



Universities in the 21st Century

Elmer Sterken
University of Groningen
Coimbra Group



What a great challenges ahead!

- › The world needs talented people and asks for innovations more than ever
- › We have about 22 thousand universities worldwide (*webometrics*-estimate) and the number is growing: the 'university model' has never been so popular
- › So how do we, universities, stimulate and develop the quality of university education and research?



Excellence of universities

- > Of those 22 thousand universities about 1500 combine education and research (the German 19th century model, further developed in the US): a necessary precondition to safeguard academic excellence
- > These universities are known for both employing inspirational academic staff members and organizing and facilitating high-level education



The Economist – March 28, 2015

- › Competition between universities has become intense, leading to:
- › Tension between education and research
- › Tension between 'excellence' and 'equity'
- › But technology can help to overcome these tensions!



How can we promote excellence?

- > Through a national Research Excellence Initiative (REI)
- > Through the EC-initiatives: for instance in H2020 the European Research Council and the ESF
- > For individual universities: try to attract more external money
- > But a university itself can also stimulate excellence by internal policy!



What is a REI? (1)

- > state-run programmes allocating time-limited (>4 years) funds to research units on a competitive basis
- > primary goal: strengthen the international competitiveness of the national research landscape
- > strategy: endow few research centres with considerable funds to conduct outstanding research
- > selection procedure: multi-level application process based on international peer review, followed by regular evaluations of chosen centres of excellence



What is a REI? (2)

- > usually open to all areas and fields of science
- > funds for research centres, not individuals
- > interdisciplinary / inter-institutional collaboration encouraged
- > Centres of excellence can be – clusters of research groups – graduate schools – HEIs as a whole
- > universities as regular host institutions for „centres of excellence“



Worldwide excellence policies

- › China: 1998 launch of '985' and later on '39'
- › Singapore: 2002: Global Schoolhouse Strategy
- › Germany: 2005: *Excellenzinitiative*
- › Spain: 2009: Campuses of Excellence
- › France: 2011: *Sorbonne* League
- › Russia: Project 5:100, 5 universities in the top-100
- › Japan: 2013: Super Global Universities
- › UK: 2014: Research Excellence Framework (RAE started in 1986)
- › And more: Finland, Sweden, Norway, Denmark, Poland, Ireland



What can an individual university do?

- > Attract and develop talented students and staff members
- > Develop international collaboration and spreading academic reputation
- > Contribute to grand societal challenges
- > Be open in many respects
- > I will give some examples on behalf of my home university, the University of Groningen, The Netherlands, and its international networks, such as the Coimbra Group



Remainder of the presentation

- > Highlight some of the international academic trends
- > Key elements in research policy
- > Key elements in education
- > The issue of opening the university to the outside world



International trends

- > Increased mobility of students and 'university capital'
- > Changing international labour markets
- > Demand for international cooperation increases, as is demand for cross-disciplinary research
- > ICT-use in education
- > 'Individualization' of education
- > Desire to be 'open' in many respects increases



How we stimulate excellent research?

- › Hire young talented academics in an attractive career - Tenure Track - model; in Groningen we have a special model for female academics: the *Rosalind Franklin Fellowships*
- › Stimulate cross-disciplinary research; offset 'More-of-me', focus on societal issues, like in the case of Groningen: healthy aging, energy use, and a sustainable society
- › Prepare 'high-potentials' for both national and international subsidies and prizes
- › Develop an internal talent-development model



Invest in large-scale facilities

- > Some examples: (1) proton-therapy facility, (2) IBM-big data infrastructure, (3) co-invest in ESO-projects in Northern Chili
- > Use Civic Science: important to use the region as a living lab – we developed a biomedical 3-generations database with 165 thousand people
- > In general: we stimulate researchers to ‘produce datasets’ and to open these to the outside world



