Video teaching and web lectures

Flipping the session

EAPRIL – University of Luxembourg
November 27th, 2015

Zac.Woolfitt@inholland.nl
Richard.Kragten@inholland.nl
Iris.Sutherland@inholland.nl
Catching the wave of ‘video teaching’

Design research to support lecturers in developing ‘video teaching’

EAPRIL – University of Luxembourg

November 27th, 2015

Zac.Woolfitt@inholland.nl

Inholland Lectorate Teaching, Learning & Technology
Overview

1. Introduction
2. Context
3. Relevance, Literature and Theory
4. Research question
5. Methodology
6. Results
7. Conclusions
8. Recommendations
1: Introduction
## Technology impacting education

<table>
<thead>
<tr>
<th>Technology impacting traditional teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overwhelming increase in video use</td>
</tr>
<tr>
<td>Lecturers uncertain how to use technology</td>
</tr>
<tr>
<td>Role of lecturer changing</td>
</tr>
<tr>
<td>Need support to move forward</td>
</tr>
</tbody>
</table>
Where are you on the wave?
Where are you on the wave?
Where are you on the wave?
2: Context
Tourism Team Inholland University

- 25 team members
- Most teaching for about 10 years or more
- One group of 50-60 years old, traditional
- One group, 30-40, younger, less traditional
- Use of web lectures in team limited
- Researcher sees opportunities
- Masters in Teaching and Technology at Inholland
3: Relevance
‘Tipping point’ in education (Greenberg & Zanetis, 2012; Sonicfoundry, 2013)

‘Zone of possibilities’ (Kereluik, Mishra, Fahnoe & Terry 2013)

‘Disconnecting the lesson’ (De Boer, 2013)

Need for professional support (Filius & Lam, 2009; Stover & Vrees, 2013)
Theoretical Framework

TPACK/Constructivism
(Mishra & Koehler, 2006)

Constructive alignment
(Biggs & Tang, 2011)

Cognitive theory of multimedia learning
(Colvin Clark & Mayer, 2011)

Plus, extensive literature review...
Technological Pedagogical Content Knowledge (TPACK)

Technological Pedagogical Knowledge (TPK)

Pedagogical Knowledge (PK)

Technological Knowledge (TK)

Content Knowledge (CK)

Pedagogical Content Knowledge (PCK)

Contexts

(Mishra & Koehler, 2006)
But...what *is* ‘video teaching’?
Teaching via video in which the teacher plays an active role, is visible and audible, is recorded, and where the screen presence of the teacher plays an important element in the didactic process.

(Woolfitt, 2014)
Web lecture (pre-recorded in studio)
Screen Cast
Qualities of Video Teaching: Technology complexity vs. teacher visibility

- **Transient**
  - Teacher not visible & not recorded
  - Teacher recorded but not visible
  - Teacher visible & not recorded

- **Permanent**
  - Teacher visible and recorded

- **Virtual Classroom** (recorded or not recorded)
- **Screen Cast**
- **Live Lecture Capture** (teacher/flip cam or technician)
- **Web lecture (studio Rec.)**
- **Knowledge Clips**
- **Instructional video**
  - Post production, editing, green screen
- **Unadjusted content**
  - Adjusted content, specially planned, re-scripted
- **One shot, no edits**
  - Post production, editing, green screen

- **Unadjusted content**
  - Adjusted content, specially planned, re-scripted

- **Simple production**
  - Multiple actors, location, complex pre and post production

- **Structured, scripted, post production**

- **Woolfitt (2014)**

Visibility/presence of teacher as on screen teaching presence
**Qualities of Video Teaching: Technology complexity vs. teacher visibility**

- **Transient**
  - Teacher not visible & not recorded
  - Teacher recorded but not visible
  - Teacher visible & not recorded
  - Teacher visible and recorded

- **Permanent**
  - Unadjusted content
  - Adjusted content, specially planned, re-scripted

- **Virtual Classroom**
  - Recorded or not recorded

- **Skype/Face Time/Google Hangouts**
  - Recorded or not recorded

- **TV/Film/YouTube Clip**
  - Participate in Webinar
  - Slide cast

- **Screen Cast**
  - Live Lecture Capture (teacher/flip cam or technician)

