



清华大学教育研究院  
Institute of Education Tsinghua University



# Improving Medical Education will Improve the International Evaluation of Universities

**Hamish Coates**

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**A smart  
idea**

**Where we  
are**

**University  
evaluation**

**Improving  
medical  
education**

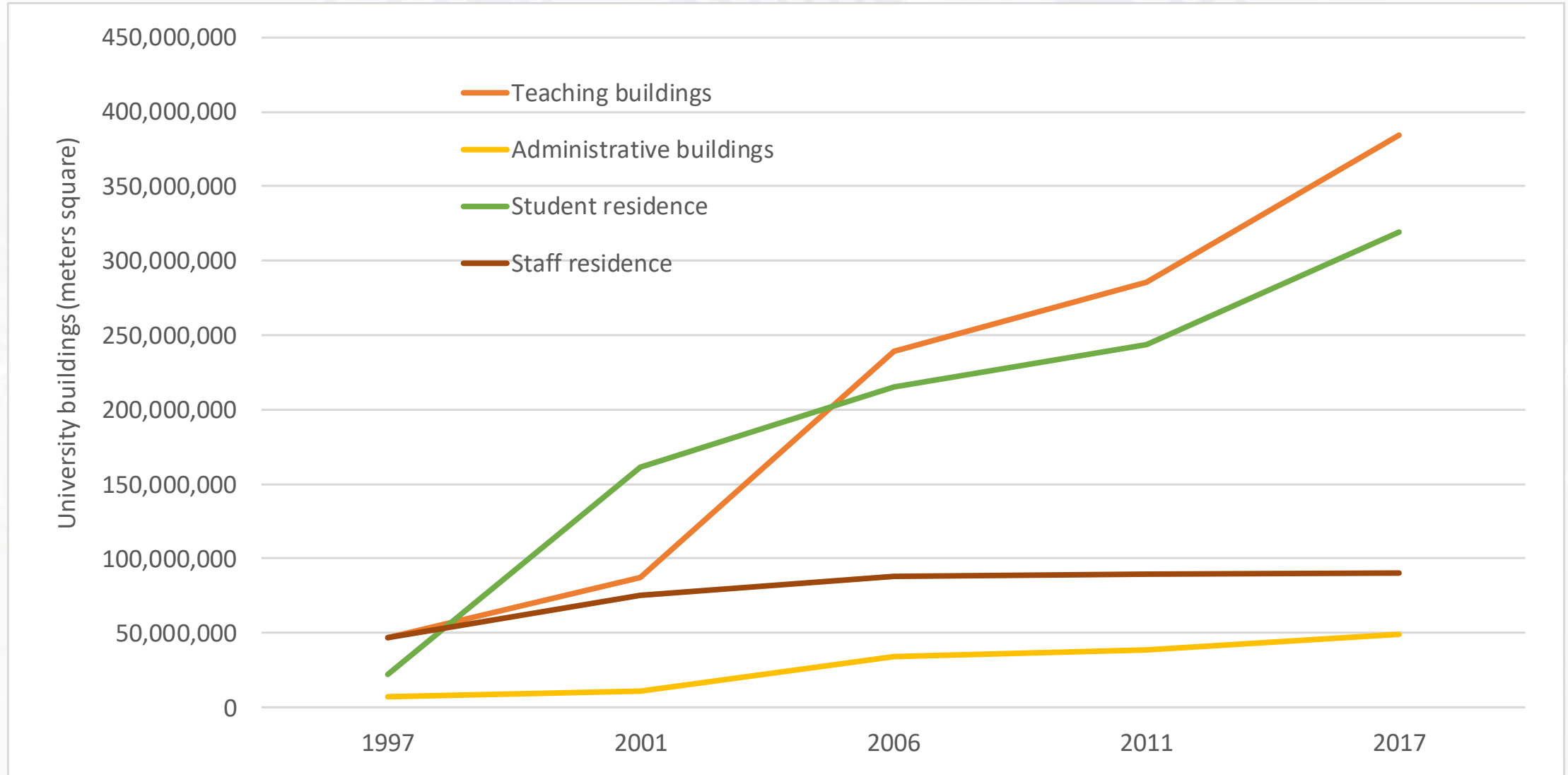


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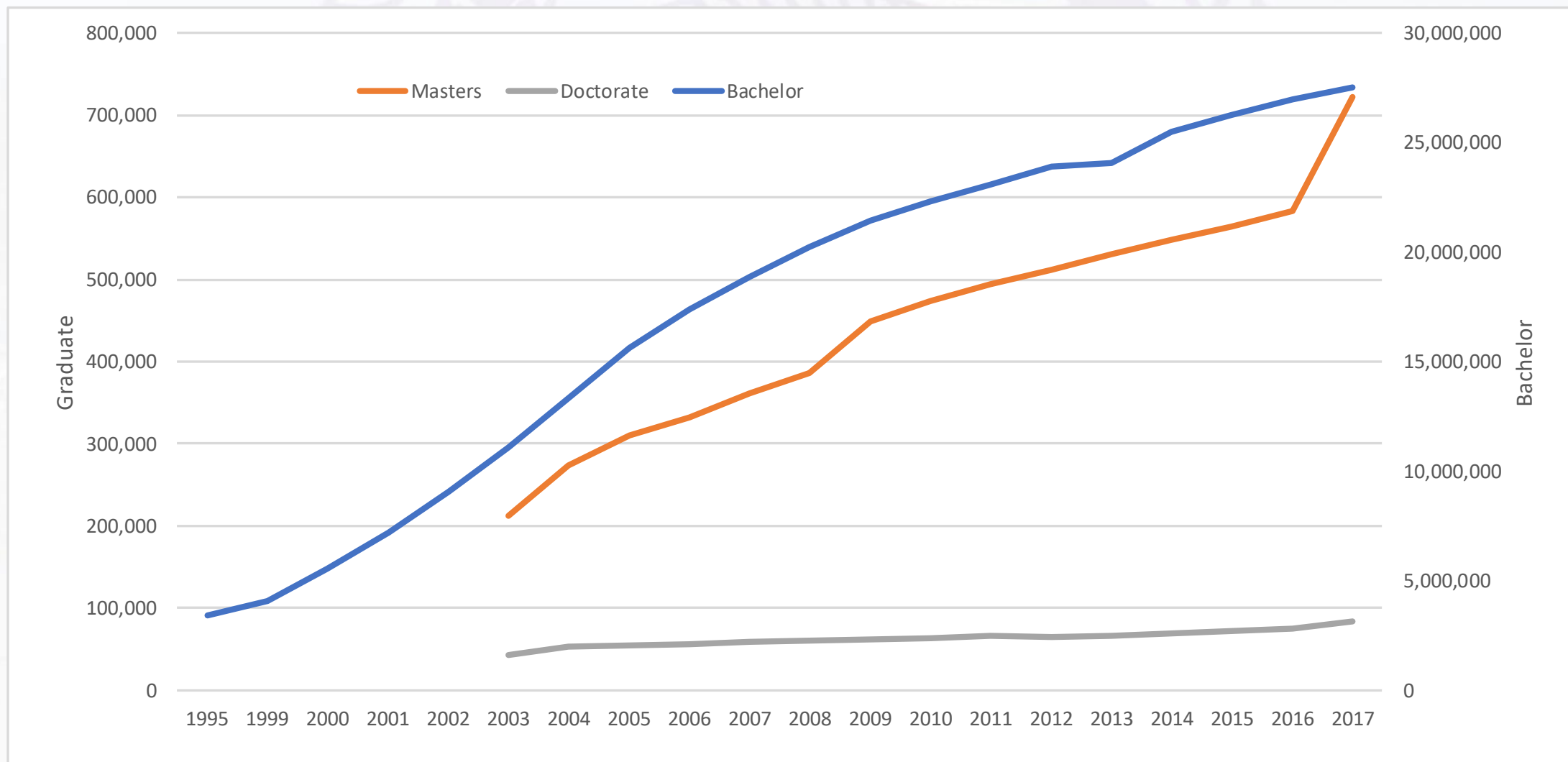
**Where we  
are**

