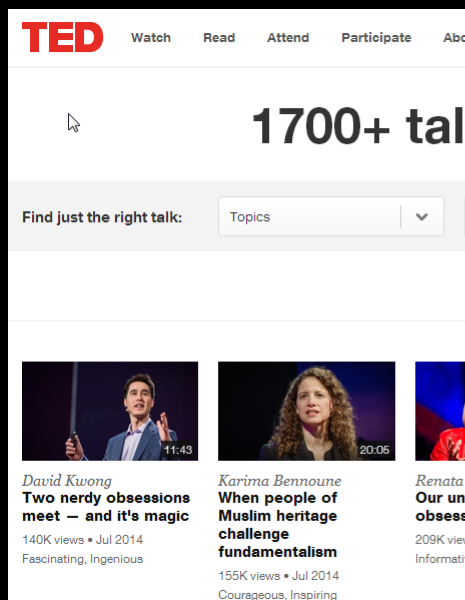
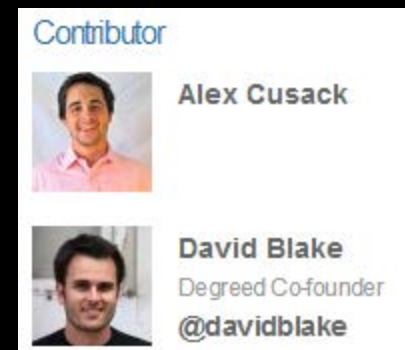




Considerations of Massively-Open Online Courses (MOOCs) in Medical Physics Education

Mark Oldham PhD,
Professor, Radiation Oncology,
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Duke University Medical Center, Durham NC

