NTNU | Norwegian University of Science and Technology

Development and experience with a learning support system using videos with embedded quizzes

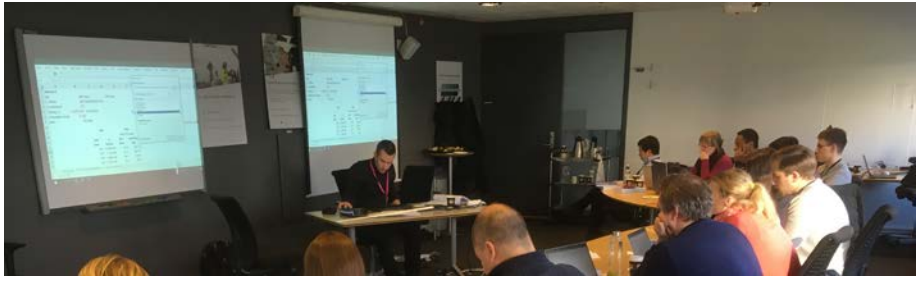
Presenter: Associate Professor Milan Stanko (IGP)

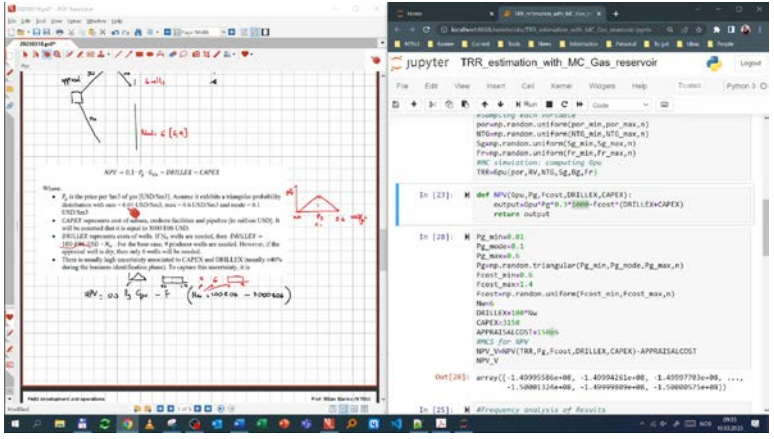
Background

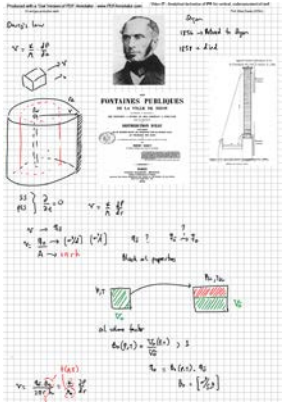
- Courses: TPG4230 – Field development and operations, TPG4245 – Production wells
  - 4th year (1rst year intl. master)
  - 20-40 students
  - Technical on petroleum engineering
  - TPG4230: 2015 - to date (assisting since 2012)
  - TPG4245: 2021 – to date
  - Education QA
    - Reference group (3 students, meetings 3 times per semester)
    - Anonymous comment box
    - Surveys
  - Evaluation:
    - 60 % final exam (digital since 2018, parts using Excel)
    - 40 % home exercises (3-4 sets with 3 problems each)

Background

- Tablet teaching, with recording of lectures (screen and voice)

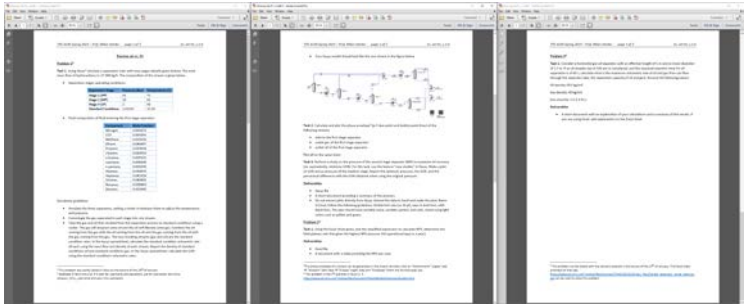






Background

- Lots of experimenting:
  - PBL
  - Class activities: lecturing, exercises, group work, quizzes (Kahoot), TA, industry presentations (1 or 2), hands-on activities, computer lab
  - Some new exercises every year



Background

- (cont):
  - Flipped classroom
  - Forums on ItsLearning/BB
  - Field trips (1)
  - Online lecturing (COVID)

Learning support system

Videos

- Asynchronous classes
- 10-40 min

Quizzes

- Online
- 4-15 questions
- Automatic correction

Motivation - Videos

- Experiment with flipped classroom
- Improve the «delivery» of difficult topics (tedious, complex)
  - Practice makes perfect