Collaboration and co-location

- › Dutch research is very productive per euro invested
- › Dutch researchers have large and strong international collaboration networks
- › Evidence shows that the impact of articles is larger if authors work more in each other's proximity
- › This hints at exploring better collaboration options within the university, for instance in cross-disciplinary curiosity-driven and/or societal projects



Stimulating cross-disciplinary research

- > By joint-PhD supervision
- > By organizing pitches for young researchers
- > By organizing sessions for more advanced academics: it is stimulated to talk about issues that are jointly unknown
- > See: <https://www.youtube.com/watch?v=zK-KYvUW4HY>



Education: What we like and acknowledge

- > We like to train students that are able to 'innovate' in their new environment
- > We like *On Campus* education and the concept of learning communities
- > We acknowledge heterogeneity of fields
- > We like 'deeper learning' over 'surface learning'
- > We like students who take responsibility in their own learning trajectory
- > We like 'variety' of any kind in the student population



Implementing educational policy

- > A strategy focused on: (1) learning communities, (2) the International Classroom, (3) flipping the classroom
- > Besides there is a desire for research-infused education and career orientation, and
- > Separate models of education for talented students: honours programs for about 10% of the student population

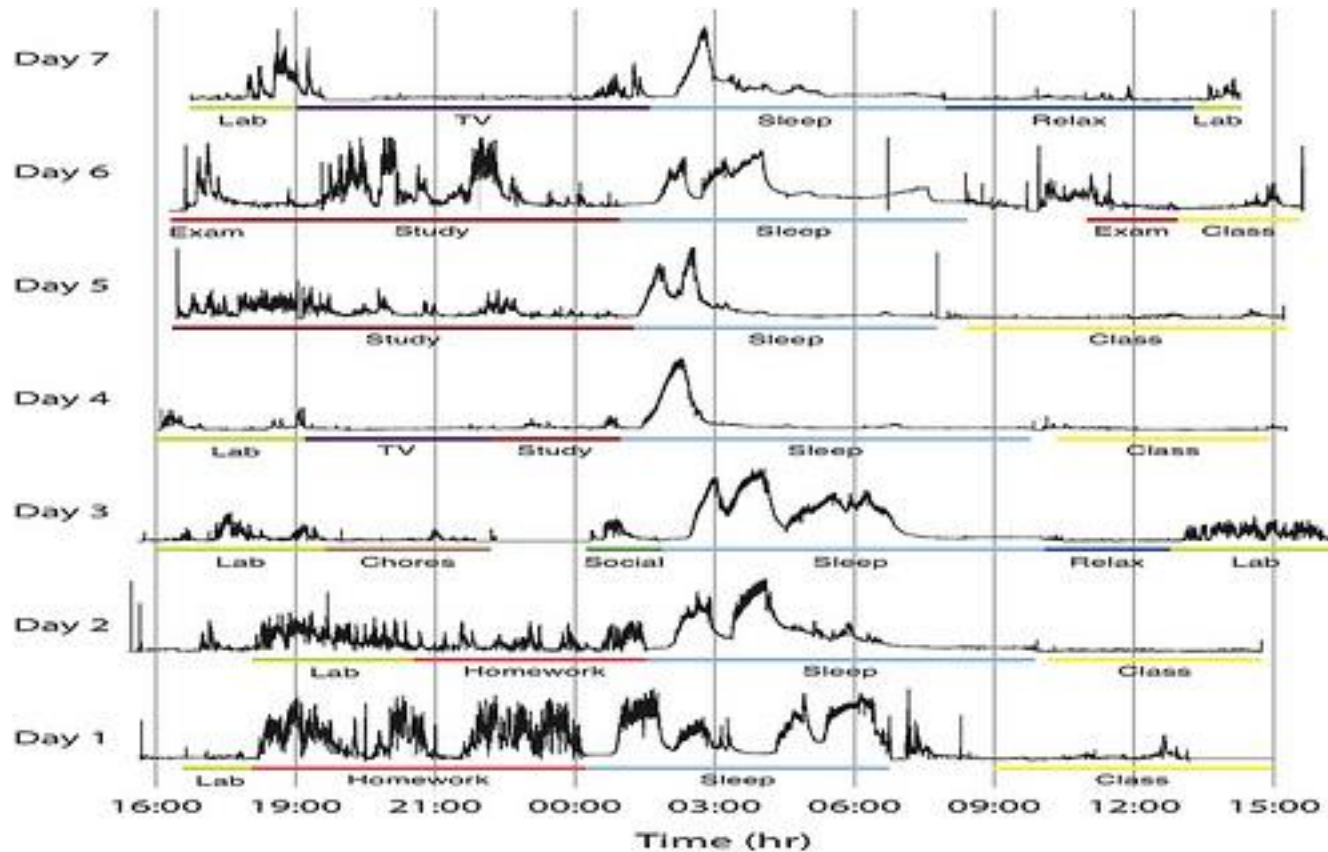


Stimulating 'deeper learning'

- > Traditional lectures, with the lecturer 'broadcasting' without acknowledging the student mix, have a limited impact on learning
- > Students learn more if they are more active in class, can bring in their own input, and feel the owner of their own learning process
- > The following slide shows brain activity of a student during a week



