

# Experimenteren met leren en doceren

Onderwijsvernieuwing binnen Wageningen University

3 december 2018, Sanne Mirck



WAGENINGEN  
UNIVERSITY & RESEARCH



100years  
1918 — 2018

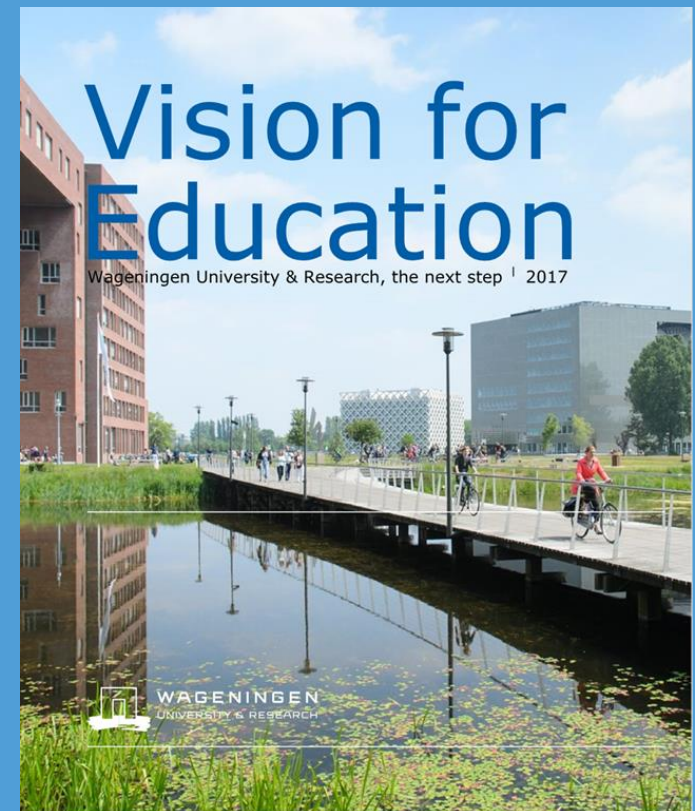
# Onderwijsvernieuwing

Start met een idee (of probleem) van de docent



# Visie op onderwijs

- Hoogwaardige wetenschappelijke kennis
- Flexibele leerpaden
- Rijke leeromgeving
  - Actieve studenten
  - Effectieve feedback
  - Diversiteit
  - Leren in communities



# Now **500,000** MOOC enrolments

## What is a MOOC?

A Massive Open Online Course: anyone can join for free!

Free



"It's much more than just videos (or recorded lectures and multiple choice questions). Try one yourself!"

## Over 100 teachers

were involved in creating the current MOOCs



Total of **2351** videos

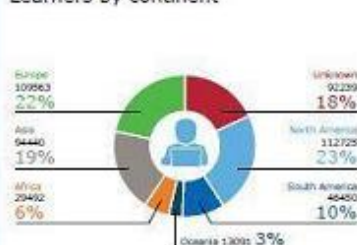
## Total video views

**2,859,358**

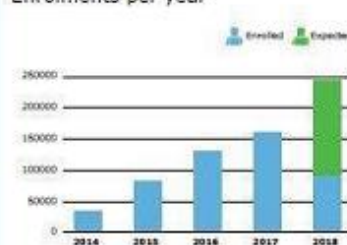
## Top 20 countries where participants come from



## Learners by continent



## Enrolments per year



## Overview of all MOOCs

**Professional Certificate Programme Food, Nutrition and Health:**

- Nutrition and Health: Macromolecules and Digestion
- Nutrition and Health: Microminerals and Malnutrition

**Professional Certificate Programme Nutrition and Disease:**

- Nutrition and Cancer
- Nutrition, Heart Disease and Diabetes

**MicroMasters Chemistry and Technology for Sustainability:**

- From Fossil Resources to Biomass: A Business and Economics Perspective
- Bio refinery: From Biomass to Building Blocks of Plinkon Products
- Catalytic Conversions for Biobased Chemicals and Products
- Capstone Chemistry and Technology for Sustainability