# Building continues 不断增加的建筑



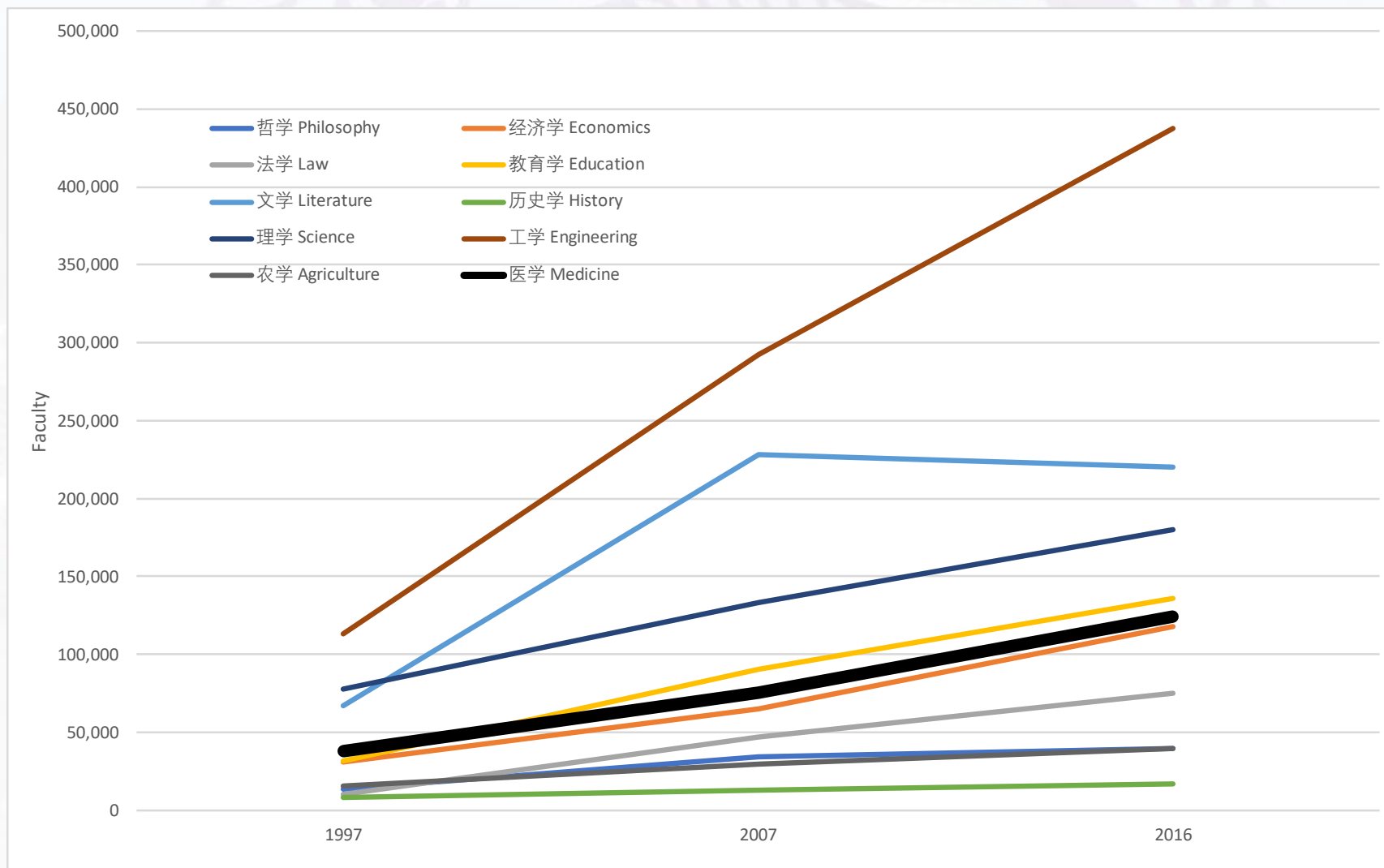
# China enrolment growth

## 中国招生规模的扩大



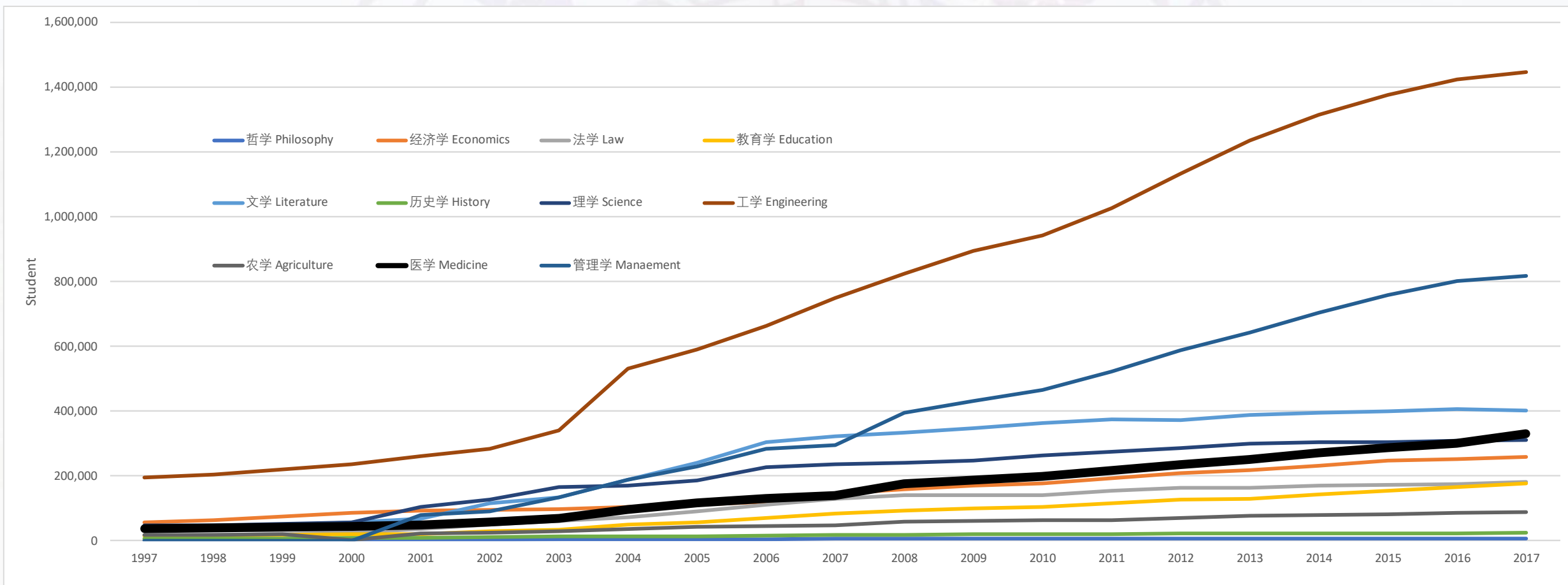
# Many new medical faculty

## 众多新增医学院系



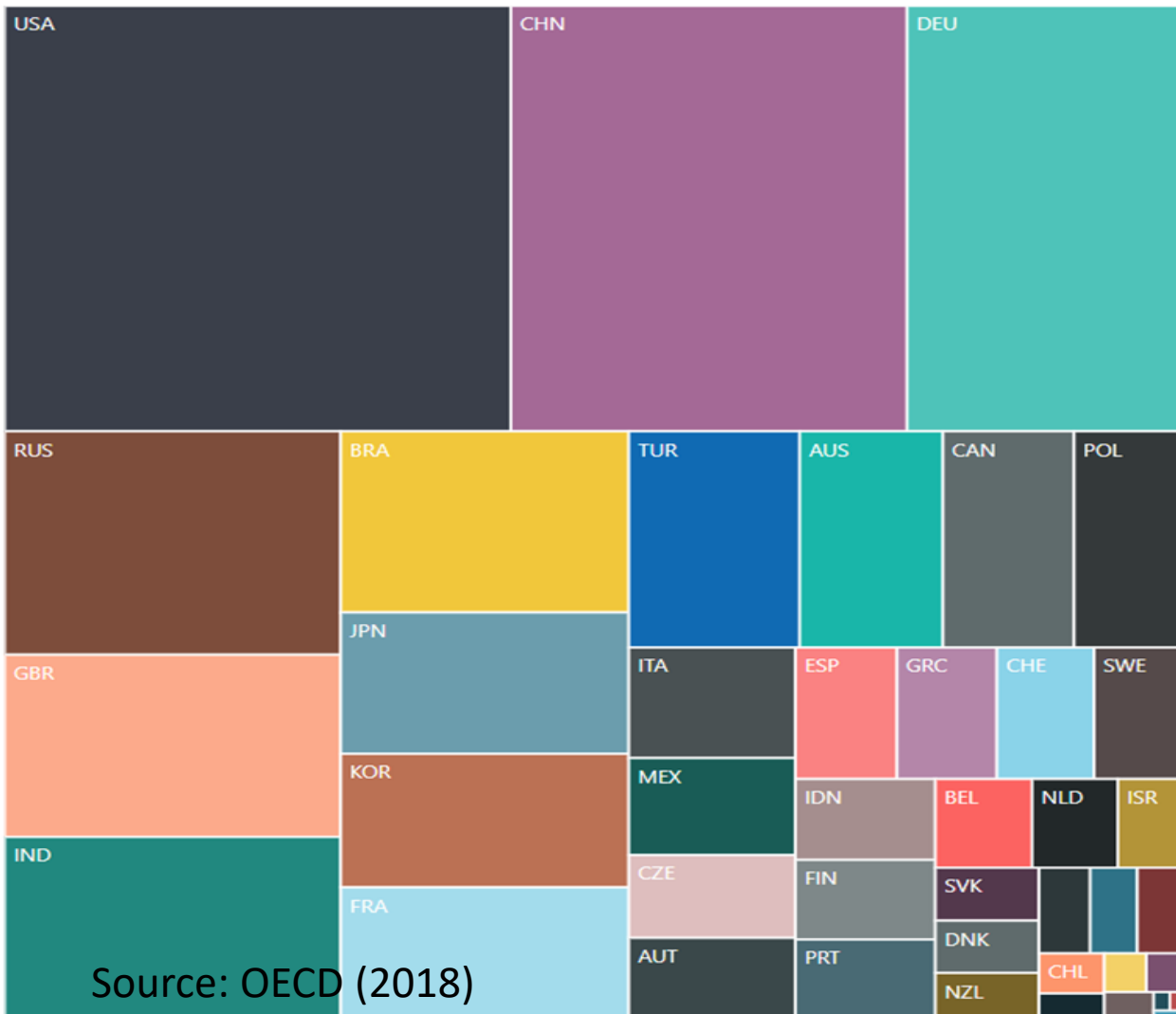
# China graduates by field

## 中国各领域毕业生数



# Doctoral enrolment by country

## 各国博士招生规模



- In 2017 there were 2.17 students enrolled globally
- Doctorate not yet 'massified' but becoming more common
- Just 12 countries do 80% of doctoral education
- Emerging contributors still growing to reach 1-2% of population with doctorate
- Asia playing increasing role
- Doctoral education essential to academic career, and increasingly other careers