Sources for this presentation

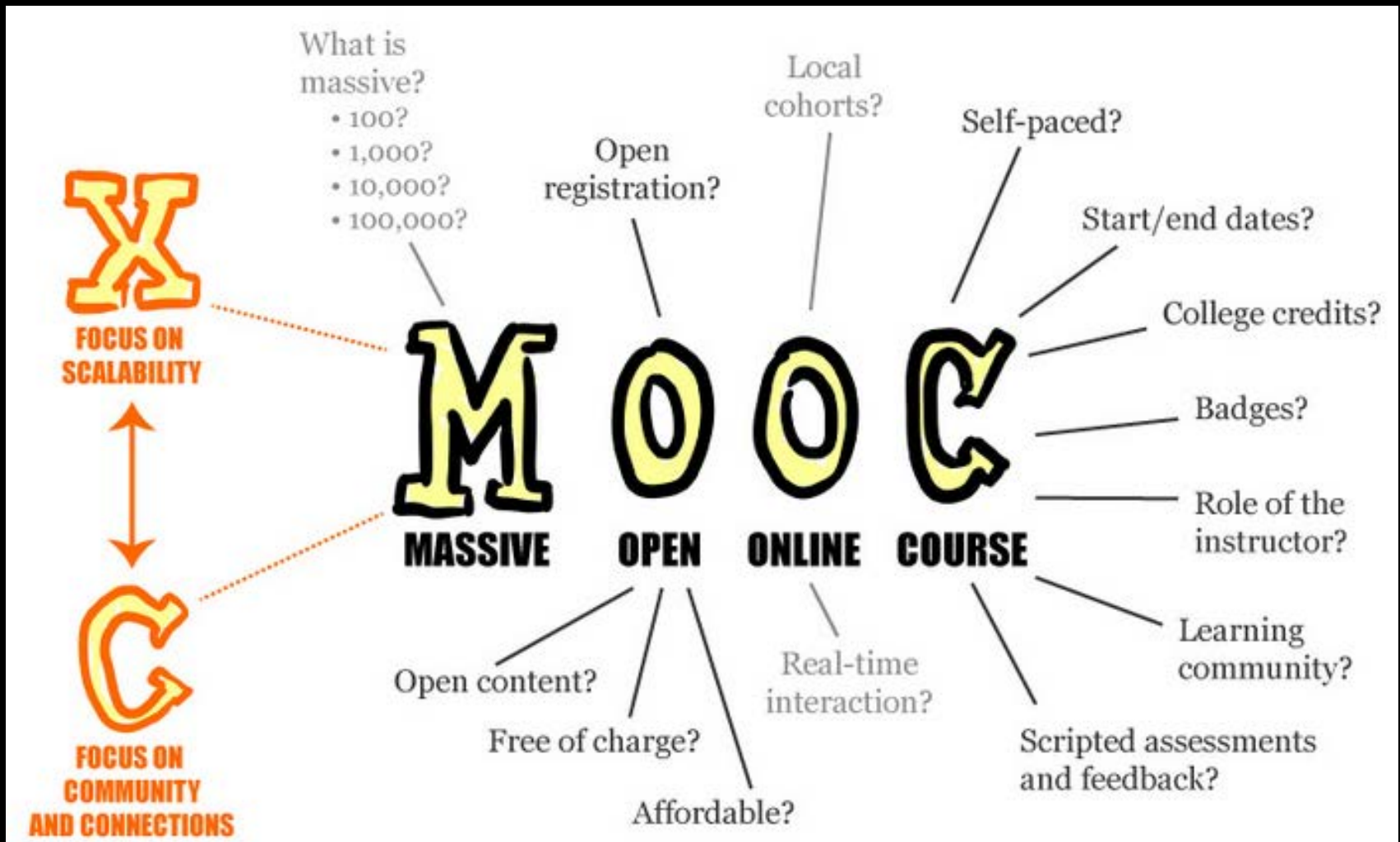


Outline

- What is a MOOC ?
 - Rationale: the nook for MOOC ?
 - Who, How and Why ?
 - Different MOOC types
- MOOCs and medical physics ?
 - Enhance current graduate/residency programs ?
 - Continuing education ?
 - Latest business models
 - Accreditation and practical training ?

What is a MOOC ?