**Series Sustainable Tourism:**

- Sustainable Tourism: Rethinking the future
- Sustainable Tourism: Society & Environmental Aspects

**Series Sustainable Food Security:**

- Sustainable Food Security: Crop Production

- Sustainable Food Security: Food Access
- Sustainable Food Security: The value of systems thinking

**Co-Created with Tubelfit:**

- Sustainable Urban Development: Discover Advanced Metropolitan Solutions
- Co-Creating Sustainable Cities
- Entrepreneurship for Engineers

**WUR100 - MOOC made by students:**

- The Science of Beer

**Other MOOCs:**

- Animal Breeding and Genetics
- Introduction to Animal Behaviour
- Sustainable Soil Management: Soil for life

## Coming soon

- Nutrition and Health: Human Microbiome
- Nutrition and Health: Food Risk
- Landscape Approaches: Business & Finance
- Landscape Approaches: Governance & Policy
- Landscape Approaches: Leadership & Partnership
- Animal Breeding and Genetics - part 2
- MicroMasters Circular Economy



Total watch time of **952,951** minutes

A typical MOOC certificate earner spends

**29** hours interacting with online courseware.



Wageningen University & Research started with its

**first MOOC in December 2014 with 25,000 participants**



# MOOCs als impuls voor onderwijsvernieuwing

- Multimedia
- Flipping the classroom
- Flexibilisering



## 36. Total soluble carbohydrate content

WORK

### Estimated time table

Edit method ↗

Total time needed: +/- 1h 5min

Steps	1	2	3-8
Time needed	10min	10min	45min



Open on phone/tablet

### Protocol

#### REQUIRED MATERIALS FOR STEP 1

1 Using the 150 µg/mL glucose stock solution, make a calibration curve in 20 mL glass test tubes.

Edit step ↗

tube	µL glucose stock solution	µL demi-water
1	0	400
2	100	300
3	200	200
4	400	0

Always measure the calibration curve and your samples simultaneously. Otherwise you cannot use it.



#### REQUIRED MATERIALS FOR STEP 2

2 Make a series of dilutions of your sample (for instance 10, 100, 1000 and 10.000 times diluted)

Edit step ↗

1 Make calibration solutions

2 Make dilution series

3 Add phenol solution

4 Mix the tubes

5 Add concentrated H<sub>2</sub>SO<sub>4</sub>

6 Mix the tubes

7 Let tubes settle

8 Mix and measure

# LabBuddy: Experiment designer

labuddy<sup>®</sup> ExperD: Molecular and Evolutionary Ecology ellen.torfs@wur.nl PREPARE

1. Introduction & instruction 2. Research questions 3. Analyses 4. Culture methods 5. DNA analysis methods 7. Isolation methods 8. Sampling methods Custom

Introduction & instruction

```
graph TD; A[Take cheek cell sample] -- Out --> B[DNA isolation from animal cells]; B -- Out --> C[PCR]; C -- Out --> D[Agarose gel electrophoresis]; D -- Out --> E[Analyze gel]; F[Take Arabidopsis samples] -- Out --> G[ ];
```

In the Polymerase Chain Reaction, a certain region of DNA is replicated over and over again.

The region that is copied is determined by the ... and the ...

Submit Answer Reset Edit question

Should you include a control, why and how?

Choose one or more options:

- No
- Yes, to check for contamination
- Yes, to check if primers are correct
- Yes, to check if template is correct
- Yes, to check for background enzymatic activity
- by using PCR mix without template
- by using PCR mix without polymerase
- by using PCR mix without primers

Submit Answer Reset Edit question

The ingredients of the PCR all have a purpose. These purposes are listed below. Indicate which components belong to which purpose.

<https://gen-wur.labuddy.net/>

# Projecten Innovatie Call

- Leerpaden voor vaardigheden
- Peer feedback
- VR/AR

<https://www.4tu.nl/cee/en/research-innovation/>



# Ondersteuning en uitwisseling

## Ondersteuning

- Onderwijskundig advies
- Workshops en trainingen
- Functioneel beheer en multimedia

## Uitwisseling

- Docentendag
- Voorbeelden delen
- Docenten met elkaar in contact brengen

# Vragen?



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