- **Web lecture (studio Rec.)**
  - Post production, editing, green screen

- **Instructional video**
  - One shot, no edits

- **Film/Documentary**
  - Structured, scripted, post production

- **Knowledge Clips**
  - One shot, no edits

- **One shot, no edits**

- **Transient**

- **Permanent**

- **Woolfitt (2014)**

**Visibility/presence of teacher as on screen teaching presence**
Qualities of Video Teaching: Technology complexity vs. teacher visibility

Complexity of technology for teacher

Teacher not visible & not recorded
Teacher recorded but not visible
Teacher visible & not recorded
Teacher visible and recorded

Visibility/presence of teacher as on screen teaching presence

Transient

Permanent

Screen Cast
Live Lecture Capture (teacher/flip cam or technician)
Virtual Classroom (recorded or not recorded)
Slide cast
Participate in Webinar
TV/Film/You Tube Clip

Unadjusted content

Adjusted content, specially planned, re-scripted

Post production, editing, green screen,

Instruct ional video

Web lecture (studio Rec.)
Knowledge Clips

One shot, no edits

One shot, no edits

Structured, scripted, post production

Multiple actors, location, complex, pre and post production

Simple production

Woolfitt (2014)
4: Research question
4: Research Question

What are the characteristics of support to assist lecturers in the tourism team Inholland Diemen in developing ‘video teaching’?
Sub Questions

SQ1: Qualities of ‘video teaching’?
SQ2: Functions of ‘video teaching’?
SQ3: Our current ‘video teaching’ level?
SQ4: What support do we need?
SQ5: Opportunities in tourism course?
5: Methodology
# Design Research

## Design stage

### Quality criterion

<table>
<thead>
<tr>
<th>Design stage</th>
<th>Design specifications</th>
<th>Global design</th>
<th>Partly detailed intervention</th>
<th>Complete intervention</th>
<th>Implemented intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>- Screening</td>
<td>- Screening</td>
<td>- Screening</td>
<td>- Screening</td>
<td>- Screening</td>
</tr>
<tr>
<td></td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td></td>
</tr>
<tr>
<td>Consistency</td>
<td>- Screening</td>
<td>- Screening</td>
<td>- Screening</td>
<td>- Screening</td>
<td>- Screening</td>
</tr>
<tr>
<td></td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td></td>
</tr>
<tr>
<td>Practicability</td>
<td>Expected</td>
<td>- Screening</td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td>- Micro-evaluation</td>
</tr>
<tr>
<td></td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td>- Walkthrough</td>
<td></td>
<td>- Try-out</td>
</tr>
<tr>
<td>Actual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Survey (Quasi)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>experiment, Case-study</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>Expected</td>
<td>- Screening</td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td>- Micro-evaluation</td>
</tr>
<tr>
<td></td>
<td>- Focus group</td>
<td>- Expert appraisal</td>
<td>- Try-out</td>
<td></td>
<td>- Try-out</td>
</tr>
<tr>
<td>Actual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Survey (Quasi)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>experiment, Case-study</td>
</tr>
</tbody>
</table>

Research instruments

- Questionnaires in team (n=22)
- Semi-structured interviews (n=23)
- Focus group (n=1)
- Card sorting (n=9)
- Expert screening (prototype)
- Expert Appraisal (complete intervention)
- Questionnaires (workshop evaluation, n=13)
Design Research

<table>
<thead>
<tr>
<th>Design stage Quality criterion</th>
<th>Design specifications</th>
<th>Global design</th>
<th>Partly detailed intervention</th>
<th>Complete intervention</th>
<th>Implemented intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>- Screening</td>
<td>- Screening</td>
<td>- Screening</td>
<td>- Screening</td>
<td>- Screening</td>
</tr>
<tr>
<td></td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consistency</td>
<td>- Screening</td>
<td>- Screening</td>
<td>- Screening</td>
<td>- Screening</td>
<td>- Screening</td>
</tr>
<tr>
<td></td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practicability</td>
<td>Expected</td>
<td>- Screening</td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td>Survey (Quasi) experiment, Case-study</td>
</tr>
<tr>
<td>Actual</td>
<td>- Screening</td>
<td>- Screening</td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td>Survey (Quasi) experiment, Case-study</td>
</tr>
<tr>
<td></td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effectiveness</td>
<td>Expected</td>
<td>- Screening</td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td>Survey (Quasi) experiment, Case-study</td>
</tr>
<tr>
<td></td>
<td>- Focus group</td>
<td>- Screening</td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td>Survey (Quasi) experiment, Case-study</td>
</tr>
<tr>
<td>Actual</td>
<td></td>
<td>- Expert appraisal</td>
<td>- Expert appraisal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6: Results
Qualities and functions of video teaching
‘Video teaching’ level of team

Business Travel & Incentives periode 4.2

Preparation Case Study Exam

Global Perspectives on Tourism & Cultural Diversity part 1 & 2
Support needed?