Massive Open Online Course

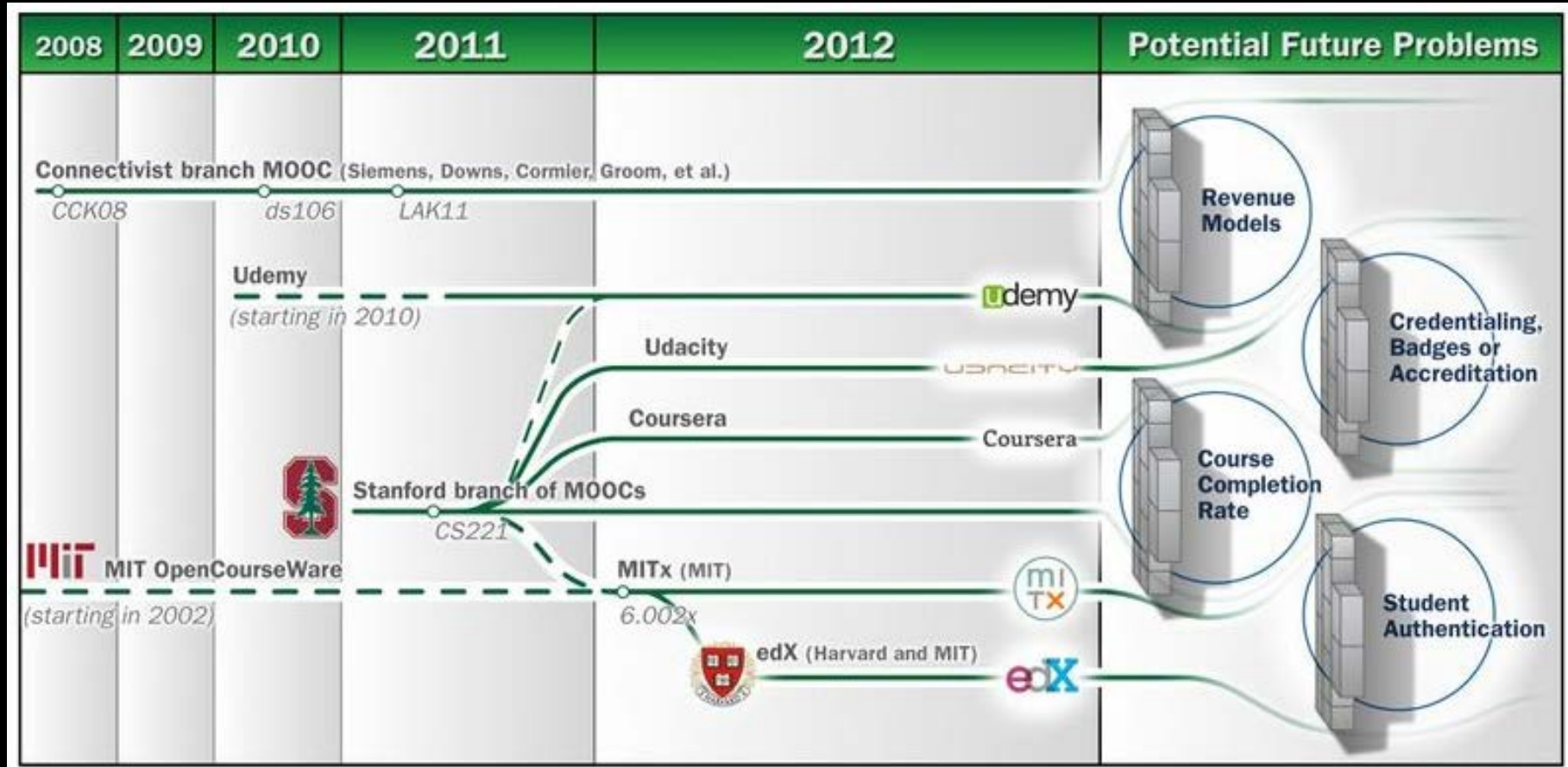


Rationale ?

- Quality education en-masse !
- Enable wave of innovation.
- “in fifty years the world will have only ten universities” ?
 - S Thrun, Udacity Founder



Origin and timeline of (some) MOOC providers



Major MOOC Providers

Major Providers



COURSERA

Started by Stanford computer science professors Andrew Ng and Daphne Koller in April 2012. For profit

