高等教育数字化转型内观与建议

Digital Transformations in Higher Education: Insights and Suggestions

祝智庭

华东师大终身教授，教育技术学博导

2023年2月28日于深圳

高等教育数字化转型国际研讨会

February 28, 2023

UNESCO于2021年11月10日发布重磅文件
《共同重新构想我们的未来：一种新的**教育社会契约**》
UNESCO's Release in 2021
Reimagining our futures together: a new social contract for education

独家观点：

- 显性的契约：教育体制、规制；
- 隐性的契约：教育文化创变
- 如何构建新时代教育社会契约乃是人类的新挑战。

Opinions:

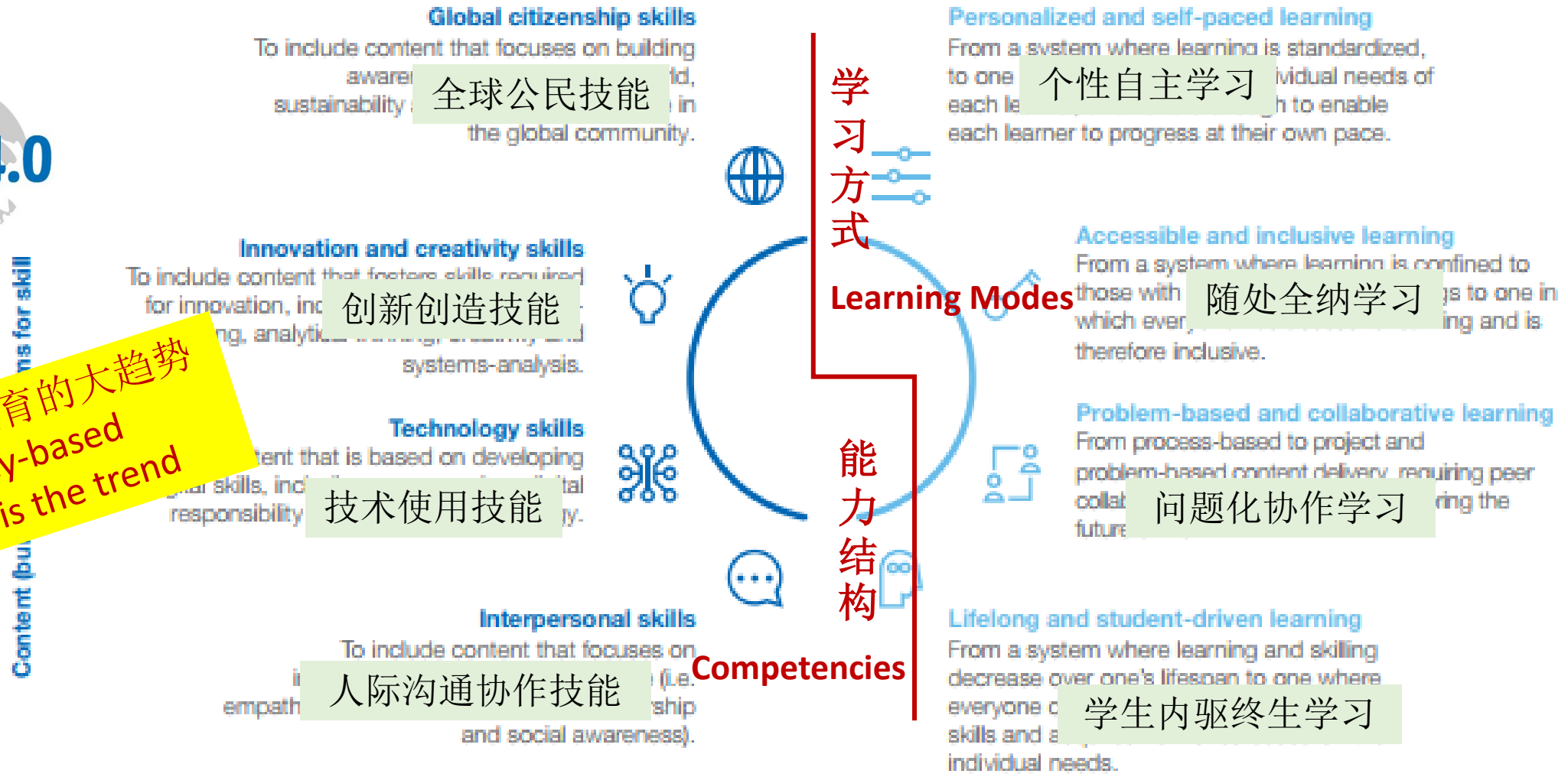
- Overt contract: Educational system and regulations
- Covert contract: Innovation in educational culture
- How to construct a new social contract for education in the new era is a new challenge for the human beings

https://unesdoc.unesco.org/ark:/48223/pf0000374309

世界经济论坛发布学校4.0 框架
The World Economic Forum Education 4.0 Framework

School 4.0

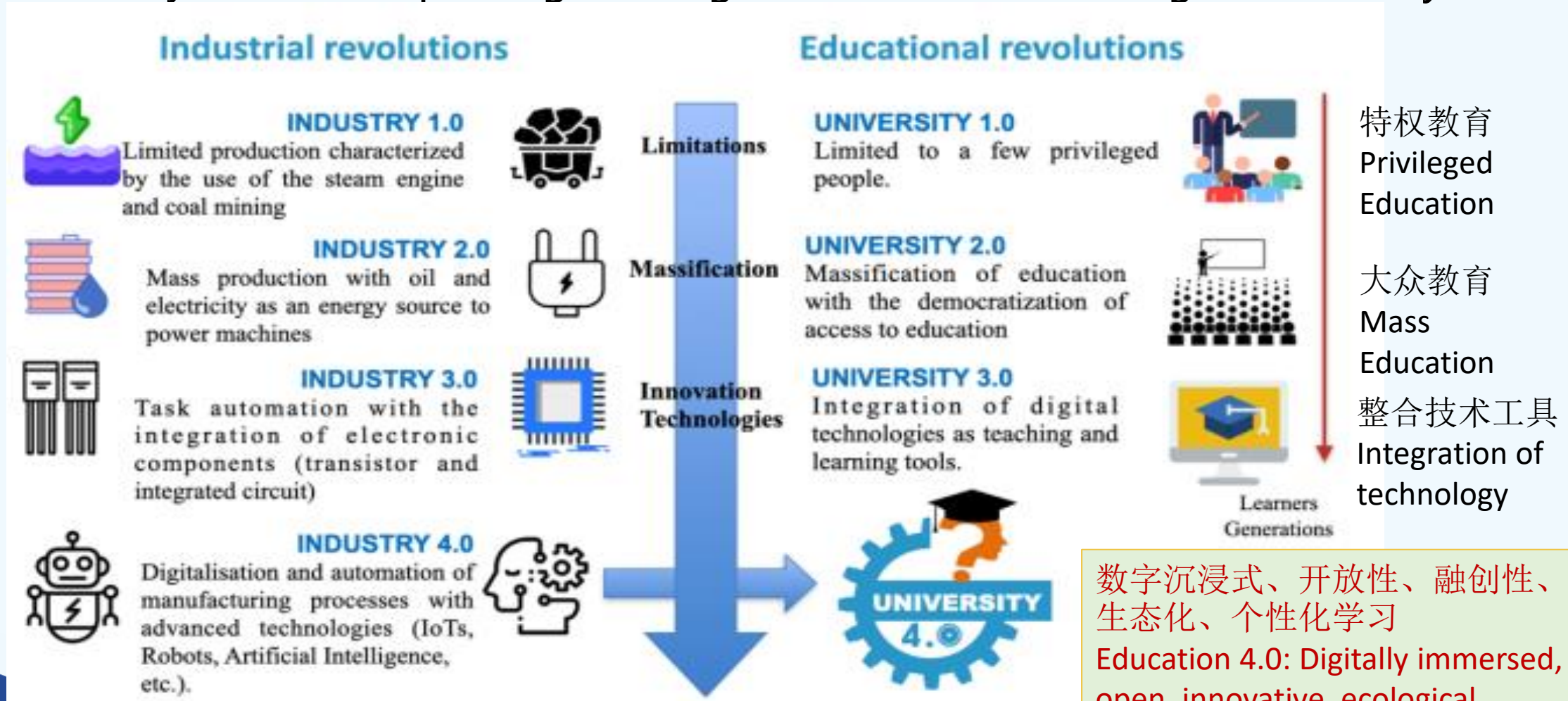
技能本位教育的大趋势
Competency-based education is the trend