- Doctoral education is perhaps most complex and conservative form of education



# Taking a deeper look

## 深入剖析

- Growth in scale and relevance
  - Diversification of programs
  - Varying standards
  - Changing workforce needs
  - Uncertain graduate capabilities
  - Students diversifying and expanding
  - Aligning funding, regulation and provision
- Need to ‘future-proof’  
**MEDICAL EDUCATION** to align  
with 21st century needs



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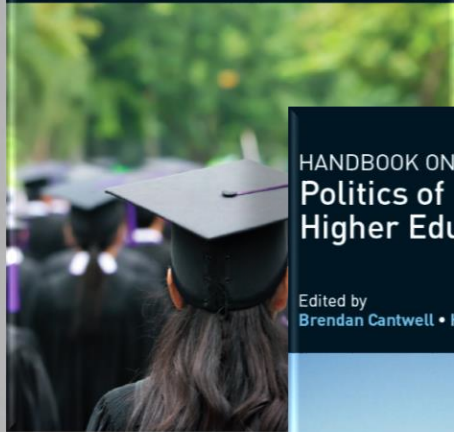
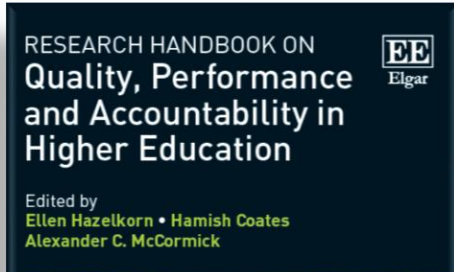
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A blue circular graphic with a white border and a drop shadow, containing the text 'University evaluation'.