- Facilitating opportunities to do video teaching
- Workshops: A series of introductory workshops about possibilities of web lectures and practice making a web lecture and trying out different didactic concepts.
- Scenarios: A series of different web lecture scenarios (examples of web lectures from fellow teachers) could be viewed as inspiration.
- Web lectures: A series of web lectures could be recorded that demonstrate by their form the different options available for video teaching.
- Peer feedback: Viewing and critiquing web lectures from fellow teachers, giving/receiving feedback.
- Instructional Video: To present current situation regarding video teaching, along with examples of how to begin, technically and didactically.
- Screen casts: A screen cast can be made to demonstrate different possibilities.
- Coaching: Analysis of recorded video teaching discussed with a video coach in a reflective environment.

Most preferred

Least preferred
Research Question

What are the characteristics of support to assist lecturers in the tourism team Inholland Diemen in developing ‘video teaching’?
WIIFM

technology

why

time

fear

application

how

Inholland

awkward
<table>
<thead>
<tr>
<th>Before</th>
<th>During</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>P</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Diagram:**
- T: Fear of application
- P: Time
- C: Technical knowledge

**Diagram:**
- WIIFM: What's in it for me
- awkward
- technology
- why
- application
- fear
- time
<table>
<thead>
<tr>
<th>T</th>
<th>Before</th>
<th>During</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Technology, Why, Time, Fear, awkward, application.
Criteria for Prototype

Small-scale workshop ‘video teaching’
2-3 staff + technician and trainer
Prepare with web lectures
Safe, fun and practical
2 hours
Learning goals
Peer to peer feedback
Reflection
Supporting micro web lectures

Introduction to workshops (07:20)
The truth about web lectures (09:24)
Making friends with technology (06:35)
Making your Power Point (10:02)
Web lecture interface (10:56)
# Workshops & participants

<table>
<thead>
<tr>
<th>Workshop</th>
<th>Department</th>
<th>Month</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workshop 1</td>
<td>Tourism</td>
<td>Nov</td>
<td>2</td>
</tr>
<tr>
<td>Workshop 2</td>
<td>Tourism</td>
<td>Dec</td>
<td>2</td>
</tr>
<tr>
<td>Workshop 3</td>
<td>Tourism</td>
<td>Jan</td>
<td>1</td>
</tr>
<tr>
<td>Workshop 4</td>
<td>Pedagogiek</td>
<td>Mar</td>
<td>2</td>
</tr>
<tr>
<td>Workshop 5</td>
<td>Tourism</td>
<td>Apr</td>
<td>4</td>
</tr>
<tr>
<td>Workshop 6</td>
<td>Tourism</td>
<td>Jun</td>
<td>2</td>
</tr>
</tbody>
</table>

Total: 13
Demystifying technology
# Evaluation of workshop

<table>
<thead>
<tr>
<th>Workshop</th>
<th>disagree</th>
<th>disagree slightly</th>
<th>neutral</th>
<th>agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The workshop met my expectations:</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>As a result of the workshop, I feel more confident about using video in my teaching:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>The format of the workshop was appropriate for the learning goals:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>The content of the workshop was appropriate for the learning goals:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>The trainers made me feel comfortable during the workshop:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>I enjoyed the workshop:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>12</td>
</tr>
</tbody>
</table>
Participants attending workshops - Cumulative

Teachers Recording
‘Adjusted’ workshop learning goals

- Practising making a web lecture (not finished product)
- Gain experience
- Reflect
- Get kick-started!
7: Conclusions
Conclusions

<table>
<thead>
<tr>
<th>Resource intensive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diffusion is slow</td>
</tr>
<tr>
<td>Momentum gaining</td>
</tr>
<tr>
<td>Becoming normal</td>
</tr>
<tr>
<td>Need a kick-start</td>
</tr>
<tr>
<td>Informal to formal</td>
</tr>
</tbody>
</table>
‘Diffusion is the process by which an innovation is communicated through certain channels over time among members of a social system’ (Rogers, 2003)
Getting your colleagues on board?
8: Recommendations