https://intelligence.weforum.org/topics/a1Gb0000000LPFfEAO?tab=publications

大学4.0: 将工业4.0范式转用于教育

University 4.0 as new paradigm of higher education in the age of industry 4.0



数字沉浸式、开放性、融创性、生态化、个性化学习

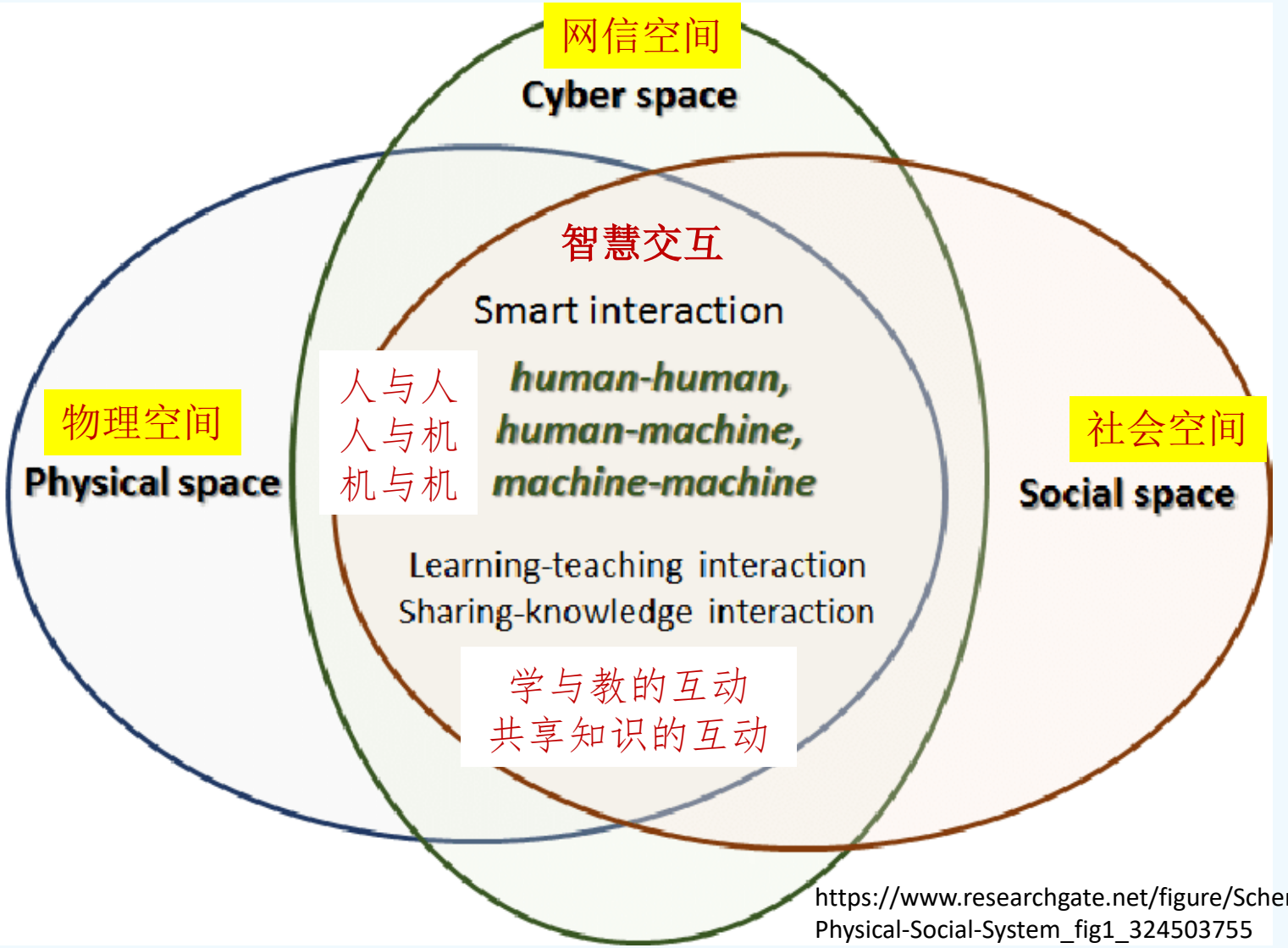
Education 4.0: Digitally immersed, open, innovative, ecological, personalized

https://hal-univ-pau.archives-ouvertes.fr/hal-02957371/document

未来教育系统基于开放式智慧教育的CPSS基架

Future education is based on the CPSS infrastructure for smart education

网信-物理-社会空间（CPSS：Cyber-Physical-Social Space）将成新的教育融创基座，支持教育新生态的发展。

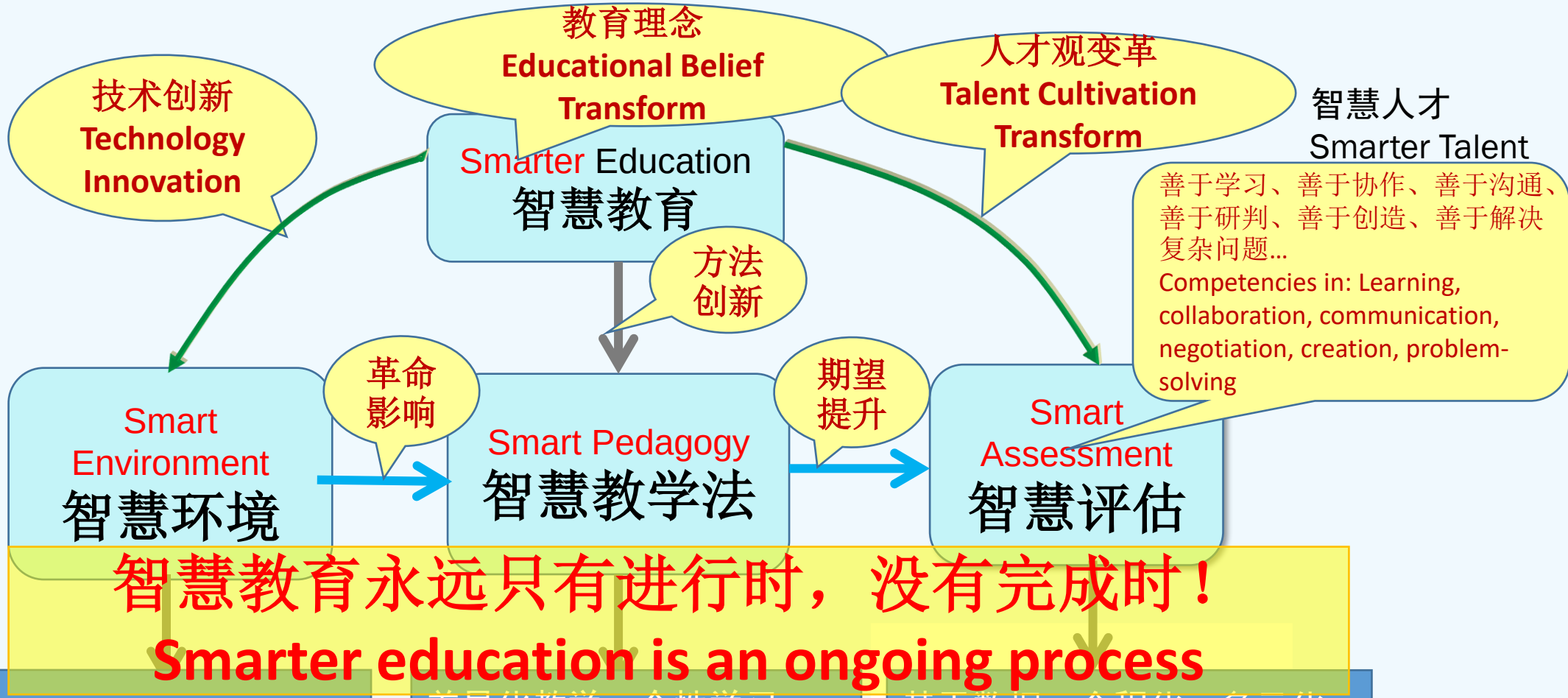


https://www.researchgate.net/figure/Schematic-of-a-Cyber-Physical-Social-System_fig1_324503755