# University evaluation

# Main evaluation approaches

## 主要评估方式



### Approaches

- Accreditation—university, faculty, professional, program
- Program and university governance
- Public information and advisory services
- Monitoring and accountability

### Evidence

- Institution-level data
- Information on teachers
- Minor information on learners

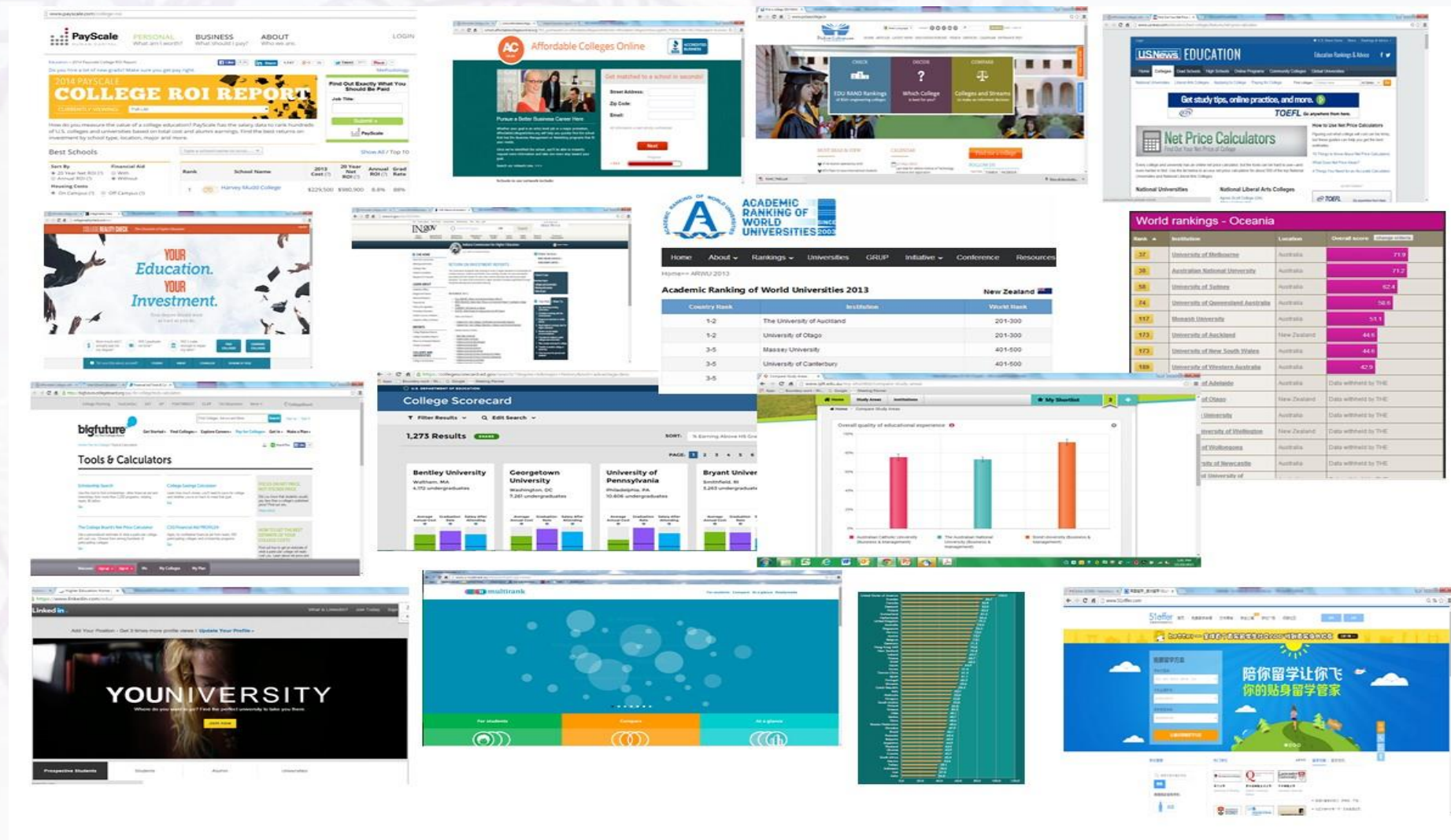
		Stage		
		Outcome	Process	Input
Level	Learner			
	Teacher			
	University			
	Society			

# It is very confusing now

## 信息时代的混乱与迷茫



- 信息太多
- 难以辨别质量高低
- 信息不对称
- 难以全面了解市场



# What we know is not enough

## 我们目前对高等教育的理解远远不够



顶尖精英大学 (前50)  
世界一流大学 (前200)  
普通本科院校 (18000)

- 目前有关高等教育的信息大多集中在全球前1%的精英大学，人们对普通大学，尤其是不在主流排行榜上的大学了解甚微
- 我们需要新的信息来了解并推动剩余99%的世界高等教育机构的发展
- 我们需要扩展现有的信息库，从而增强整个系统的实力

# Pressing need to innovate

## 迫切需要创新



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- Global student demand could reach 400 million by 2030, up from 100 million in 2009
- Economies maturing/booming—more educated workers and tertiary education needed
- Global brain race—competition for higher credentials
- Longer lives and welfare constraints—longer careers and more retraining
- Limited relevance/scalability of elite education models for universal scale of provision
- Emerging institutional and workforce models
- New accountabilities and financial pressures from many sources



# We must learn more

## 我们需要学习更多



- Persistent focus on inputs we know outcomes and processes also matter
  - Growing global interest across many sectors in impact and value, and higher education starting to lag
  - Pressing need to focus on individuals as well as institutions and systems
  - Must look beyond university research to consider other functions of higher education
  - Dynamic insights proliferate but higher education yet to seize new opportunities
- We need insights that help institutions and people understand how to best engage, create, and contribute with higher education





**Improving  
medical  
education**



# Good, but not good enough

## 好，但是不够

- Medical education has robust program accreditation and evaluation
- Schools and teachers engage in continuous improvement
- Graduates have access to global opportunities
- **BUT: there is little generalisable information about what medical graduates know and can do, and whether graduates have met minimum standards**



### Postsecondary Punters: Creating New Platforms for Higher-Education Success

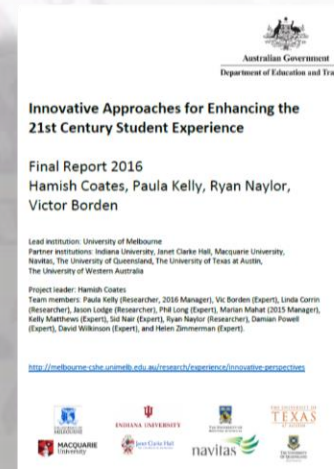
Hamish Coates

#### Making Better Bets on Tertiary Futures

Postsecondary punters are people who place bets on higher education. Higher education is a huge industry and finance firms around the world are active in many investment plays. But most postsecondary punting happens in humble family homes by people wagering that higher education has a part to play in helping them or their loved ones succeed. Improving this kind of punt is essential not just to students and graduates, but more broadly to the industries, organizations, professions, and communities that these people will lead.

As higher education has expanded, so too have widespread calls for information on its value. But there remain core facets of the academy about which very little is known, and available information is often difficult even for specialists to interpret. Traditional disclosure arrangements evolved for highly regulated and supply-driven forms of provision. Recent shifts to far larger and more competitive contexts require radically new disclosures. To guide and sustain future growth, more must be done to report and affirm the sector's value and contribution. It is really important that people have access to insights that sustain confidence and support. This means moving beyond myths and rituals that may feel ingrained yet fail to prove value, creating new data collections

Assessing Quality in Postsecondary Education: An International Perspective, edited by Steven P. Wils, Martin Hols, and Gary Shaker. Montreal and Eugene, Oregon: Queen's University Press, Queen's Policy Studies Centre. © 2013 The School of Policy Studies, Queen's University at Kingston. All rights reserved.