5+million students

532 courses

107 partner schools

Students from 190 countries



EDX

Started by Harvard and MIT in May 2012. Non-profit

1.65 million students

125 courses

30 partners

225 countries and territories



UDACITY

Started by Sebastian Thrun and Peter Norvig in February 2012. For profit

1.8 million students

33 courses

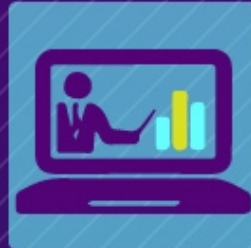
16 partners

190 countries

PROS & CONS OF MOOCs



FLEXIBLE



**DIVERSE
RANGE OF
SUBJECTS**



**OPEN TO
ANYONE**



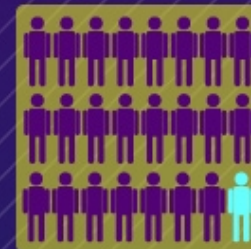
FREE



NO CREDIT



**LACK OF
HANDS ON
LEARNING**



**100,000+ TO 1
STUDENT/
TEACHER
RATIO**



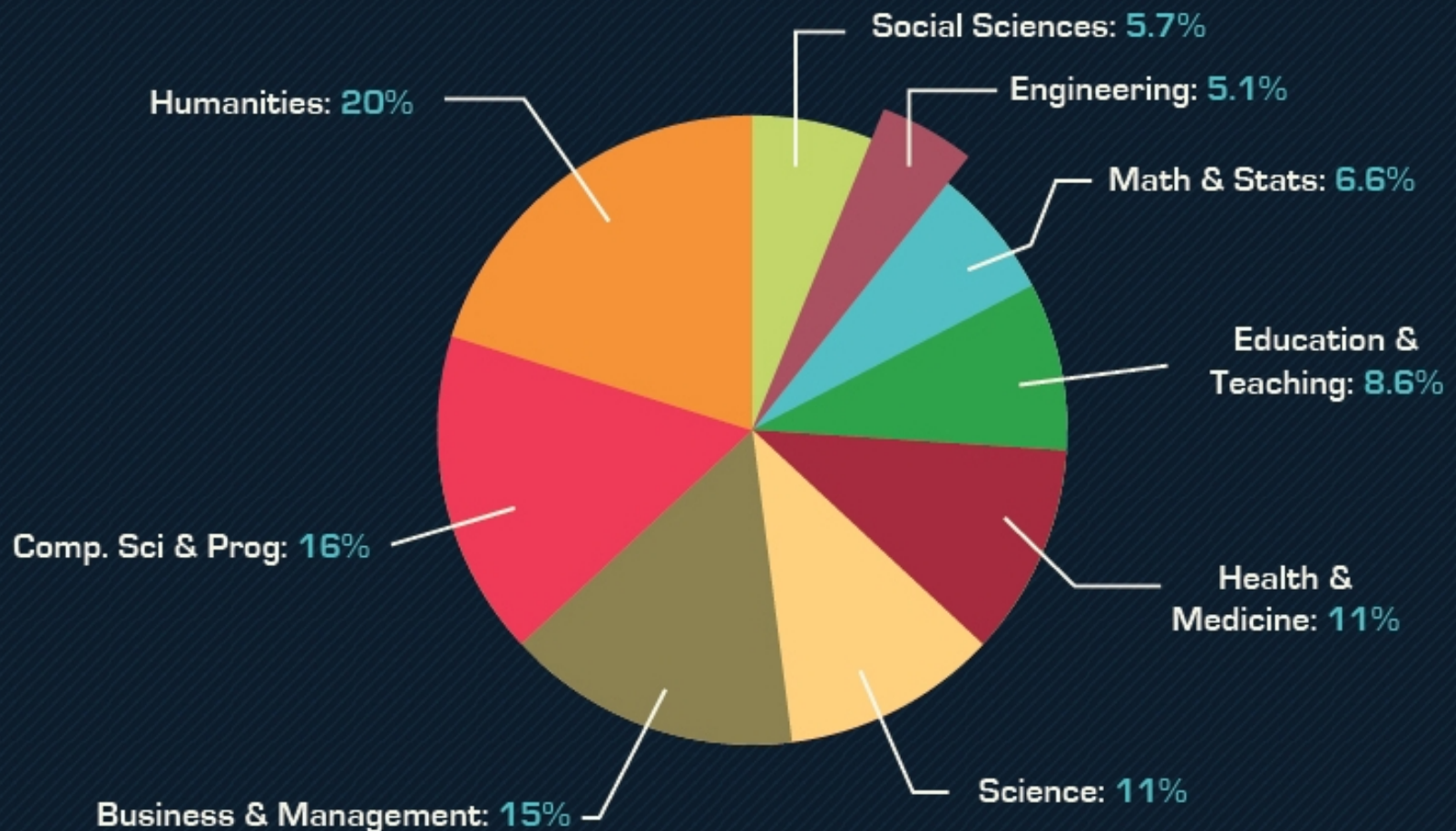
**DROPOUT
RATES OF UP
TO 90%**

brought to you by

TOP100ONLINECOLLEGES.ORG

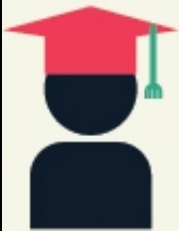
MOOCs – what's out there ?

1200+ courses available



MOOCs – who's taking them ?

User Demographics (via Coursera)



35, the median age of students enrolled with Coursera.