Zhu's Insights

智慧教育研究框架（祝智庭， 2012. 10）

A research framework of smarter education proposed by Zhu



智慧教育的“祝氏定义”

Zhu’s definition of smarter education

智慧教育的真谛就是通过构建技术融合的生态化学习环境，通过培植人机协同的**数据智慧、教学智慧**与**文化智慧**，本着“**精准、个性、优化、协同、思维、创造**”的原则，让教师能够施展高成效的教学方法，让学习者能够获得适宜的个性化学习服务和美好的发展体验，使其由不能变为可能，由小能变为大能，从而培养具有良好的人格品性、较强的行动能力、较好的思维品质、较深的创造潜能的人才。（祝智庭，2012.12；2016.6，2017.7修订）

[简明定义]

智慧教育是通过人机协同作用以创变教学过程与促进学习者美好发展的未来教育范式。

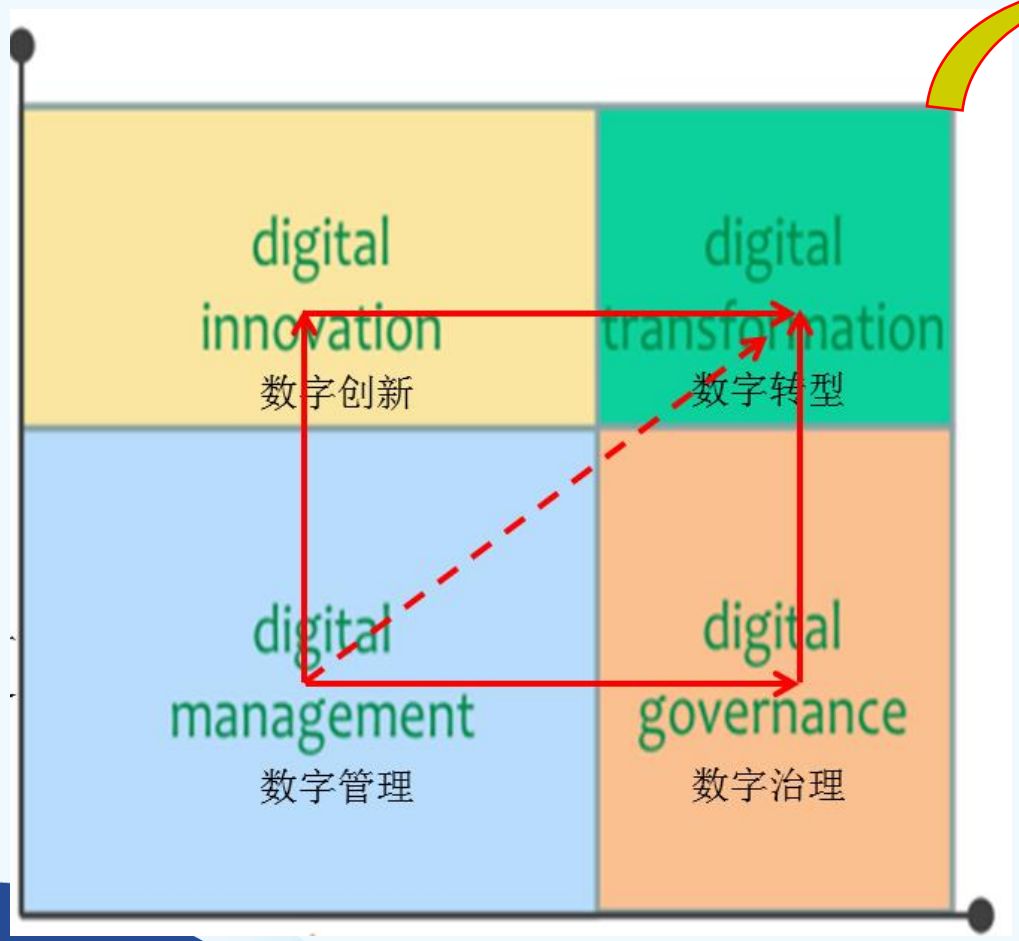
Simply put,

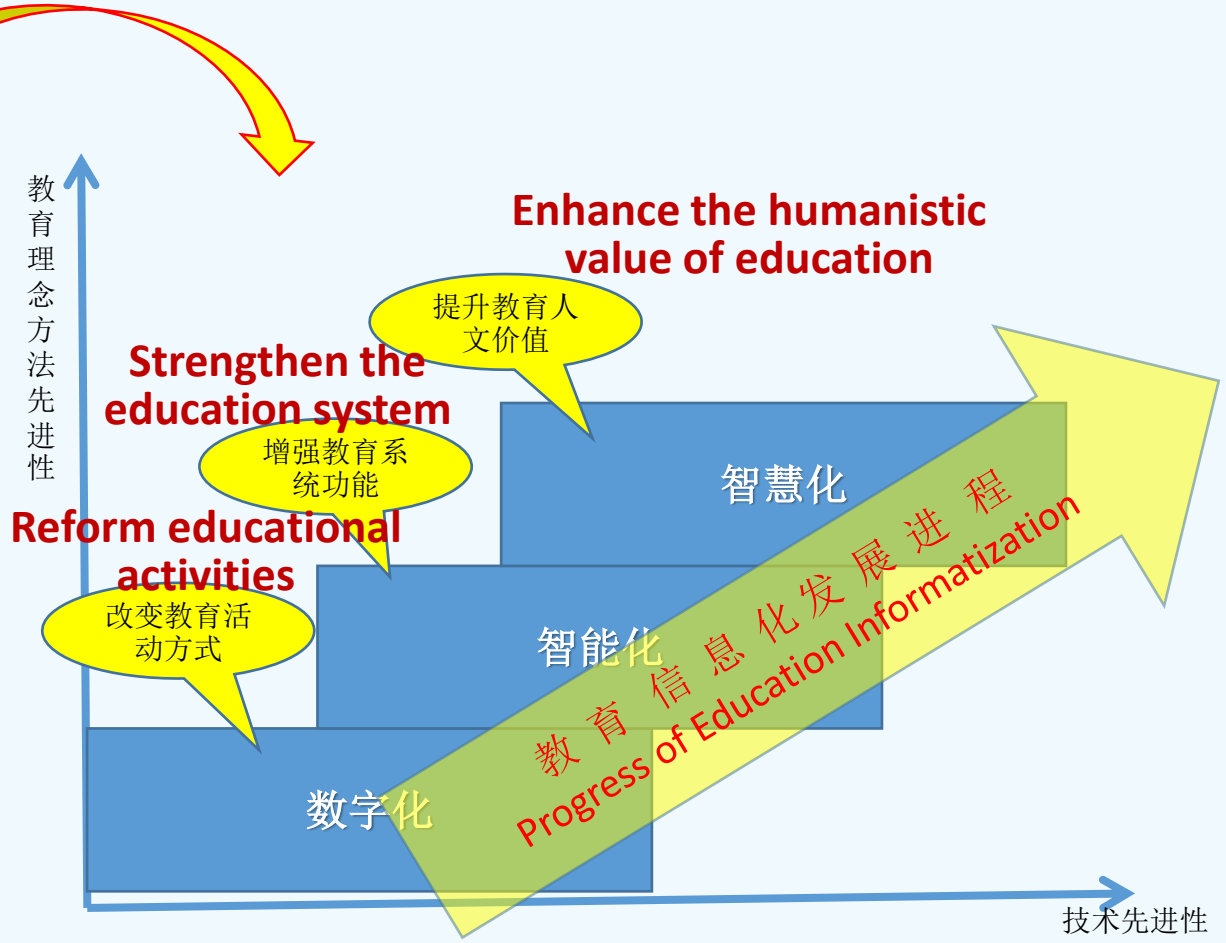
Smarter Education is the future educational paradigm through Human-Machine interaction facilitated by innovative processes