- Friendly but persistent
- Get formal support
- Reduce complexity of technology
- Scale up with ‘public’ workshop
- Small scale workshop
- Patience
Further Research

• Learning curve of teachers with technology
• Student use of web lectures
• Student generated web lectures
• Learning effect of web lectures
• Didactic embedding of web lectures
• ...?
Selected sources


Flipping the session 1

Video Teaching is an essential skill for 21st Century Lecturers
Fostering meaningful learning with web lectures and concept mapping

Cell Biology redesigned to foster meaningful learning

EAPRIL 2015
Richard Kragten, Inholland University of Applied Science
November 27, 2015
Context and research purpose

- Difficulty understanding specific subjects
- Passive behaviour in class (not active)
Meaningful learning

- Active learning can foster meaningful learning and positively influences the learning outcomes
- Constructive learning can increase learning results
- Better understanding of concepts due to meaningful learning activities

(Biggs & Tang, 2007; Huet et al., 2008; Novak & Cañas, 2008; Ausubel, 1963)
Meaningful learning

(Karppinnen, 2005)
Problem statement

What are the characteristics of a redesigned Cell Biology module in which meaningful learning is fostered with web lectures and concept mapping?

(Day, 2005, Marée, 2013)
Redesign of Cell Biology

Before class…

Watch web lectures and create a summary

Go to workshop and bring summary

Expert map

Concept mapping in pair with collaboration script

Teacher checks
Methodology

Design research
  o Fase 1: pre-research phase
  o Fase 2: prototype phase
  o Fase 3: evaluation phase

(Plomp & Nieveen, 2007)

• Context analysis and needs analysis
• Questionnaire (5-scale Likert)
  o 2014: online en paper, 70%, n = 132
  o 2015: online, 44%, n = 204
• Focusgroeps
  o 2014: 4 groeps, 27 students
  o 2015: 4 groeps, 23 students
• Interview Cell Biology teacher
Results web lectures

- Leads to better understanding of concepts: 83% (80%)
- Are an added value to education: 80% (80%)
- Are useful for preparing for exam: 85% (72%)
- Talking head teacher is an added value: 66% (67%)
- Creating summary leads to better learning: 61% (60%)
- Creating summary leads to better understanding of concepts: 63% (60%)
Results web lectures

Students say:

• Web lectures were motivating but does not automatically lead to active learning
• Assignment in weblecture was an added value
• Active learning was promoted due to the summarizing assignment
• They start earlier with learning
Results concept mapping

- Better understanding of concepts due to concept mapping: 30% (positive, 30% neutral)
- Concept mapping promotes learning: 28% (positive, 23% neutral)
Results concept mapping

- Most students positive about concept mapping
- Concept mapping promotes active learning
- Collaborating was motivating
- Explaining each other contributed learning
- Teacher guidance important
- Lack of feedback concept maps
Problem statement

What are the characteristics of a redesigned Cell Biology module in which meaningful learning is fostered with web lectures and concept mapping?
Meaningful learning is promoted when:

• Using web lectures
• Web lectures are assigned to an assignment
• Web lectures are recorded by the teacher
• Concept maps are created collaboratively
• Feedback is given at concept maps
Flipping the session 2

All lectures can be replaced with web lectures.
Learning with pre-recorded web lectures in a Nuclear Physics programme in higher education

Iris Sutherland
Master research Learning & Innovation
November 27, 2015
Agenda

1. Context and reason
2. Outline research
3. Student’s point of view
4. Discussion
5. Recommendations and future research
THE ELECTROMAGNETIC SPECTRUM
increasing wavelength
increasing energy

non-ionizing

ionizing

TYPE OF RADIATION
extremely low frequency
radio
microwaves
infrared
ultra violet
X-rays
Gamma rays

visible

\[ I_d = I_0 \cdot e^{-\mu \cdot d} \cdot B = I_0 \cdot 2^{-\frac{d}{d_1/2}} \cdot B \]

\[ K = \frac{\Gamma \cdot A \cdot t}{d^2} \]
\[ \dot{K} = \frac{\Gamma \cdot A}{d^2} \]

\[ K = \frac{\Gamma \cdot A \cdot t}{d^2} \cdot T \]
\[ \dot{K} = \frac{\Gamma \cdot A}{d^2} \cdot T \]

\[ K = \frac{\dot{K}_n \cdot m \cdot A \cdot s}{d^2} \]
\[ \dot{K} = \frac{\dot{K}_n \cdot m \cdot A}{d^2} \]
...ideal situation
...ideal situation