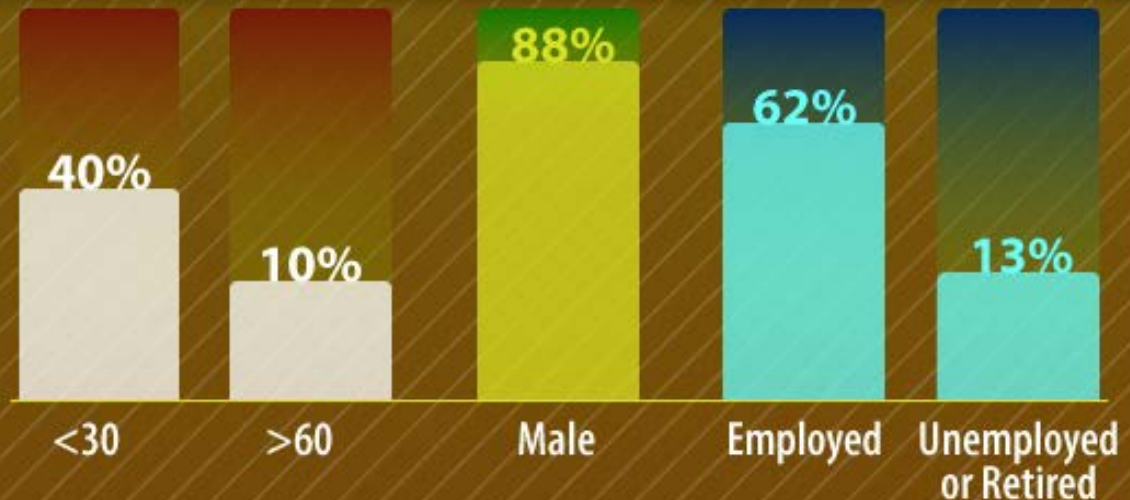
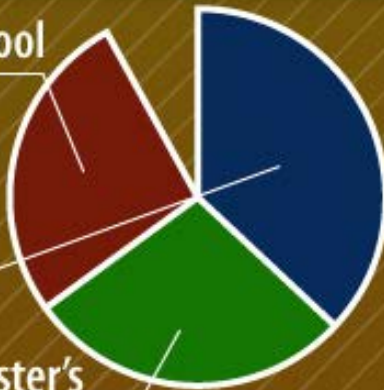
73.3%