Zhu's Insight

数字化转型交织于教育信息化进程

DxE is Interweaved with the Process of Educational Informatization



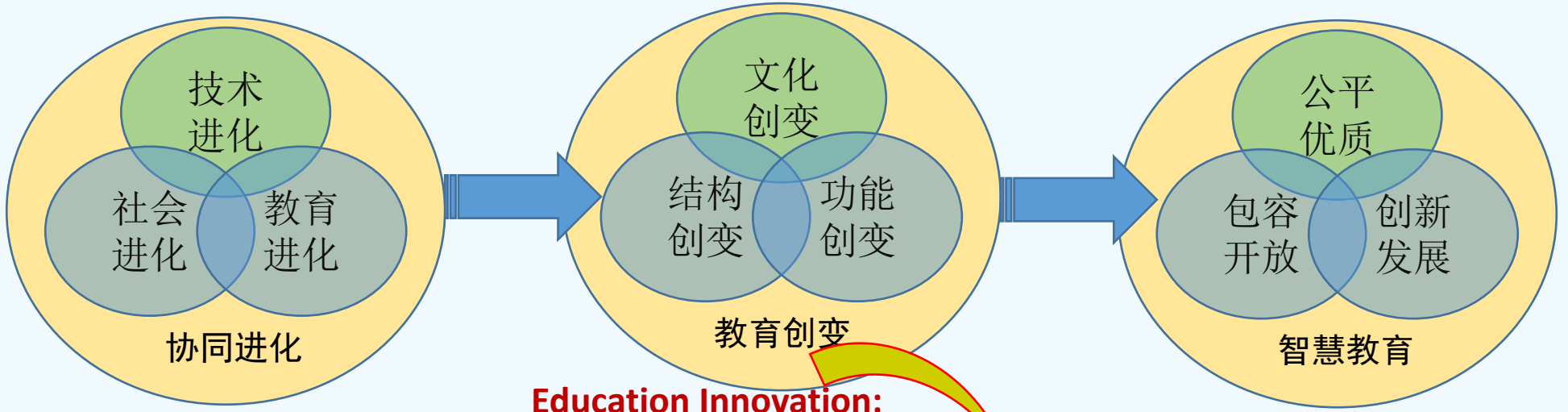


https://rua.ua.es/dspace/bitstream/10045/99031/2/Introduction-to-Digital-Maturity-Model-for-Universities-MD4U-english.pdf

Zhu's Insight

进化论：数字达尔文时代的教育战略转型

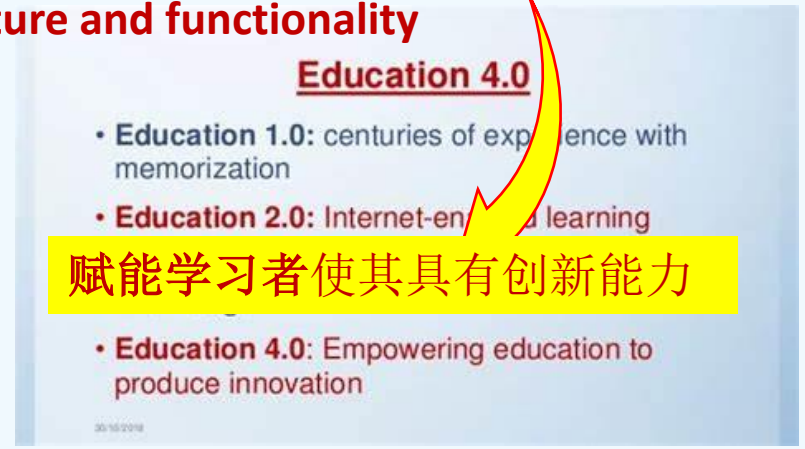
Evolutionary approach: Educational strategy shift in the age of Digital Darwin



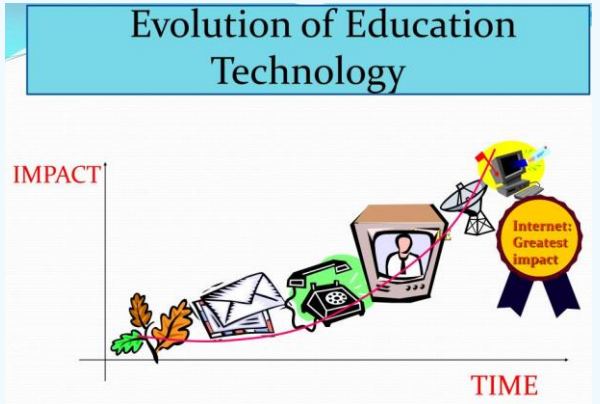
Smarter Education: Open, Equity, Quality, Innovative Development

Collaborative evolution among: technology, society, education

Education Innovation: The innovation of culture, structure and functionality



Empowering learners' competency for innovation

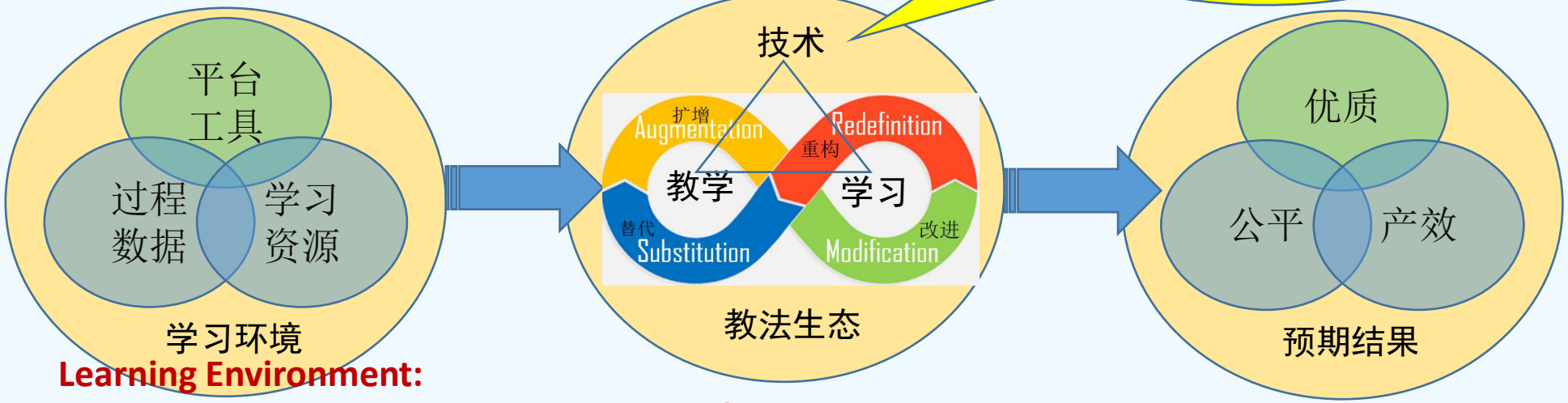


催化论：技术赋能的教学法创变

catalyzing approach: Technology enabling pedagogical innovations

中观/微观（适用于教改研究与实践）
Meso/Micro Level (for teaching practices)

技术-教学-学习被称为成为“教育金三角”
The golden triangle of education



Learning Environment:
Platform, learning data, learning resources

Pedagogy:
Technology, teaching, learning

Expected Outcome:
Quality, Equity, Efficacy

Zhu's Insight

应变论：从系统韧性建设到系统变革新常态

Emergency approach : Turning resilience building into transformation as the new form

中观/微观（适用于应对灾变）
Meso/Micro Level (in response to disruption)