# ‘Traditional’ assessment

## 传统评估



- Academics working alone
- Within single institutions
- Using technically non-validated materials
- Arbitrary mapping to curriculum
- Single-subject focus
- Delivered using dated methods
- Scored normatively by uncalibrated markers
- Adjusted to fit percentile distributions
- Reported using grades and thin feedback

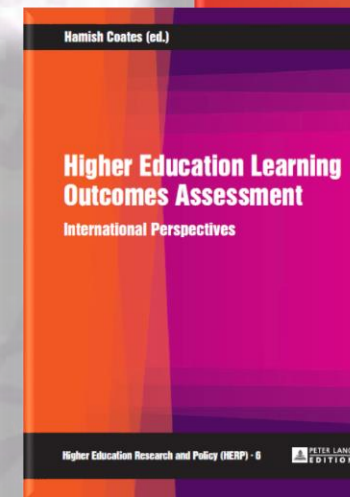
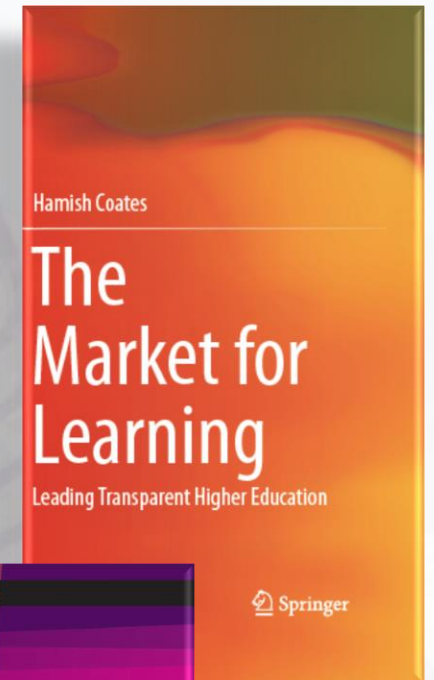
→ Such practice can make it hard to evaluate and value what learning has taken place...



# Why generalisable data counts

## 为什么归纳性数据很重要

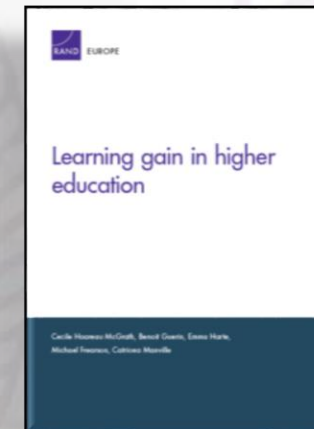
- Need to reassure the public about the quality of medical education
- Rapid expansion in medical schools; growth in the number and diversity of learners and graduates
- Need for outcomes data on education to balance that on research performance
- Data from formative assessments not fit for broader purpose
- Globally, higher education is moving into an era that involves more focus on outcomes



# Benefits and opportunities

## 益处与机遇

- Ready access to a common independent objective data
- Objective data for benchmarking and quality improvement
- Cross-check internal assessments and assure standards
- Move beyond indirect proxy measures of quality
- Review effectiveness of curriculum and teaching innovations
- Prevent convergence around limited outcomes indicators



### Productivity in Higher Education

Research insights for universities and governments in Asia



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Higher Education Management and Policy  
Volume 21, No. 1  
© IIOE 2019

#### What's the Difference? A Model for Measuring the Value Added by Higher Education in Australia

by  
Hannah Coates  
Australian Council for Educational Research (ACER), Australia

Measures of student learning are playing an increasingly significant role in determining the quality and productivity of higher education. This paper evaluates approaches for estimating the value added by university education, and proposes a methodology for use by institutions and systems.

The paper argues that value-added measures of learning are important for quality assurance in contemporary higher education. It reviews recent large-scale developments in Australia, methodological considerations pertaining to the measurement and evaluation of student learning, and instruments validated to measure students' capability, generic skills, specific competences, work readiness and student engagement.

Four approaches to calculating value-added measures are reviewed. The first approach computes value-added estimates by comparing predicted against actual performance using data from entrance tests and routine course assessments. In the second approach, comparisons are made between outcomes from objective assessments administered to cohorts in the first and later years of study. Comparisons of first-year and later-year students' engagement in key learning activities offer a third and complementary means of assessing the value added by university study. Feedback on graduate skills provided by employers is a fourth approach which gives an independent perspective on the quality of education.

Resolving these four approaches provides a basis for their synthesis into a robust and potentially scalable methodology for measuring the value added by higher education. This methodology is advanced, along with its implications for instrumentation, sampling, analysis and reporting. Case studies are presented to illustrate the methodology's potential for informing comparative analyses of the performance of higher education systems.



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# Drawing from research

## 从研究绘制



我今天报告的内容都是基于以上这些论文和研究报告，如果各位感兴趣，我非常乐意分享。

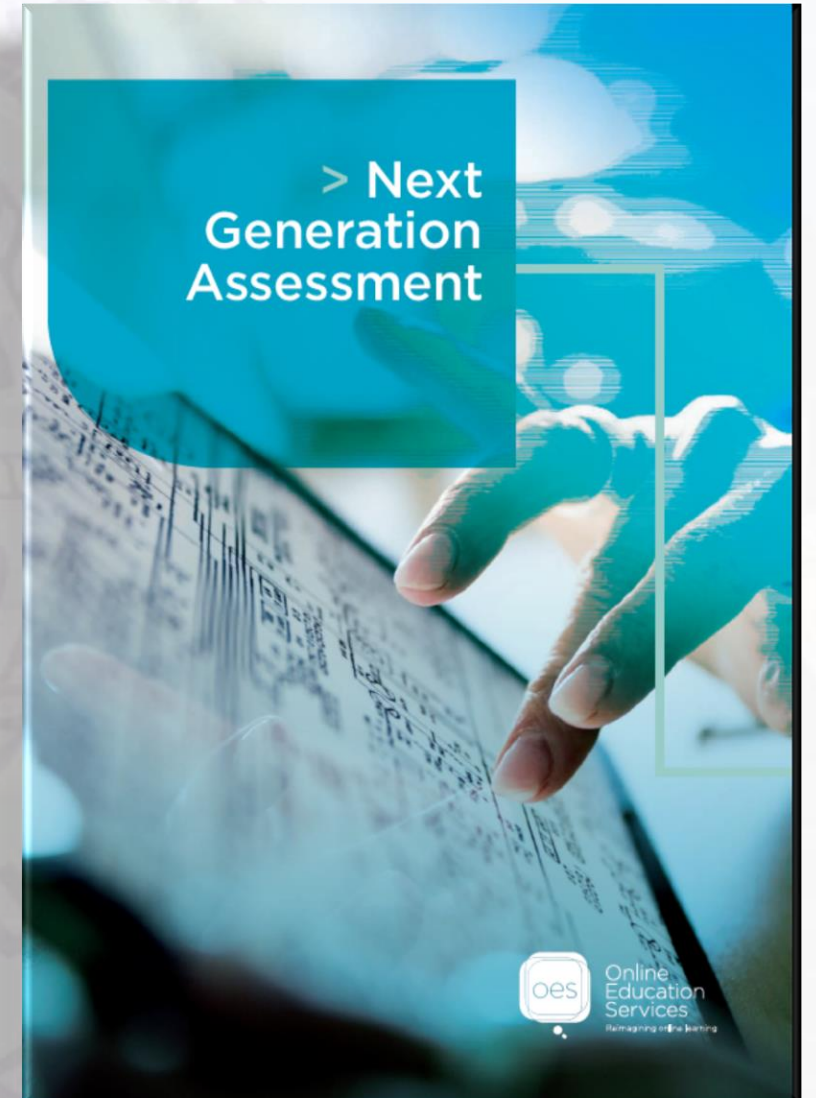
# Aha!