Employment Status

27% High School

37% Have B.S. Degree

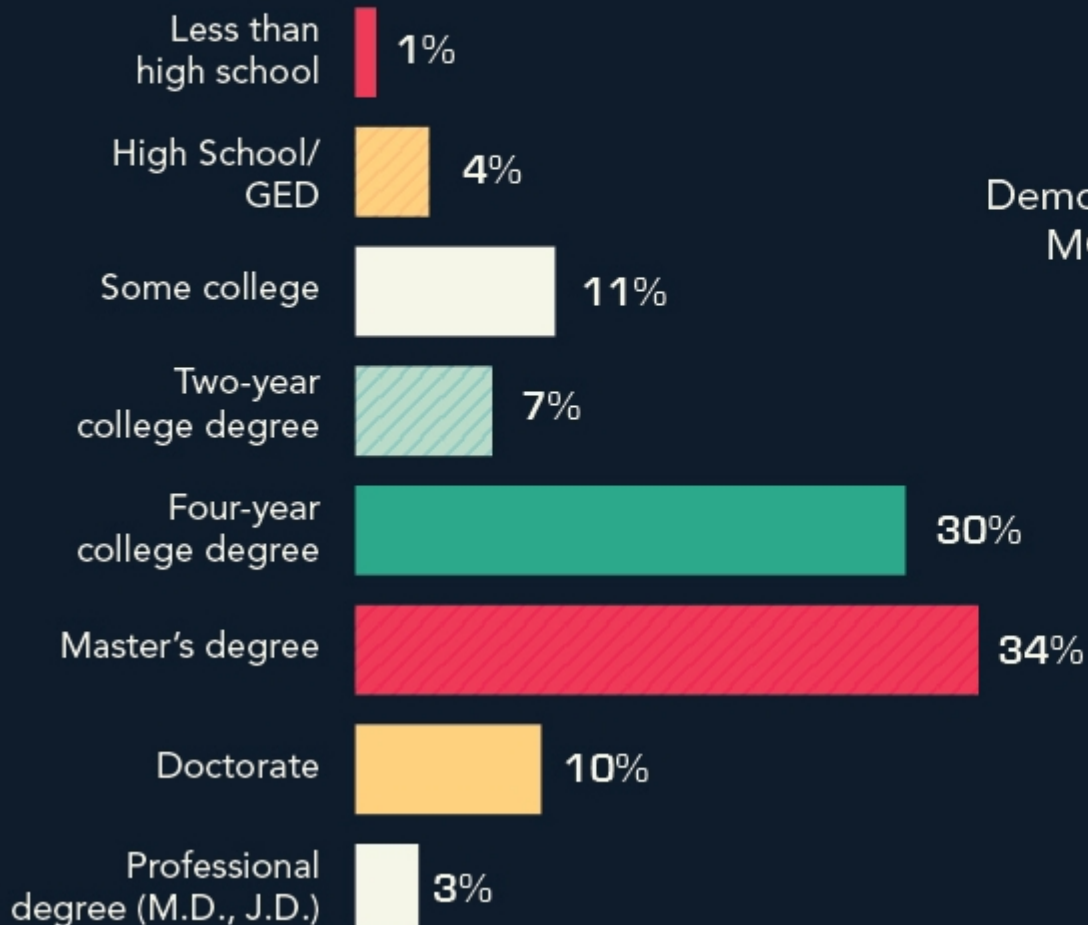
28% Have Master's Degree or Profession



MOOCs – who's taking them ?