恢复常态

Culture, Structure, Functionalities

文化
结构
功能
教育系统
Educational System

外部冲击

文化调整
结构调整
功能调整
韧性建设
Resilience

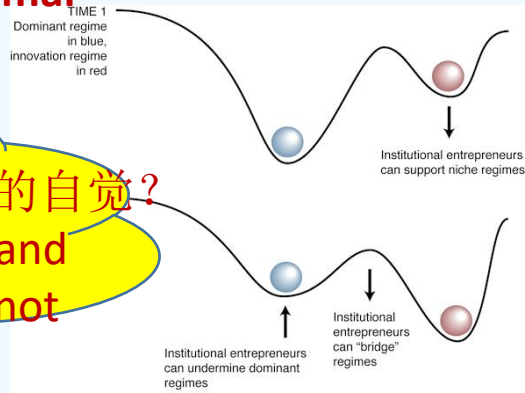
技术介入
Technology

进化
Evolution

文化适应
结果优化
功能优化
新常态
New Normal

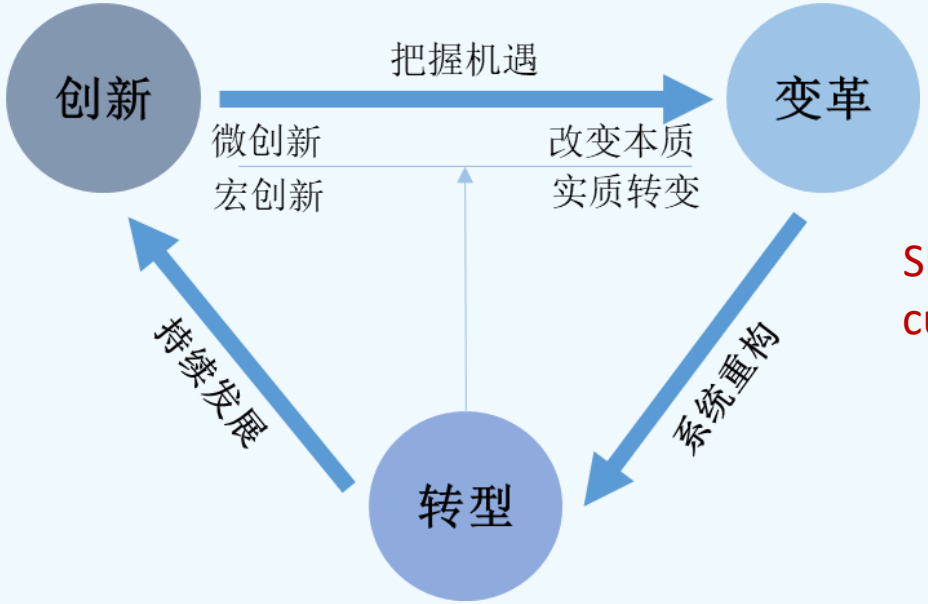
Optimized: Culture adoption, outcomes, functionalities

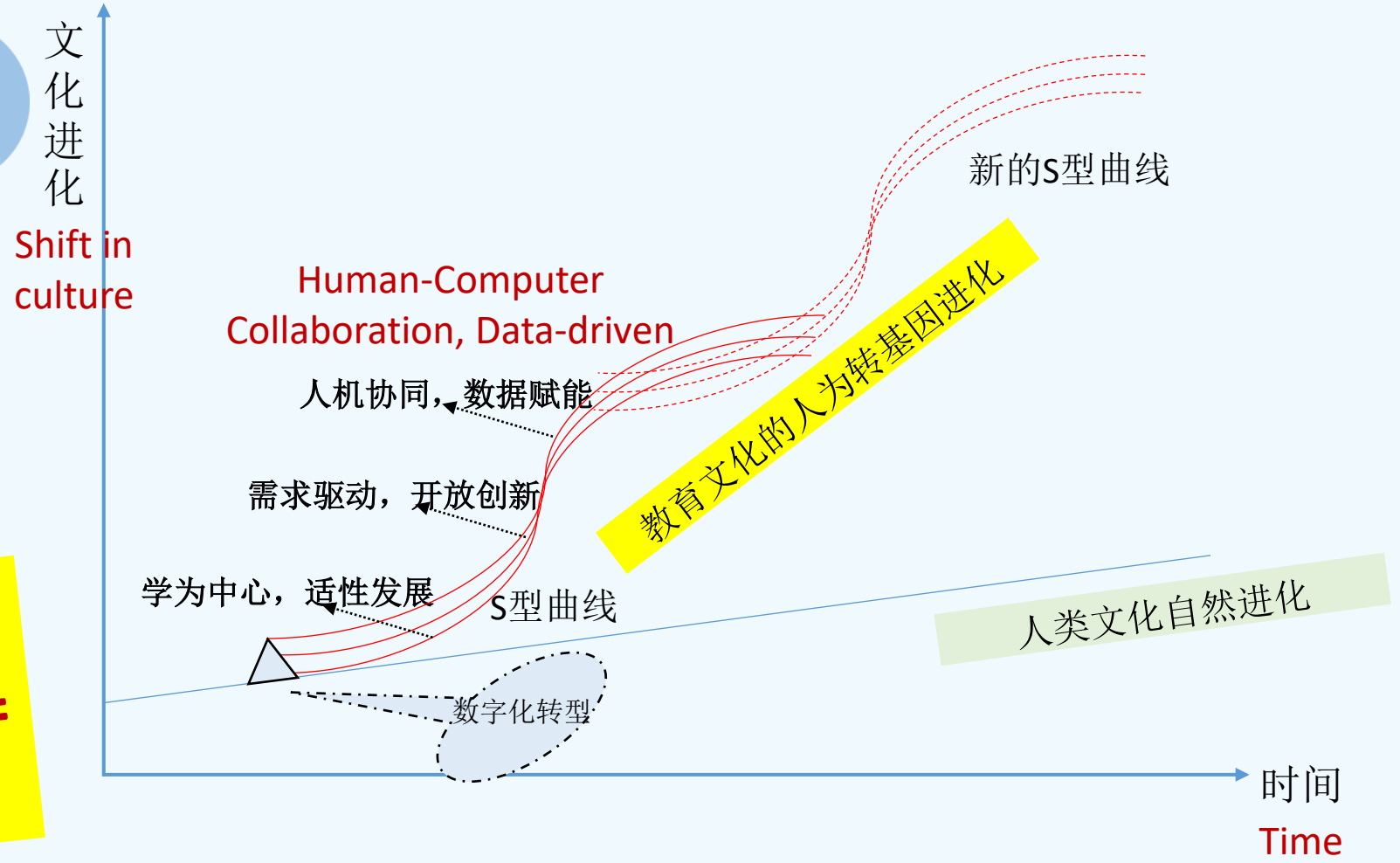
如何将疫情后教育“回不去”的无奈变为“不回去”的自觉？
How to take active approach towards post-pandemic era, and have the mind-shift from “cannot go back to normal” to ”not wanting the old normal”?