## 啊哈!

- **Must improve student assessment!**
- **Build collaborative/shared and generalisable formative assessment of pre-clinical learning/skill outcomes**
- Get information on **student outcomes**
- Examine **growth and value-added**
- Understand and improve **academic productivity**



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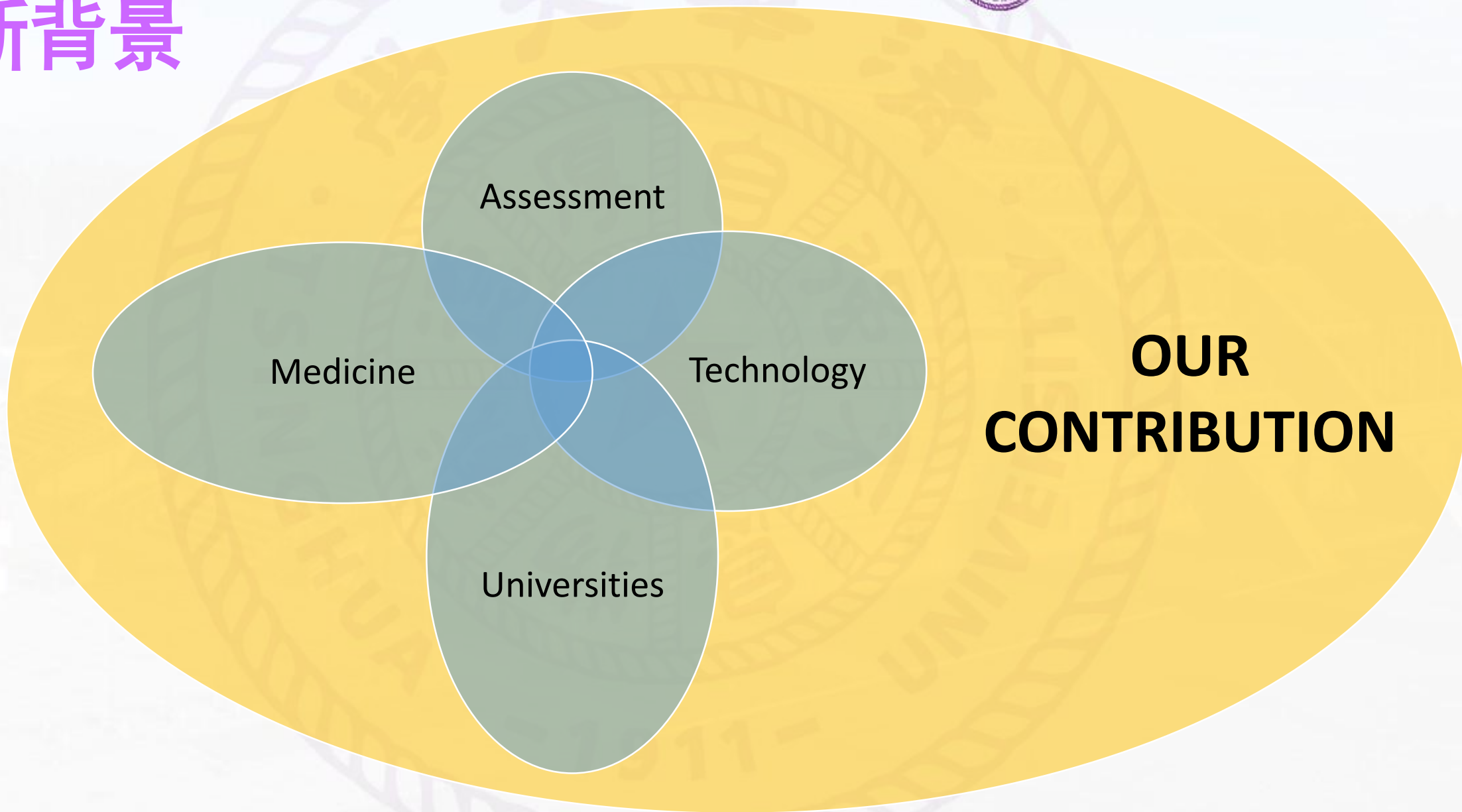


# Innovation background

## 创新背景



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# Degrees of sharing

## 共享程度



### Scholarly collaboration among interested schools

- Formalised library of test items that teachers share, and embed
- Results are shared, enabling generalisability
- Builds expertise, enables diversification, yields common data and, links practice with QA

### Consortium-led capability test

- Single, independent, common test
- Focus on core pre-clinical or final-year curriculum
- Pitched 'above content'
- Engaged capability building

### Independent national licensing examination

- Licensing exam run independently
- Most stringent generalisable assessment
- Comprehensive measurement of specific competencies
- Expensive and detached