Motivation - Quiz

- Help/motivate students to:
  - Keep up to date with the content (reading material and videos)
  - Better understand the material
- Save evaluation time
- Standardization of some class exercises that don’t change much from year to year

Other motivations – (Quiz and Videos)

- Personal development:
  - Learn about web app development
  - Learn better JS, html
  - Learn about encryption
- Explore simple possibilities for MOOC development

PROJECT

MultiFlow SUITE - Smart Utilization of Data for CondItion Monitoring, Operational OpTimization, and Tie-in Design

Guidelines

- No need for user authentication
  - Do not keep track of student’s quiz attempts
- Frictionless system
  - Free and open access video platform
  - Free and open access tool for quiz creation

Description of the system

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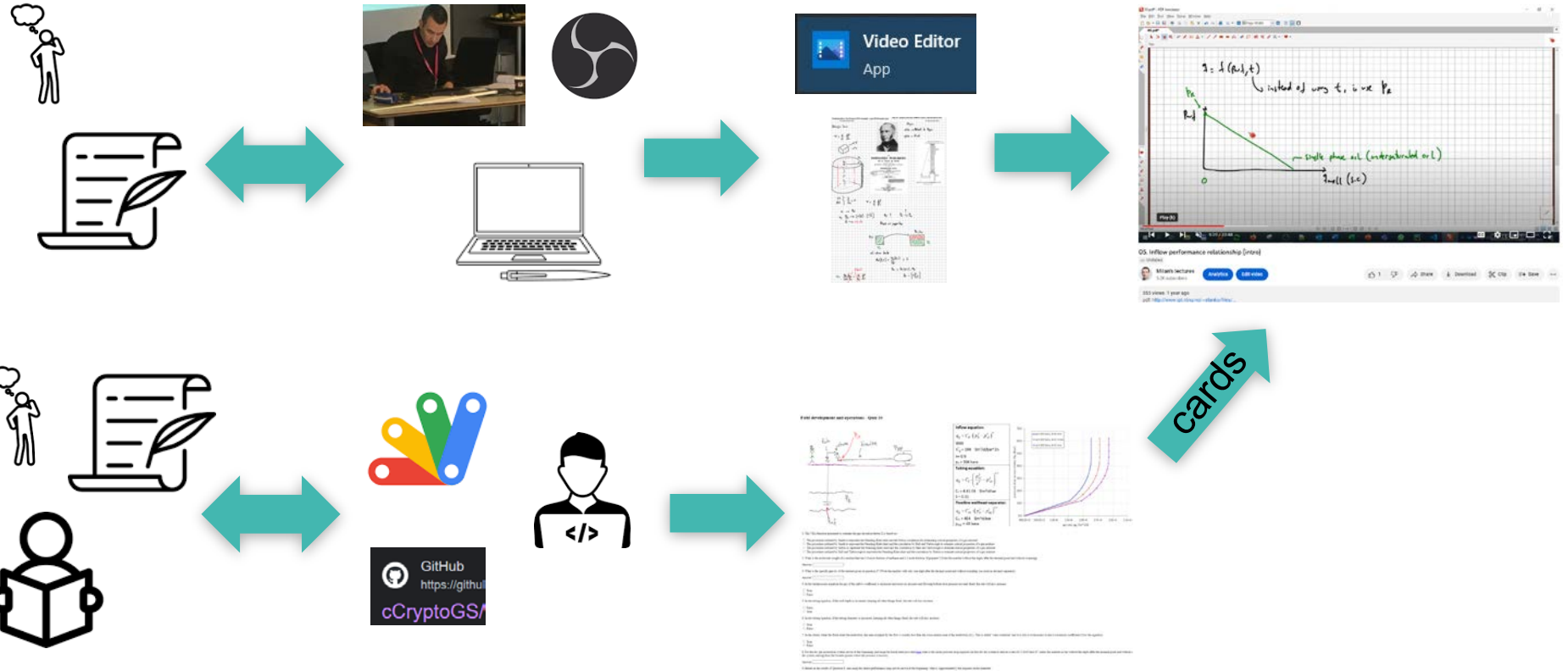
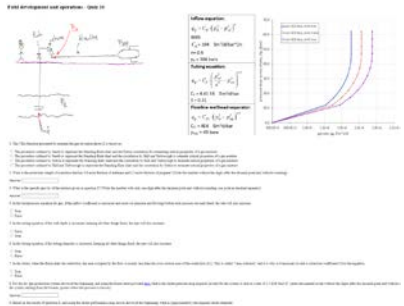
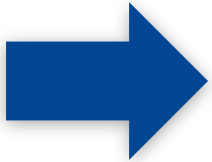