教育数字化转型是文化“转基因”工程

Digital Transformation in Education (DTE) is Cultural Trans-genetic Engineering





进化 + 创变 = 转型

Evolution + Innovation= Transformation

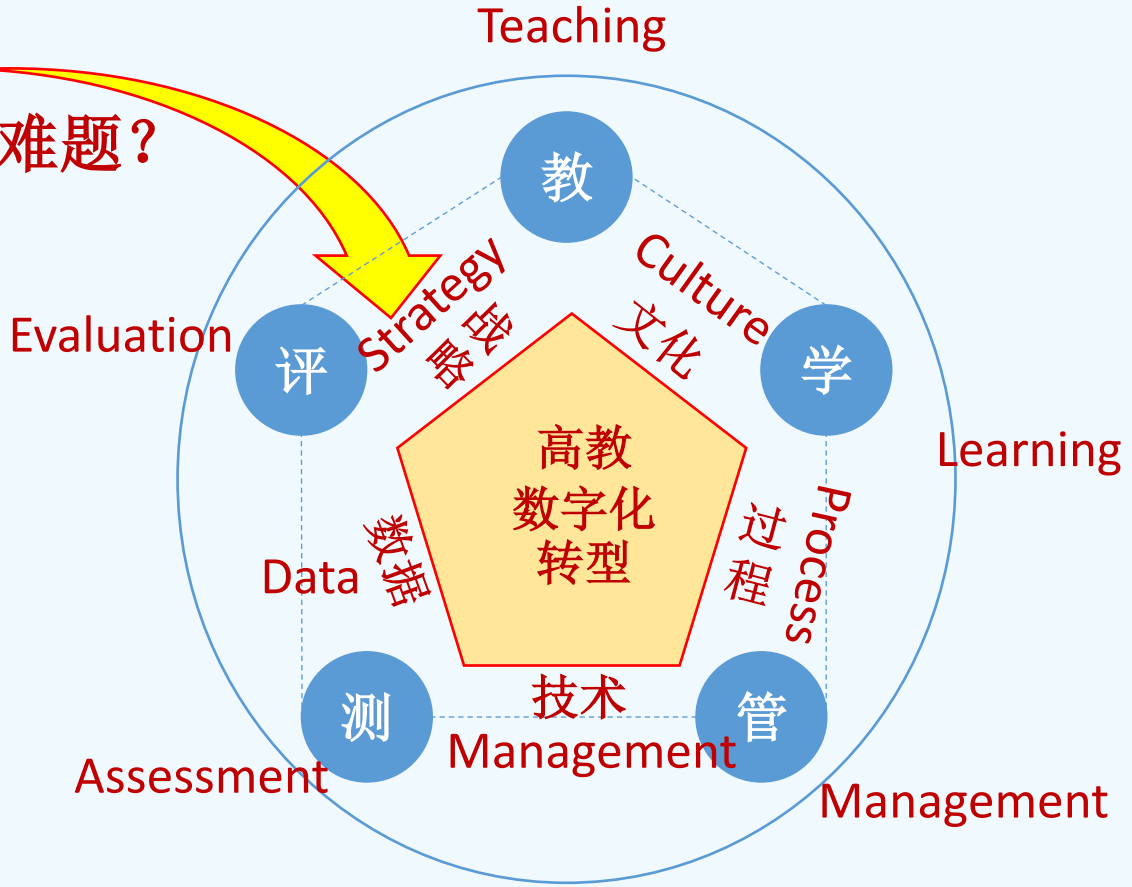
（祝智庭，胡姣，2022——教育数字化转型：面向未来的教育“转基因”工程）

Zhu's Insight

如何破解教育“不可能三角”难题?

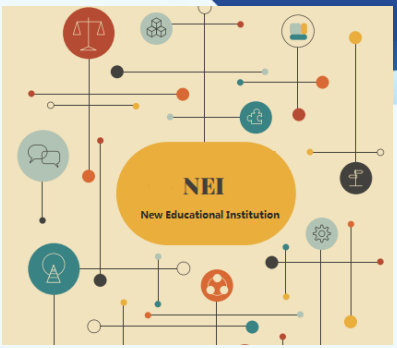
How the "impossible triangle" problem in education can be solved?

如何破解难题?



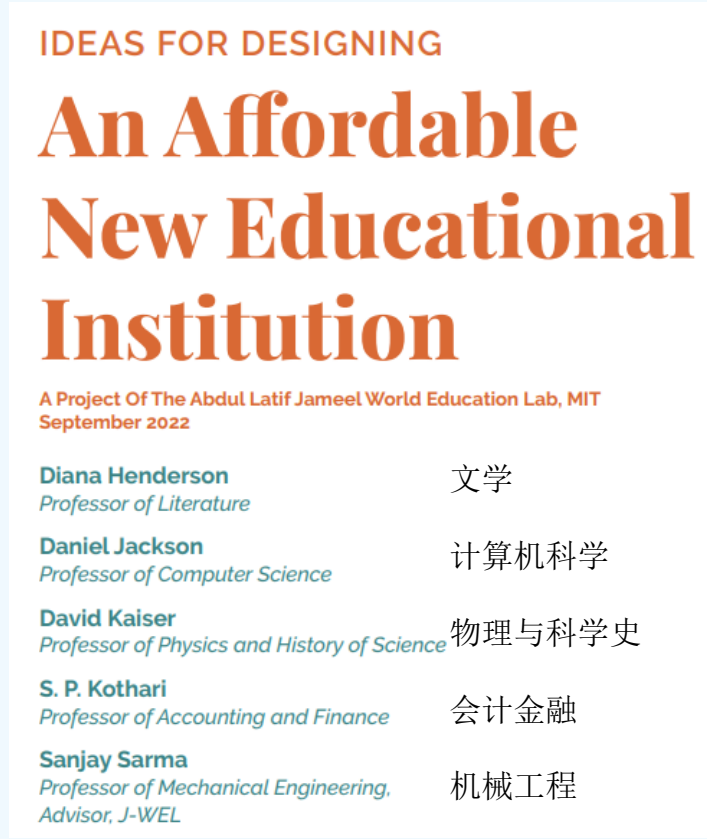
The Higher Education Digital Transformation

MIT五位著名教授2022年发布白皮书
首倡建设“负担得起的新教育机构”（NEI）
MIT Professors, Ideas for Designing an Affordable New Educational Institution



Core Recommendations：

- 将重点从研究转向教学 (Shift professors’ focus from research to teaching)
- 使物理校园精益求精，便于学习 (Perfect the design of the physical environment of the campus, design for learning)
- 将学士学位转化为一系列微证书 (Making bachelor’s degree a series of micro-credentials, stackable credentials)
- 鼓励课程和集中的团队教学 (Forming group-based teaching and learning communities for cross- and inter-disciplinary learning)
- 提供雇主实习机会以获得学分 (Internship opportunities for co-op with employers for credit)


IDEAS FOR DESIGNING

An Affordable New Educational Institution

A Project Of The Abdul Latif Jameel World Education Lab, MIT
September 2022

Diana Henderson, *Professor of Literature* — 文学
Daniel Jackson, *Professor of Computer Science* — 计算机科学
David Kaiser, *Professor of Physics and History of Science* — 物理与科学史
S. P. Kothari, *Professor of Accounting and Finance* — 会计金融
Sanjay Sarma, *Professor of Mechanical Engineering, Advisor, J-WEL* — 机械工程

https://www.projectnei.com/_files/ugd/d859ad_d6ca8f62511b48b0a21ec6eba8e5db84.pdf

如何理解教育系统的质量与功能?

How to understand the quality and function of the education system?

Structure

结构

结构质量指的是资料、课程、师生比例等的优劣程度衡量。

Process

过程

过程质量侧重于动态过程，尤其是课堂中交互的优劣程度衡量。

Overall quality of education

教育全局质量

结构+过程

复杂性

Complexity

- **目标 Objective**
- **结果 Outcome**
- **内容 Content**
- **过程 Process**
- **方式 Method**

Systematic value of education

教育系统功能

“人的发展”+“社会的需求”

Human development + societal demand

未来性

Complexity

Output

输出

促进人的发展：关注个性的教育过程，强调教育“促进人的发展”的价值

优质人才 Excellent Talent

人类福祉 Human Welfare

促进社会的发展：关注人与社会的连接，服务于社会，强调“适应社会的需求”的价值

文化影响 Cultural Impact

技术促进教育系统创新变革的作用力

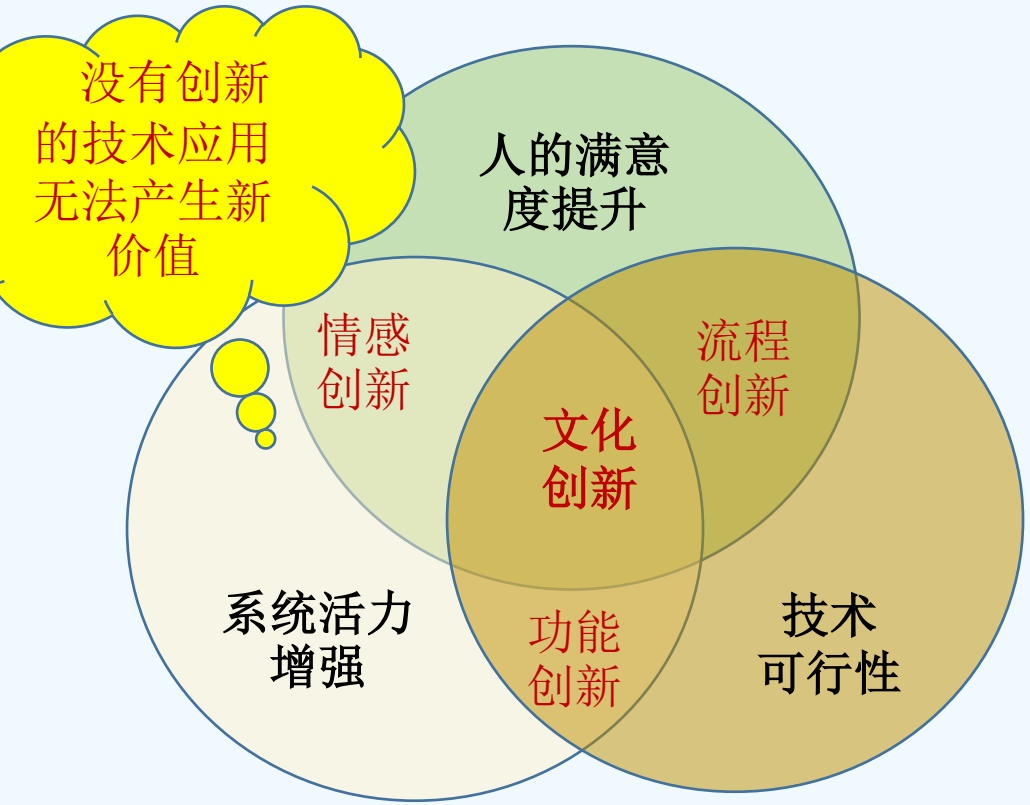
The power of technology enables education system innovative changes