# Designing optimal sharing

## 设计最佳共享模式



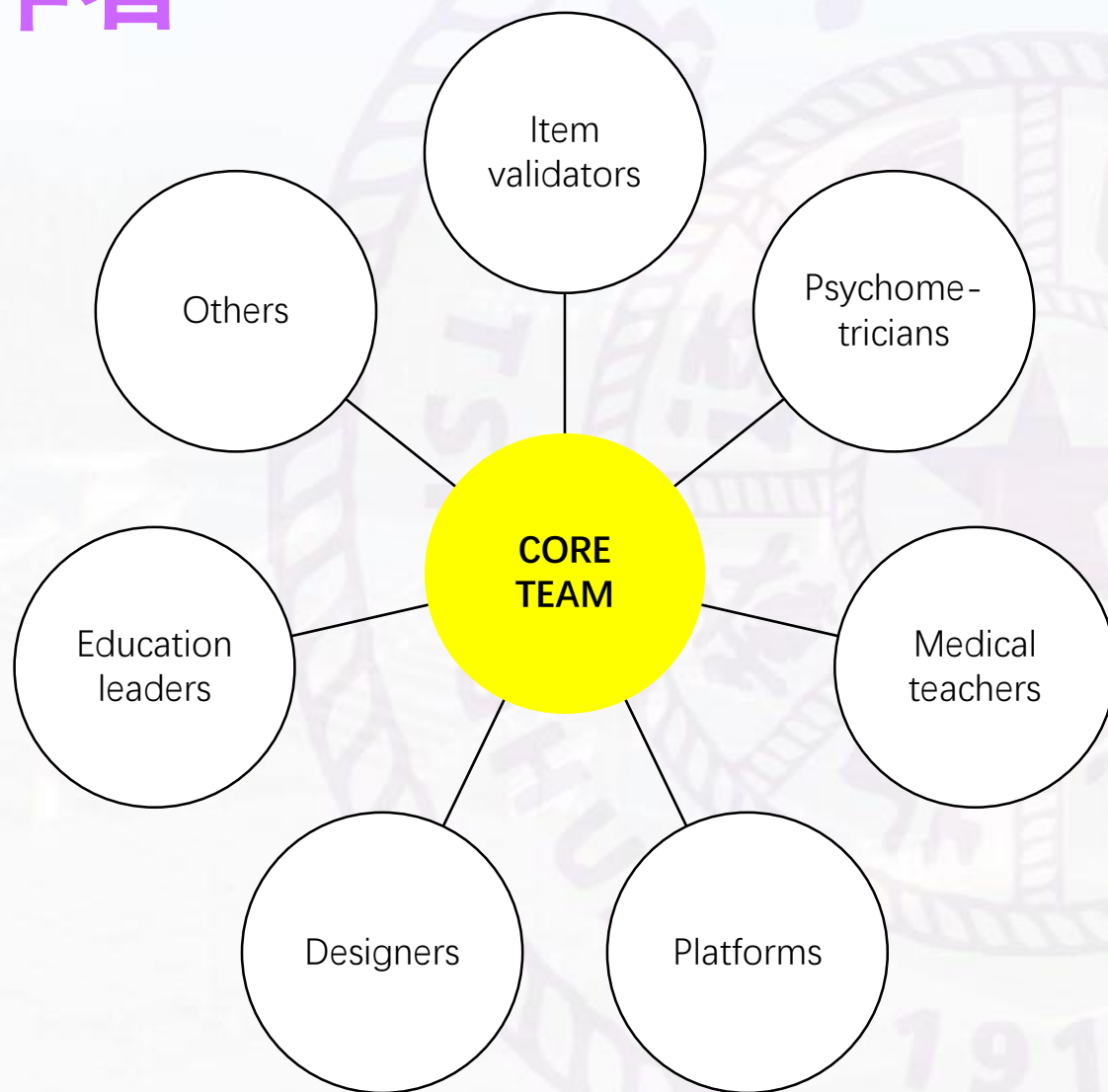
These phases/activities parameterize a generic value chain which can be used to create a strategy canvas to model any different kinds of assessment:

Planning	Development	Implementation	Analysis	Reporting
<ul style="list-style-type: none"><li>• Governance</li><li>• Leadership</li><li>• Management</li></ul>	<ul style="list-style-type: none"><li>• Mapping resources</li><li>• Specifying outcomes</li><li>• Selecting formats</li><li>• Drafting materials</li><li>• Qualitative review</li><li>• Quantitative review</li><li>• Material production</li></ul>	<ul style="list-style-type: none"><li>• Designing administration</li><li>• Organising facilities</li><li>• Managing students</li><li>• Administering assessments</li><li>• Resolving problems</li></ul>	<ul style="list-style-type: none"><li>• Collating results</li><li>• Marking and verifying</li><li>• Producing data</li><li>• Cross-validating results</li></ul>	<ul style="list-style-type: none"><li>• Producing grades</li><li>• Analysing and commenting</li><li>• Reporting and benchmarking</li><li>• Reviewing and improving</li></ul>

→ Different forms of sharing can be planned...

# Contributors

## 合作者



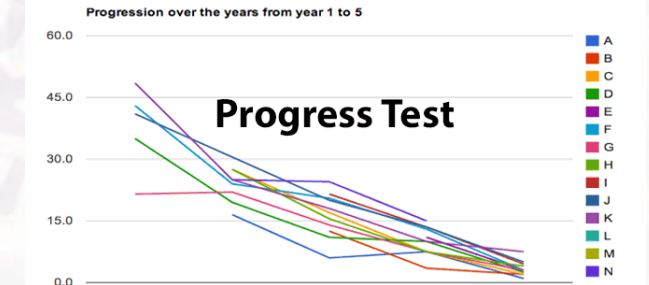
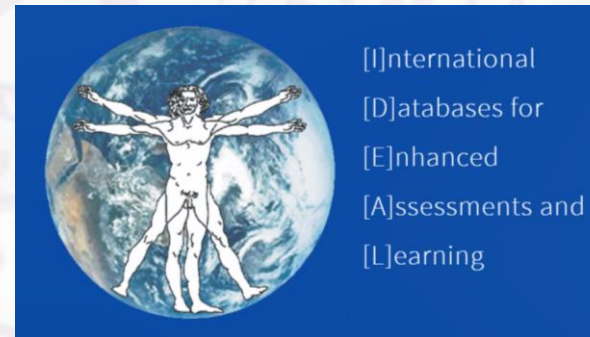
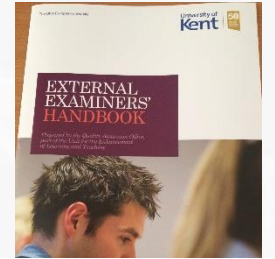
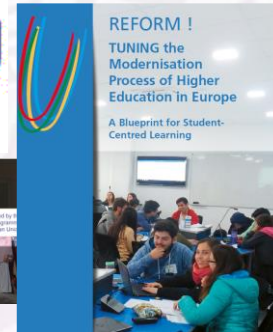
- Build **COLLABORATIVE ASSESSMENT** leadership that has required authority, expertise and participants
- Start by leading core team and build out once value of the assessment is established
- Involve academic capability development in assessment / leadership as part of the value chain and contribution

# Proven assessment science and practice

## 经过验证的评估科学与实践



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HEIghten®



# AMAC proves feasibility...

# AMAC具备可行性



**Australian Government**  
Office for Learning and Teaching

**The Australian Medical Assessment Collaboration: developing the foundations for a national assessment of medical student learning outcomes**

Final Report 2012

Lead Institution:  
The University of Queensland

Partners:  
Australian Council for Educational Research  
Monash University

Project Leader:  
Professor David Wilkinson (The University of Queensland)

Project Manager:  
Dr Daniel Edwards

Project Team members:  
Associate Professor Professor Ben Carr  
Mr Jacob Pearce (ACER)  
Dr Jennifer Schaffer  
Dr Tracy Popeluck  
Associate Professor

Project website: [amac.edu.au](http://amac.edu.au)

The University of Queensland  
Reading for the profession  
Teaching. The new approach

**Australian Government** | **Office for Learning & Teaching**

**The Australian Medical Assessment Collaboration**  
From proof of concept to proof of sustainability

Final Report 2014

Macquarie University (Lead Institution)  
Prof David Wilkinson (Project Leader)  
Monash University  
Prof Ben Carr  
Australian Council for Educational Research  
Dr Daniel Edwards  
Mr Jacob Pearce  
Prof Hannah Coates (now University of Melbourne)  
Flinders University  
Professor Lambert Schwartz  
The University of Queensland  
Dr Jennifer Schaffer  
The University of Notre Dame Australia  
A/Prof Joan MacLach  
A/Prof Michael Wain  
The University of Wollongong  
Prof Ian Wilson  
University of New England/The University of Newcastle (Joint Medical Program)  
Prof Philip Jones  
Griffith University  
A/Prof Ray Tedman  
Deakin University  
Dr Janet McLeod