Description of the quiz



Answers to questions



No logs

U2FsdGVkX1+nNtWoDyc2GPXI0FyUeZ+P3WIiSq7kNvAVUa7j2l3j8A6/WpoRWxf

Encrypted string containing:
-Quiz nr
-Time stamp
-Browser type

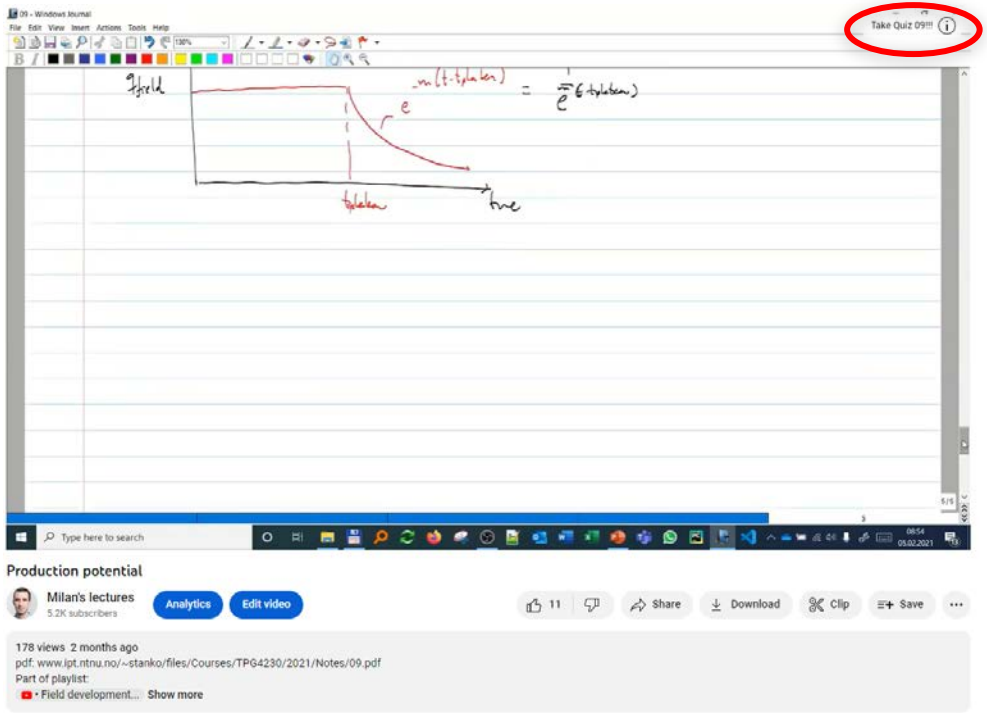
Fail message
-(opt) how many questions were correct

Description of the quiz

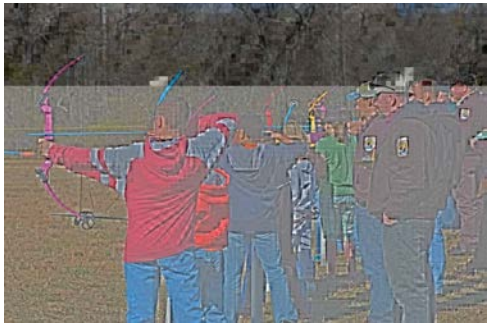
Collected and stored by the student for:

- Mandatory activities
- Graded activities

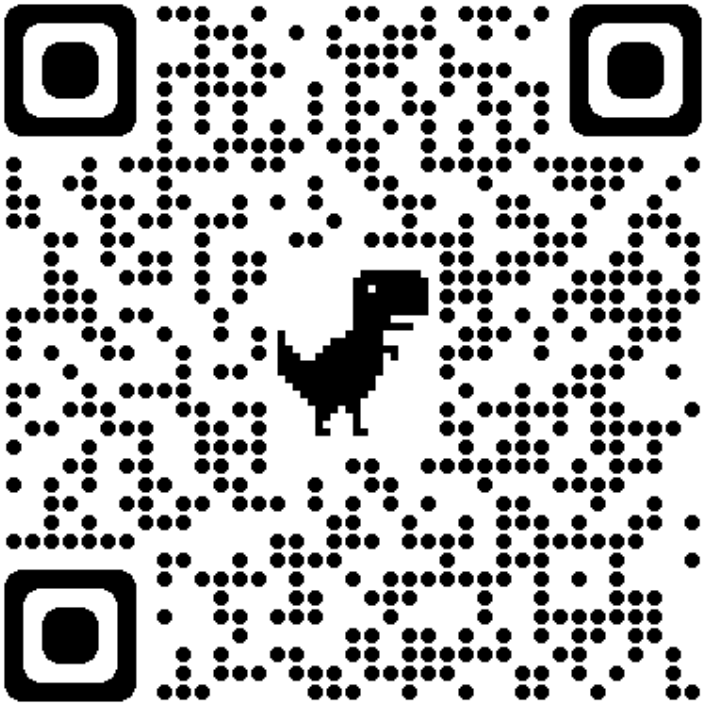
Description of the system



Live demo!