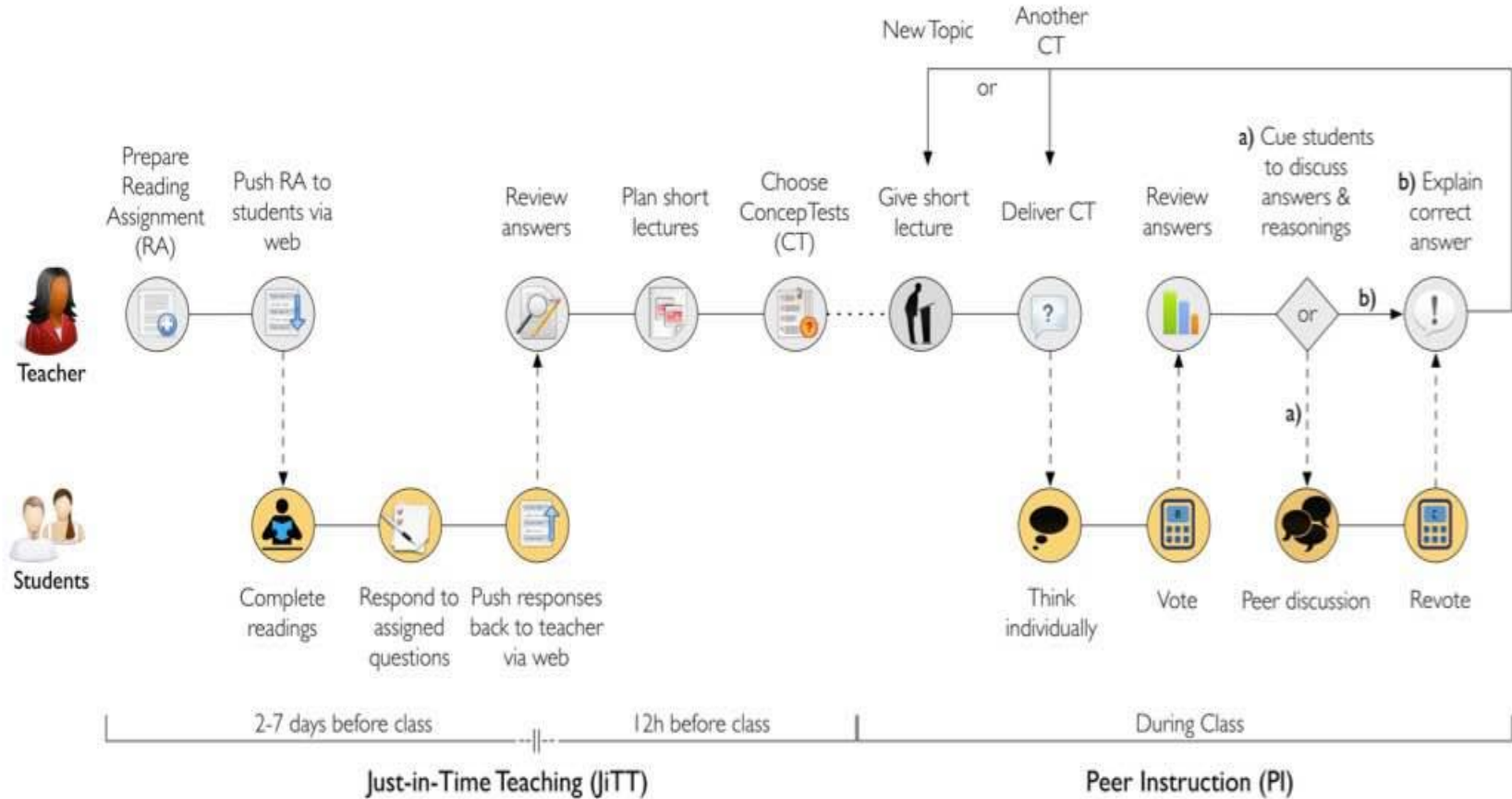
Student brain activity





Flipped Classroom

- > More preparation and activity before the actual lecture starts
- > Just-in-time instructions: video-lectures, collaborative document sharing systems (see NB (Nota Bene) at MIT), pre-class testing
- > In class: active individual input, peer instruction, discussions, working on projects, testing





The International Classroom

1. Taking account of intercultural differences before class starts
2. Making use of the different cultural/international backgrounds of students in class in discussions and problems/cases: let students bring their home examples
3. Preparing for the international labour markets



Learning communities

- › Although it is important to take individual responsibility, we like to exploit the fact that students like the Groningen campus
- › Both social and educational arguments to form learning communities
- › Always a mix of lecturers and students: different forms of communities



Career development

- > We stimulate entrepreneurship and the entrepreneurial attitude of students
- > We use career intermediation software: Career ConNEXT
- > We offer various tools and ask student societies to actively participate



International networks

- > Our university is a true believer of the benefits of international cooperation!
- > Coimbra Group – active member
- > U4: with Ghent (Belgium), Gottingen (Germany) and Uppsala (Sweden)
- > Bilateral active partners: e.g. Newcastle, Fudan, USP, Maryland
- > And a brand new initiative: University of Groningen Yantai as a branch campus in China



University of Groningen Yantai

- > Yantai (1.8 million) is a city in the province Shandong (97 million people)
- > Will start in 2017
- > Capacity up to 10 thousand students