Report Author: Dr Daniel Edwards (Project Manager)  
Project Website: [www.acer.edu.au/amac](http://www.acer.edu.au/amac)

Australian Medical Assessment Collaboration (AMAC)

**Determining the Quality of Assessment Items in Collaborations: Aspects to Discuss to Reach Agreement**

Developed by the Australian Medical Assessment Collaboration

**Governance Models involving Assessment**

Developed by the Australian Medical Assessment Collaboration

**Implementing Common Assessment: Lessons and Models from AMAC**

Developed by the Australian Medical Assessment Collaboration

**Perspectives**

**Assessment of medical students' learning outcomes in Australia: current practice, future possibilities**

Programs such as the Australian Medical Assessment Collaboration will allow nationwide comparisons between medical schools

Development of the worldwide program Assessment of Higher Education Learning Outcomes sees "what students in higher education know and do on graduation". Across 248 higher education institutions in 27 countries, the program has already measured and compared generic and discipline specific skills in engineering and commerce. Its inclusion in or related to the learning outcomes that result from the medical measurement made by society in higher education.

In the United States, all doctors must take the US Medical Licensing Examination (USMLE) to be able to practice medicine. It is a three-step exam (with two steps usually taken before graduation, developed and delivered by the National Board of Medical Examiners (NBME)). The USMLE is a benchmark of individual medical school assessments, for more US schools might measure in place in as well as their own national exams in order to graduate.

The NBME has developed a global center of the USMLE and the International Foundation of Medicine (IFM) organizations, that is being used by medical schools in Europe, Asia and Latin America. "Now Australian medical schools are working with the IFM on the integration of the IFM into their assessment programs, and the medical schools of the Group of Eight are working a benchmarking process using the IFM."

In the United Kingdom over the past decade, a collaborative approach to assessment among a small number of medical schools has moved to wider collaboration. "And, here, in Europe, a greater understanding that needs to facilitate assessment of medical students requires assessment across member states."

Returning to the local program, in Australia, the relatively rapid expansion in the number of medical schools and the ability of medical students numbers has put considerable pressure on educational resources. The value of collaboration across the sector has been recognized, with

Project Lead Ben Carr  
DOI: 10.1017/9781017014102

REVIEW ARTICLE

**The rationale for and use of assessment frameworks: improving assessment and reporting quality in medical education**

Jacob Pearce, Daniel Edwards, Julia Fritchie, Hannah Coates, Bradley J. Casey, David Wilkinson

© The Author(s) 2015. This article is published with open access at [springer.com](http://springer.com)

**Abstract** An assessment framework provides a structured conceptual map of the learning outcomes of a programme of study along with details of how achievement of the outcomes can be measured. The rationale for using frameworks to underpin the reporting of essential content components is especially relevant for the medical education community. Frameworks have the capacity to improve validity and reliability in assessment, allowing test developers to more easily create robust assessment instruments. The framework used by the Australian Medical Assessment Collaboration (AMAC) is an interesting and relevant case study for the international community as it draws on established processes in higher education assessment. The AMAC experience offers an insight into important considerations for developing assessment frameworks and implementing frameworks in differing contexts. There are lessons which have the potential to improve assessment and reporting practice and quality in not only medical education, but in other domains of assessment. Prior to

**Implementing our programme of assessment, the framework considerations outlined here will hopefully improve the quality of assessment and reporting practice by making implicit assumptions explicit, and allowing more critical reflection and evaluation throughout assessment processes.**

**Keywords:** Assessment framework, Assessment Reporting, Quality

**Introduction**

This paper discusses the rationale for the assessment frameworks and the use of a particular framework in the field of medical education. Firstly, assessment frameworks are defined in relation to construct validity and programme of assessment. The rationale for using assessment frameworks is presented in then discussed. This is followed by outlining the use of an assessment framework as part of the Australian Medical Assessment Collaboration (AMAC) [1]. This collaboration endeavours to bring an independent research organisation and 16 of the 19 medical schools in Australia and New Zealand involved assessing final year medical students completing clinical training. The framework is presented and important considerations for those work emerge. We conclude by presenting a series of practice implications associated with using the framework. Considerations and challenges relating to future framework development and deployment are presented, with an overarching focus on improving assessment and reporting quality.

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Hannah Coates · Bradley J. Casey  
Daniel Wilkinson  
Pearce has 11,124 Citations · VUE, Australia  
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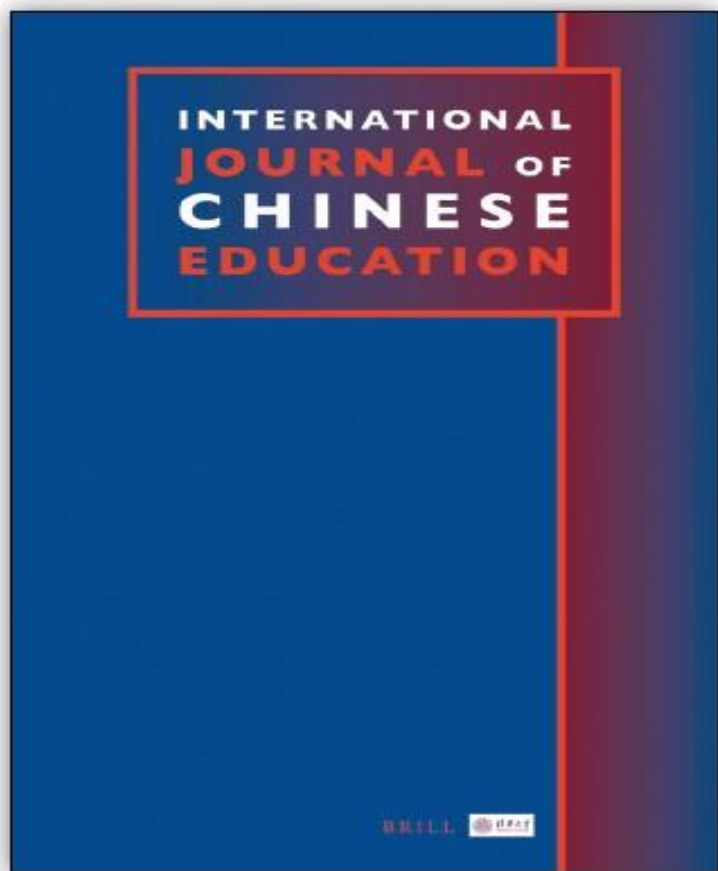
Let's talk about  
next steps and get  
moving!

让我们共议未来  
之路，一同前进

**Constructing Higher  
Education for the  
Global Era: Proving  
Student Competence**

**Tsinghua University  
2019.10.26-27**





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**Subjects:** China, Asian Studies, Chinese History, History, Social Sciences, Education



## International Journal of Chinese Education (IJCE)

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**Executive Chief Editor:** Hamish Coates (Tsinghua University)

**Managing Editor:** Lu Liu (Tsinghua University)

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