http://www.assignmenthelp.net/blog/samr-model-pedagogy-technology-examples/

Zhu's Insight

教育数字化转型的“适者生存”原理

The principle of "survival of the fittest" in DTE: Innovation is the premise of successful DTE



Technology without innovation cannot create added value

☆ 技术推动人才培养的重新定位—社会责任
Drive for repositioning talent cultivation - social responsibility

☆ 技术服务优质资源的合理配置—公平原则
Drive for equitable distribution of resources - principle of equity

☆ 技术提供虚实共存的情境空间—场景革命
Provide the platform for mixed reality – a reformation of the education scene

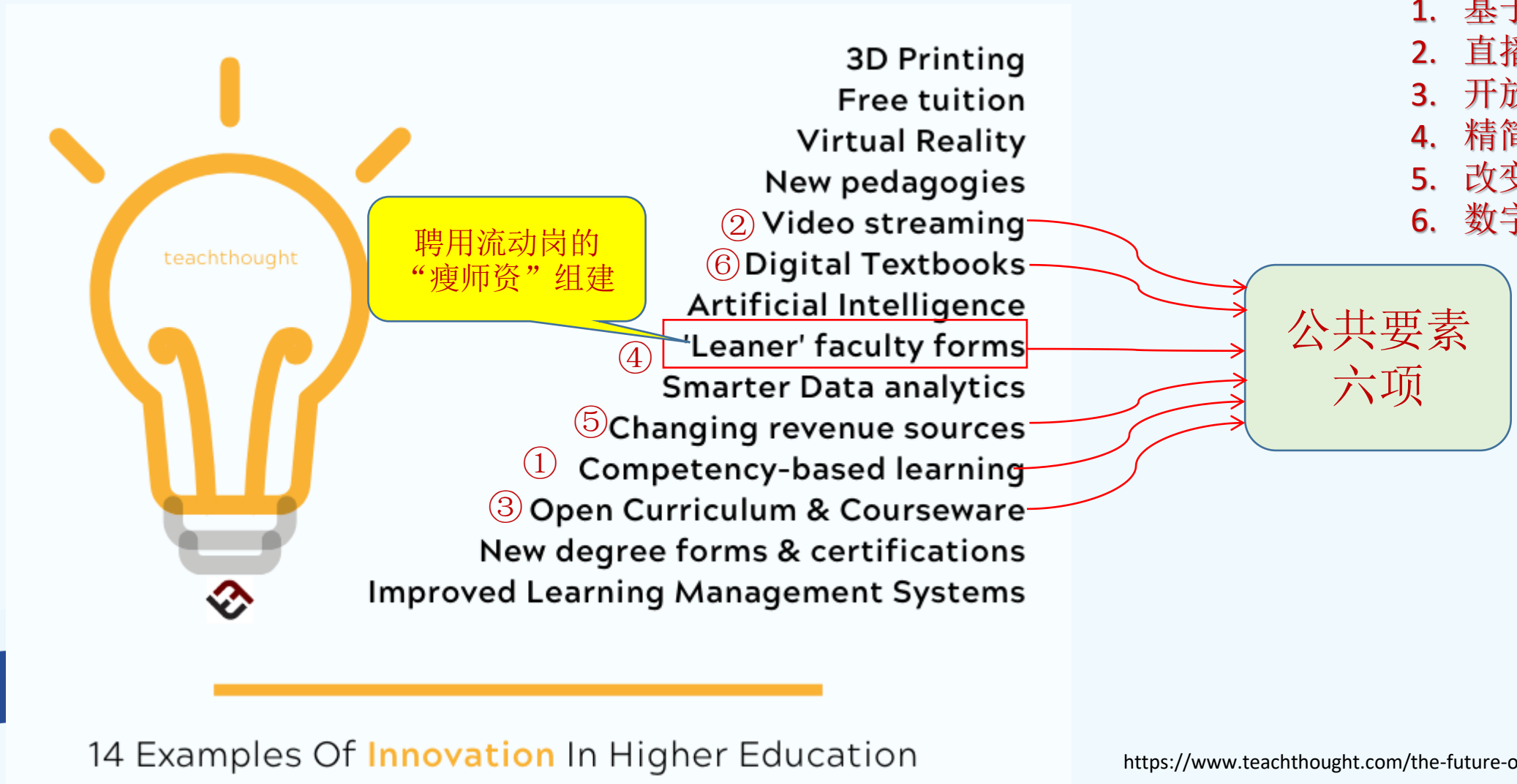
☆ 技术支持教育系统功能的重构—适性服务
Supports the reformation of educational systems – adaptive system

☆ 技术支撑教育过程的数据融合—循证思维
Supports the blend between formative assessment and educational data - Evidence-based thinking

☆ 技术助力精准增值的教育评价—核心素养
Technology-driven educational evaluation – Core competency

https://baijiahao.baidu.com/s?id=1610275552991205769&wfr=spider&for=pc

大学教师专业发展机构 Teach Thought University
2022年发布高教创新14例



1. 基于能力的学习
2. 直播
3. 开放的教学大纲和课程
4. 精简的教师队伍组成
5. 改变工资收入方式
6. 数字教材

https://www.teachthought.com/the-future-of-learning/innovation-higher-ed/

Zhu's Insight

设计智慧驱动教育数字化转型研究
Design wisdom driven DTE Research

设计转型导向:（Design the drive force of transformation）

（一）教育范式从供给主导向需求主导转变 – supply front

（二）教学模式从教为中心向学为中心转变 – student-centered

（三）教育评价从知识本位向能力本位转变 – knowledge based vs. competency based evaluation

（四）教育制度从阶段学习向终身学习转变
- Phased learning → lifelong learning

（五）教育架构从系统封闭向系统开放转变
- Closed cycle to open cycle

（六）教育系统运行机制从管理向治理转变
- From operation to governance

设计转型原则：

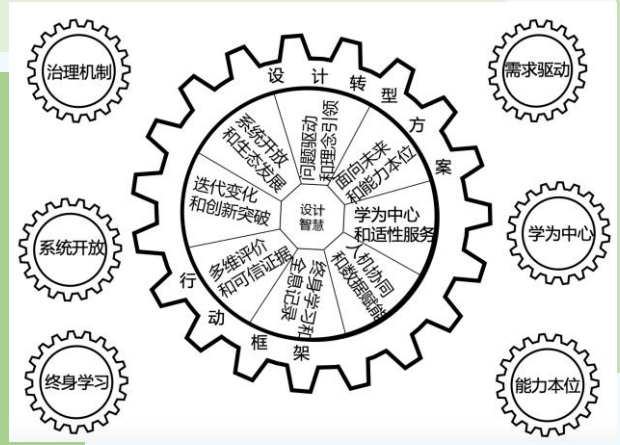
1. 问题驱动和理念引领的原则
2. 面向未来和能力本位的原则
3. 学为中心和适性服务的原则
4. 人机协同和数据赋能的原则
5. 终身学习和伴随记录的原则
6. 多维评价和可信证据的原则
7. 迭代进化和持续创新的原则
8. 系统开放和生态发展的原则