- > Broad range of programmes, PhD-students
- > Goal: spread the reputation of the University of Groningen



university of
 groningen

Date 08-10-2012 |

Impression





Balance between being 'regional' and 'international' at the same time

- > We see ourselves as a 'window to the international world' and connect the region to international developments
- > We use our region as a 'living lab' for international research and education
- > We incorporate local companies in international projects and we ask international companies to join the region



The benefits of international networks

- > Sharing knowledge and experience
- > Offering students help in acquiring foreign experience
- > Using 'trust' among members in research proposals
- > Creating influence through lobbying
- > Looking for strategic complementarities



Excellence in Europe - a must for UoG

- > ERC is extremely important
- > Since 2008 the UoG has obtained 32 Starting Grants, 3 Consolidator, 4 Proof of Concept, and 7 Advanced Grants
- > Annual additional budget by the EC has increased to 30 million euro per year



Universities in the 21st century

- > Research: curiosity-driven and societal orientation – cross-disciplinary – open – civic science – strong interaction with companies and institutions
- > Education: individual active student contributions in class – new ICT – international experience – labour market oriented – unbundled, but with strong campuses
- > Societal involved



Concluding: optimism!

- > We, universities, bring welfare, both in the short - and in the long run
- > We develop the multi-talented young students and researchers
- > We safeguard the important academic traditions
- > We bring the world to our region
- > We determine the future!





Thank you for your attention