Prior education level

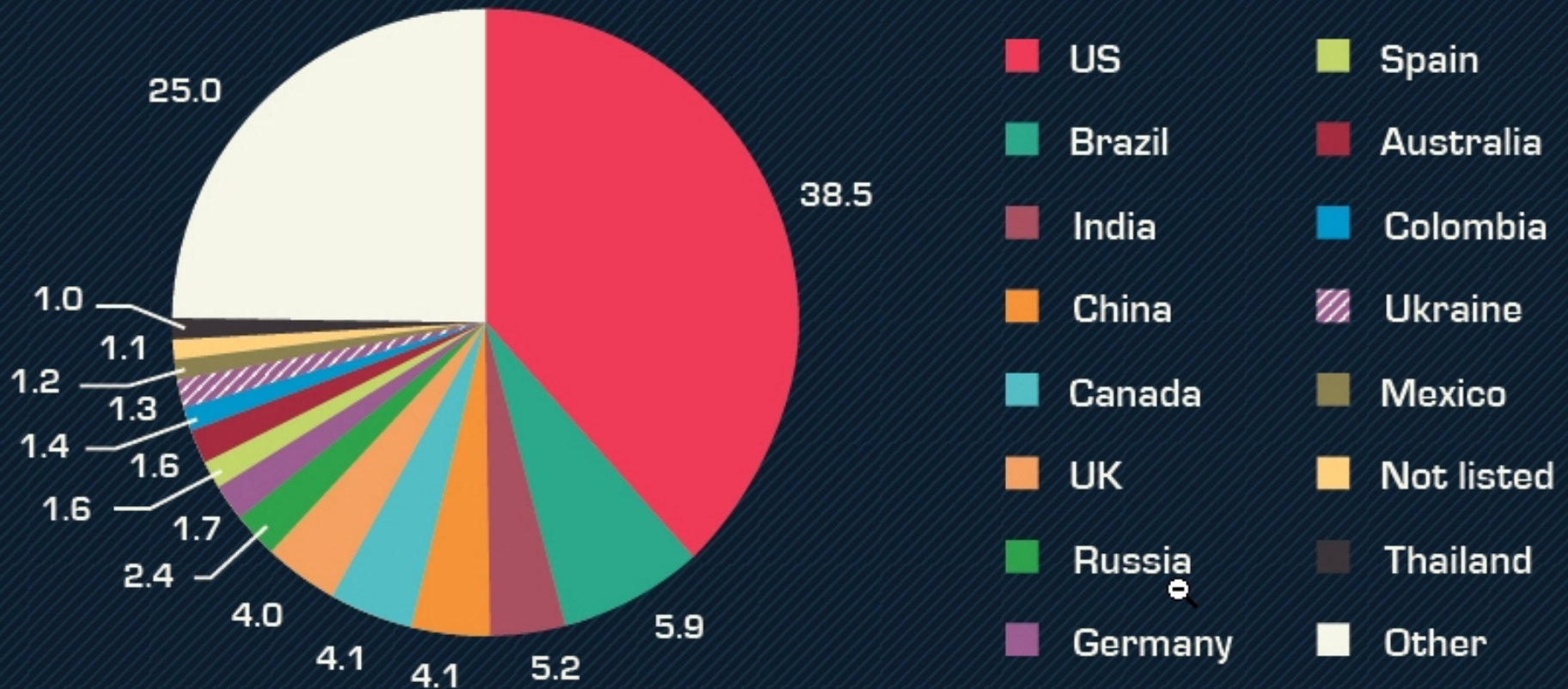
Education



Demographics of people taking MOOCs on Canvas Network

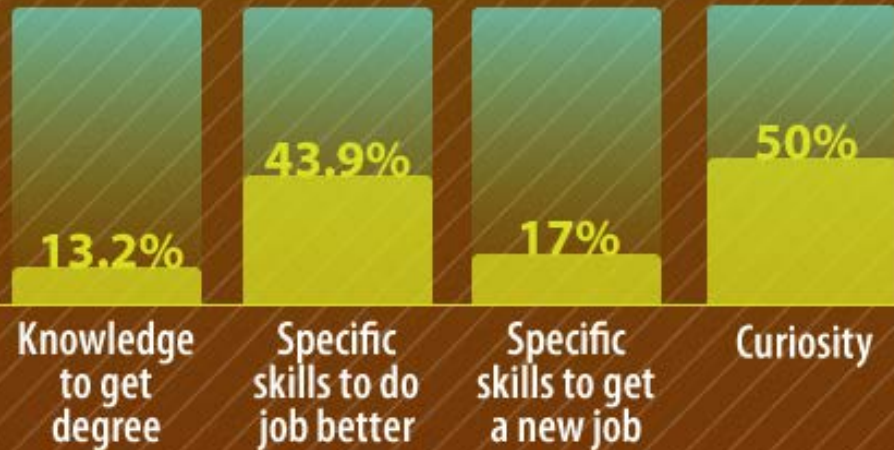
MOOCs – who's taking them ?

Where students are coming from (via Coursera)
as of August 2012



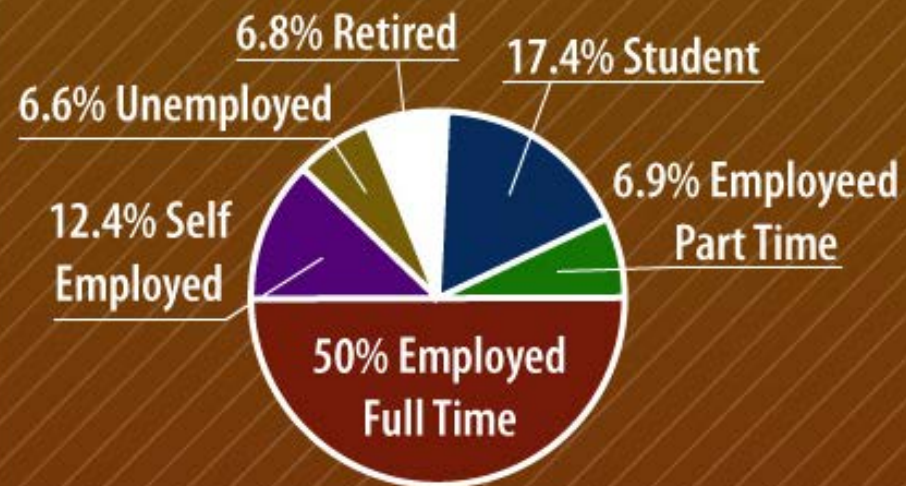
Why take a MOOC ?

WHY MOOCs?



(Those surveyed could pick more than one answer)

EMPLOYMENT



Different flavors of MOOC ..

6 SPOC

Small Private Online Courses are similar to BOOCs, in that the class sizes are limited, but the student teacher interactions are more closely modeled after traditional classroom interactions. SPOCs are similarly referenced in the "flipped classroom" model

7 Corporate MOOCs

MOOC courses designed for employee training or continuing education typically subsidized or uniquely accredited by employers.