KEEP CALM AND STUDY NUCLEAR PHYSICS
...ideal situation

KEEP CALM AND STUDY NUCLEAR PHYSICS
Innovator NP (5 yrs ago)
Teacher group NP (1 yr ago)
Aim

Gain insight into the use and the appreciation of the newly designed series of pre-recorded web lectures on Nuclear Physics
Question

What is the design for the programme of Nuclear Physics enriched with web lectures and how do students use, appreciate and value the weblectures?
Themes

Design (flipped classroom)
Practice (flipped classroom, referring)
Themes

Design (flipped classroom)
Practice (flipped classroom, referring)

Use (strategies, behavior and needs)
Quality (multimedia principles)
PU and PE (alignment, referring and TAM)

Methodology - strategy

document analysis

inter-view innovator

course observations

student journals and viewing reports

log data

questionnaire students

interview teachers

exam

course
Methodology - strategy

- Document analysis
- Interview innovator
- Course observations
- Student journals and viewing reports
- Log data
- Questionnaire students
- Interview teachers
- Exam

Course
Participants

Teachers:  4 (3)

Students:  99 first years (97%)
           119 second years (35%)

Studentpanel: 17 first years
              11 second years
              20 student journals
              88 viewing reports
<p>| Results        | Design:                  | no formal design, no referring in study material/guide |
|               | Practice (class):       | no flipped classroom                                     |
|               | Quality (WL):           | sufficient quality (MMP)                                 |
|               | Use:                    | not all students use all WL complete viewing and rehearsal, before exam |
|               | PE:                     | based on individual needs in line with goals           |</p>
<table>
<thead>
<tr>
<th>WL</th>
<th>Yr</th>
<th>Teacher</th>
<th>N</th>
<th>Time</th>
<th>Variant</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>E</td>
<td>96</td>
<td>9</td>
<td>Knowledge clip</td>
<td>Rememb/underst</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>E</td>
<td>96</td>
<td>9</td>
<td>Knowledge clip</td>
<td>Rememb/underst</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>F</td>
<td>56</td>
<td>9</td>
<td>Knowledge clip</td>
<td>Rememb/underst</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>C</td>
<td>100</td>
<td>11</td>
<td>Knowledge clip</td>
<td>Rememb/underst</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>C</td>
<td>91</td>
<td>18</td>
<td>Knowledge clip</td>
<td>Rememb/underst</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>C</td>
<td>73</td>
<td>11</td>
<td>Knowledge clip</td>
<td>Rememb/underst</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>D</td>
<td>181</td>
<td>18</td>
<td>Knowledge clip</td>
<td>Rememb/underst</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>D</td>
<td>159</td>
<td>8</td>
<td>Knowledge clip</td>
<td>Analyse</td>
</tr>
<tr>
<td>9</td>
<td>1, 2</td>
<td>B</td>
<td>135</td>
<td>12</td>
<td>Knowledge clip</td>
<td>Rememb/underst</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>C</td>
<td>93</td>
<td>16</td>
<td>Instruction</td>
<td>Analyse/apply</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>D</td>
<td>85</td>
<td>16</td>
<td>Instruction</td>
<td>Analyse/apply</td>
</tr>
<tr>
<td>12</td>
<td>2</td>
<td>B</td>
<td>70</td>
<td>17</td>
<td>Instruction</td>
<td>Analyse/apply</td>
</tr>
<tr>
<td>13</td>
<td>2</td>
<td>E</td>
<td>100</td>
<td>8</td>
<td>Instruction</td>
<td>Analyse/apply</td>
</tr>
</tbody>
</table>
Conclusions

Web lectures are:

usefull, effective, easy to use, in line with the programme, suits individual needs

Referring by the teachers is necessary

More as part of a flipped classroom concept
Student’s point of view
Discussion

1. Which instruments are adequate to evaluate the quality, the use and the perceived usefulness of pre-recorded web lectures?

2. Which instruments can be more useful in the designing based research on using pre-recorded web lectures?
Questionnaire
Student journals
Log data (analytics)
Viewing reports
Interview / focus group
Recommendations and further research
Flipping the session 3