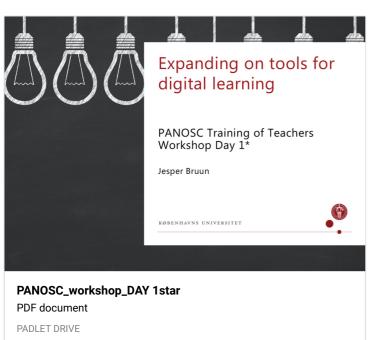### Handout with questions

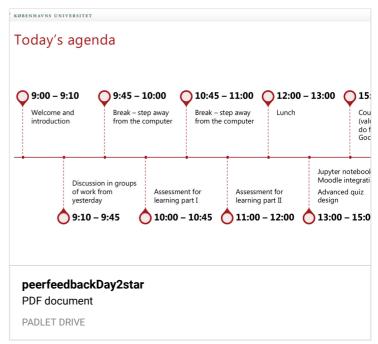Write you answers in the corresponding columns to the right.

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Analysis of videos for learning about neutron scatter

- Go to **Train the Trainers intro-ns playground.**
- Go to **Introduction to diffraction from crystalline materials**
- Short link: http://bit.ly/kimsVid.
  - Read the learning goals, watch the first video and look at the quiz in th
  - Chrome and Safari seems to work better than Firefox – also Flash not r
- What is the prior knowledge and expertise needed to engage
  material in a meaningful way?
- Are what you see (e.g. read) and hear connected in a meaning
  on blackboard, elsewhere in the video, and in associated mate
  Or how not? Is some information repeated and therefore redu
- Should learners read before, after or during?

handoutVideo
PDF document
PADLET DRIVE

Slides from today

Multimedia principles on page 12, Video considerations on page 13

Expanding on tools for digital learning

PANOSC Training of Teachers
Workshop Day 1*

Jesper Bruun

KØBENHAVNS UNIVERSITET

PANOSC_workshop_DAY 1star
PDF document
PADLET DRIVE

Slides from Wednesday

Assessment for learning task on slide 23

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Today's agenda

| 9:00 – 9:10 | 9:45 – 10:00 | 10:45 – 11:00 | 12:00 – 13:00 | 15: |
| Welcome and introduction | Break – step away from the computer | Break – step away from the computer | Lunch | Cou (val do f Goo |

| | Discussion in groups of work from yesterday | Assessment for learning part I | Assessment for learning part II | Jupyter notebook Moodle integrati Advanced quiz design |
| | 9:10 – 9:45 | 10:00 – 10:45 | 11:00 – 12:00 | 13:00 – 15:0 |

peerfeedbackDay2star
PDF document
PADLET DRIVE

Prior knowledge needed

Neutron-nucleus interaction

Follows previous courses on basics of neutron scattering: cross-sections, probably coherent/incoherent, etc.

It would be good to indicate this in the page presenting the video.
— ANONYMOUS

continuum approximation?

Several Jargon words are not introduced in thevideo, but first two weeks of the course before

A quizz on required knowledge

That would help participants to know if they have the required knowledge to fully understand the course and guide them to other courses if it is not the case.

How should such a quiz be designed in this case? Would it motivate/demotivate? Would it actually test the required knowledge? (Annonying didactical questions, I know)
— JESPER BRUUN

Introduction to neutron scattering

The video seems to require that previous lectures in the course "Introduction to neutron scattering" has been followed.

Meaningful connections in material?

Annotations to show blackboard content

It would be good to have more "multimedia" content, such as a video showing the scattering, showing different crystal structures, etc.
For a "blackboard" presentation, prefer to write it directly into a padlet or similar.

Connection of graph to explanation?

There is this small graph shown in the bottom section of the video. It is too small to identify its individual parts. What is its relation to what was explained and what was written down?

Concept of Flux and scattering phase stand unrelated next to each other.

Give context for used symbols

Having the opportunity to provide additional text to the video could be used to recap which symbol is used for which physical value.

The question on what a Cristal structure can only be answered after watching 2nd video

It is confusing that the question is labelled Follow-up as it is really leading up to video nbr 2, instead of following up on the material presented in the video.

recap and leading question

recap previous lecture and leading up to next video with open question

When should learners read and why?

Before or after

We don't suggest reading during the lecture.

Quick reading before to get a first idea about lecture content, followed by a more thorough lecture afterwards.

A pre-video link collection might be nice

To give the participants a chance to refresh their required knowledge a link collection on the already established knowledge might be nice.

Have a short post-video summary

Clarify the take-away message which allows the viewer to check if they got all the points or if they missed some important information

Before and after

* Before: to give context since the video does not provide it.
* After: to sum-up introduced formulae and to keep as a reference for future use.

Mainly after

At the very beginning to get an overview of the course and then after each video, so that the short videos work as teasers

Literature

Ayres 2015

Short paper on multimedia principles

State-of-the-Art Research into Multimedia Learning: A Commentary on Mayer's Handbook of Multimedia Learning

PAUL AYRES*

School of Education, University of New South Wales, Sydney, New South Wales, Australia

Summary: This article reviews the research into multimedia learning through the lens of a recently updated Handbook of Multimedia Learning edited by Richard Mayer. By examining the theories underpinning the research and the major experimental findings, a number of conclusions emerged. Firstly, the major theories and models guiding the research are well accepted and based on classical memory research, although there is a need to extend them to the affective domain. Secondly, most of the boundary conditions for effective learning from basic multimedia materials (e.g. explanatory words and pictures) have been identified. Thirdly, for more complex learning environments (e.g. games and computer-based tutors), much less is known, and more research is required to untangle the various moderating factors. Fourthly, there is a need for further investigations that match specific instructional strategies (e.g. self-explanations) with multimedia materials to find the most effective learning combination. Copyright © 2015 John Wiley & Sons, Ltd.

INTRODUCTION

The second edition of the *Cambridge Handbook of Multimedia Learning* edited by Richard Mayer was published in 2014 and consists of 34 chapters written by leading researchers into multimedia learning Mayer (2014a). Together these chapters provide a comprehensive state-of-the-art analysis of the research on multimedia learning. In the 9 years since the first edition (Mayer, 2005), the field has advanced significantly in terms of the depth of research completed. The reviews cover topics ranging from basic multimedia effects such as combining

THEORIES/MODELS UNDERPINNING THE HANDBOOK

Mayer's *cognitive theory of multimedia learning* is based on three principles (Mayer, 2014c). Firstly, the information processing system has two channels for individual processing of visual/pictorial information. Secondly, each channel has limited processing capacity, and thirdly, active learning requires coordination of the cognitive processes (selecting and organising relevant words and pictures into coherent representations and integrating them with prior knowledge).