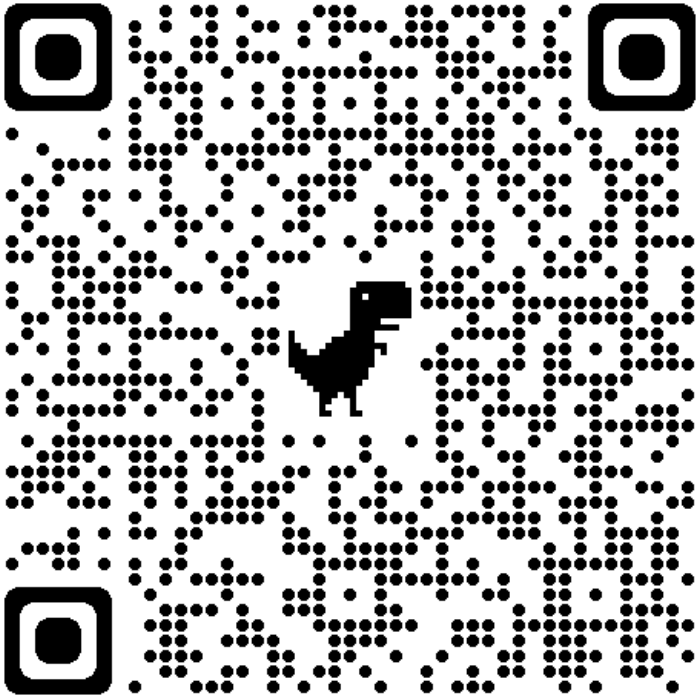


Live demo



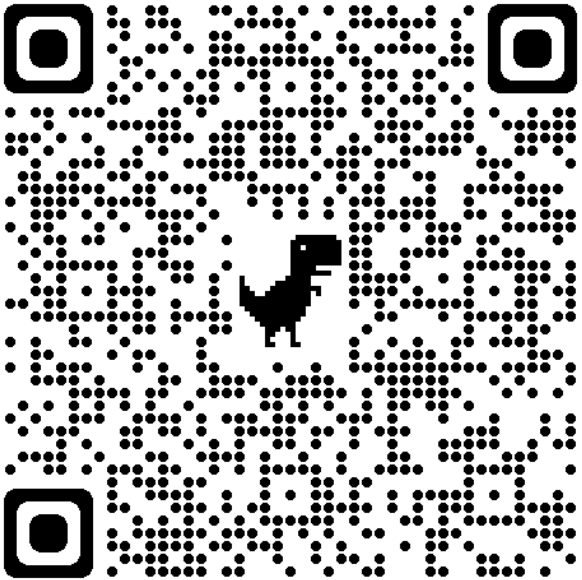
Youtube lecture

Live demo

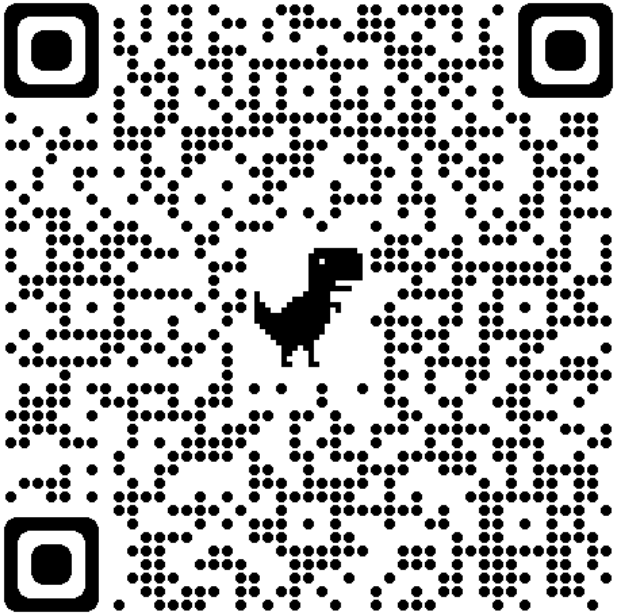


Quiz

Live demo



Reading assignment



Quiz

Outcome

Milan

- It works!
- A lot of effort/learning required to create the quizzes, somewhat less later
- Less time required for correction
- Better delivery of tedious topics
- Works better together with classroom teaching

Outcome

Students

- Videos are very useful, allow for pausing and re-watching
- Quizzes:
  - Good to test yourself
  - Good to keep up to date with the content
  - Too much work (but fair for the grade?)
  - Frustrating when there are errors and you don’t know which question is wrong

Future Possibilities

- Suitability for MOOC?
- Browser fingerprinting to avoid copying?

Questions?