Various MOOC Types

1 xMOOC

The most common type of MOOC, organized around a central professor and core curriculum.

2 cMOOC

"Connectivity" MOOCs resemble graduate seminar courses; course materials provide a starting point for student discussions with the core of the learning coming from student-to-student interactions.

3 DOCC

Distributed Online Collaborative Courses are courses in which the same core course material is distributed to students at multiple institutions, but the exact administrations of the material can vary. Students can also engage with each other across institutions via the online component.

4 BOOC

Big Open Online Courses are similar to MOOCs but limited to a smaller number of students; typically 50.



5 SMOC

Synchronous Massive Online Courses differ from xMOOCs in that the lectures are broadcast live, requiring students to log in at specific times in order to hear the lectures.

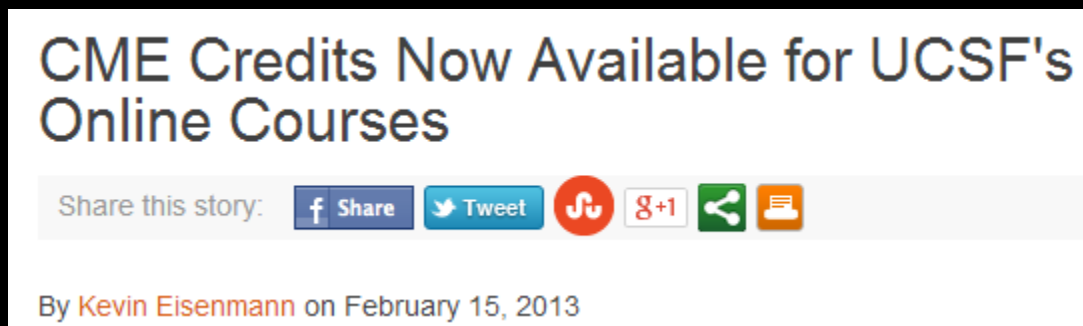
6 SPOC

MOOCs and Medical Physics ?

- Domestic (US)
 - Recruitment
 - Introduce Medical Physics earlier (School/Univ ?)
 - Enhance Training
 - Graduate/residency programs – democratize
 - Allow MOOC credits ?
 - Maintenance of Certification ? ..
 - compliment SAMS etc
 - MOOC certification ? Testing ? Grading ?
- International ?
 - Greater flexibility

Accreditation and practical training?

- MIT - Continuing Education units (CEUs)
 - Nationally recognised
 - \$495, 4 week, 30 days



- Stanford – surgery CME online course
 - <http://online.stanford.edu/course/sonodoc-cme-sp2014>
 - Local supervision training

Practical training ?

- The U. of Edinburgh has a Master's in surgical science
- The practicum component supervised by the student's on-site location.
- http://www.ed.ac.uk/studying/postgraduate/degrees?id=404&cw_xml=details.php

How to build a MOOC ?

- Duke Planning Guide: Building a Coursera Course.
<http://bit.ly/1jcMqFa>
- Vanderbilt Coursera Resource Guide for creating a MOOC: <http://cft.vanderbilt.edu/files/coursera.pdf>
- Duke video production kit description and documentation for using it: <http://vital.oit.duke.edu/>

Summary

- MOOCs
 - Driving forces – flexible access and low cost
 - Flexible, all aspects rapidly evolving
- Potential for Medical Physics
 - Domestic and international
 - Diversify educational offerings
 - Accreditation and practical training
 - Maybe feasible with creative models

Thank-you !

- Giving education away for free is a really good idea, but ... here has to be a business model that actually works.
Sebastian Thrun (Udacity)
- We aren't about replacing physical schools. ... if lectures happen in the students' own time and pace then you can do a higher order activity in the classroom: more conversation, more problem solving, more projects.
Salman Kahn (Kahn Academy)
- "We need a way to integrate education much more deeply into the fabric of our lives in a lifelong way," she says. "And that's what we're doing."
Dahne Koller (co-founder of Coursera)