设计转型方案:

（一）教育数字化转型的行动框架设计
Design framework for Action Plan

（二）教育数字化转型的生态系统设计
Ecosystem design for DxE

（三）教育数字化转型的风险防范机制设计
Risk management / control design for DxE



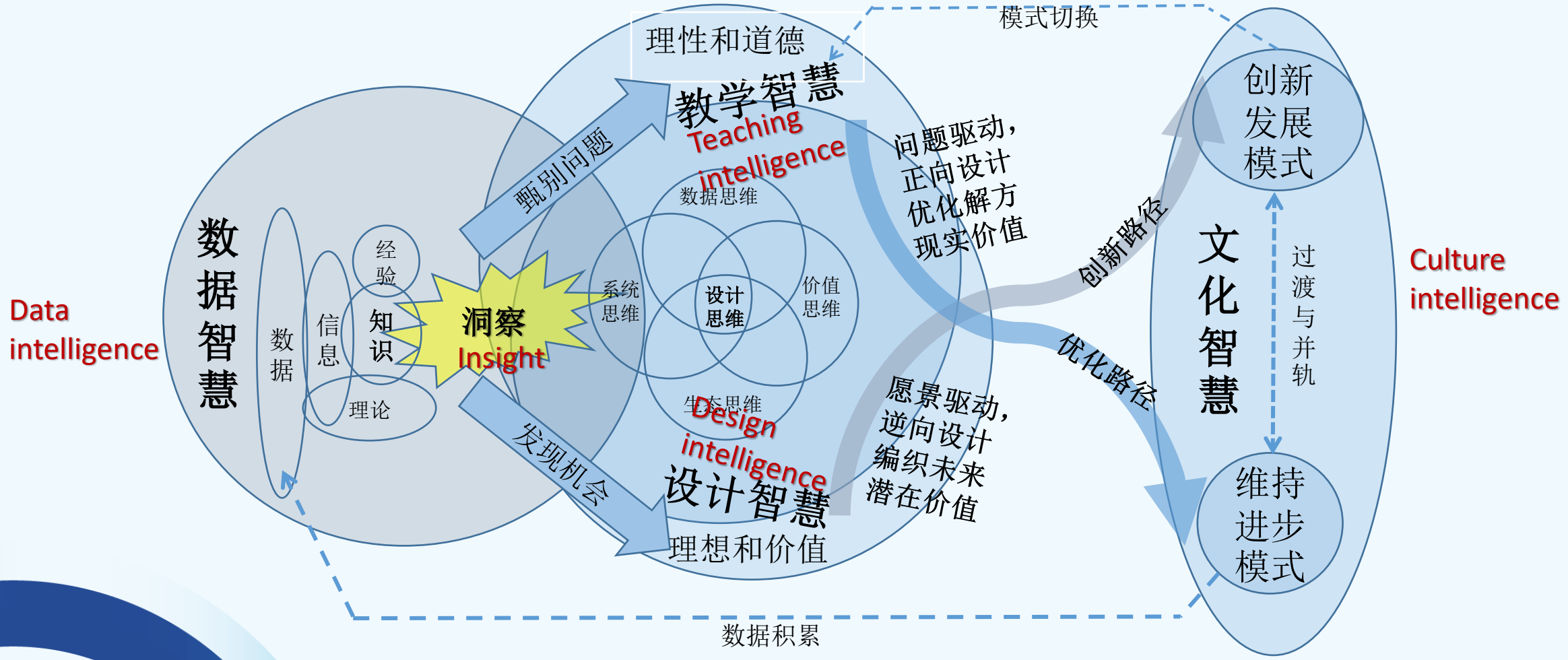
（来源：祝智庭，戴岭，2022.11）

（来源：祝智庭，戴岭，2022.11）

Zhu's Insight

面向教育数字化转型的综合智慧视图

A comprehensive view of multiple wisdoms for DTE



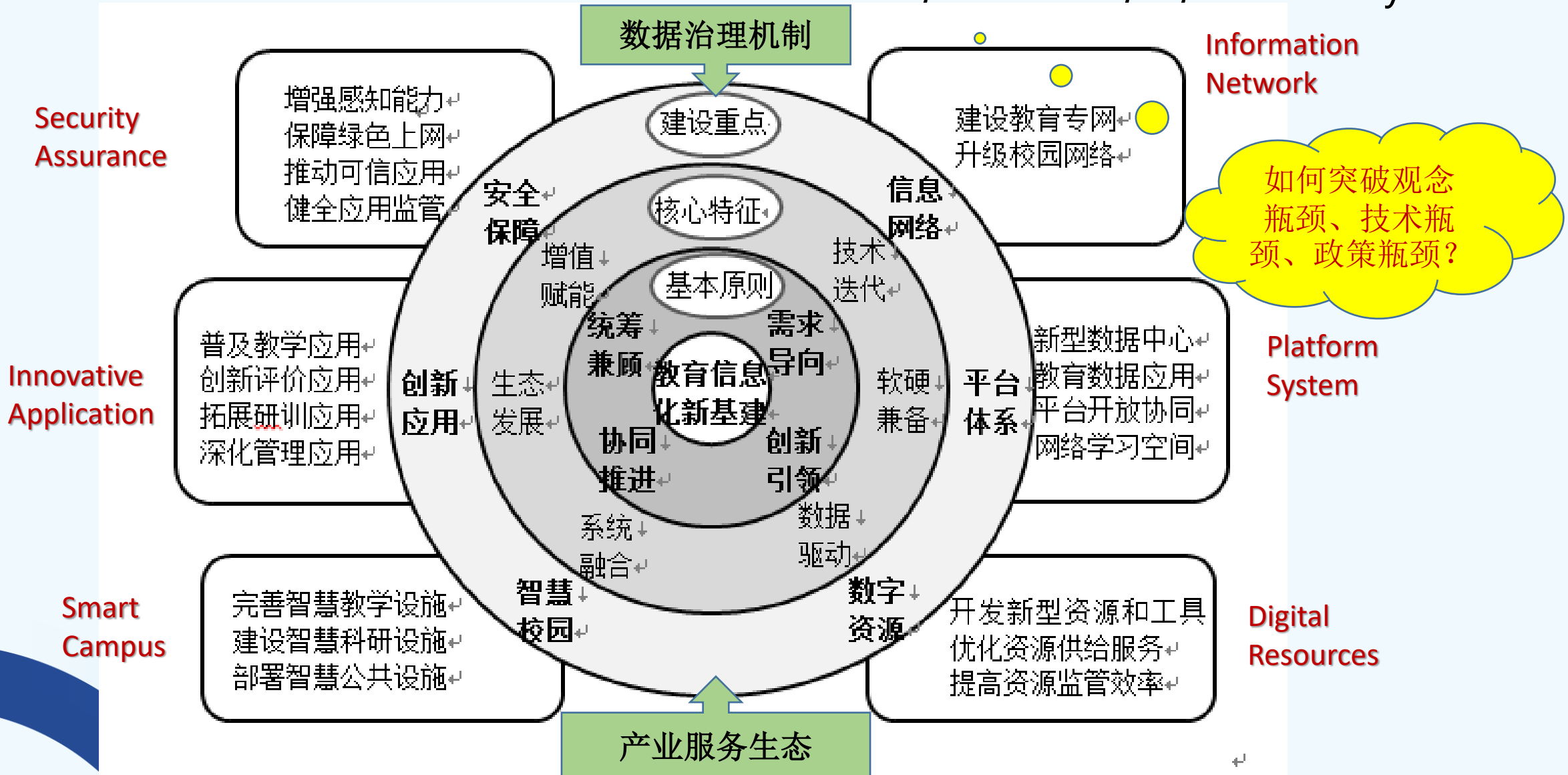
（来源：祝智庭，戴岭，2022.11）

Recommendation①

Zhu's Insight

新基建要为人人享有数字学习权创造条件

New infrastructure must create the conditions for digital learning rights for everyone

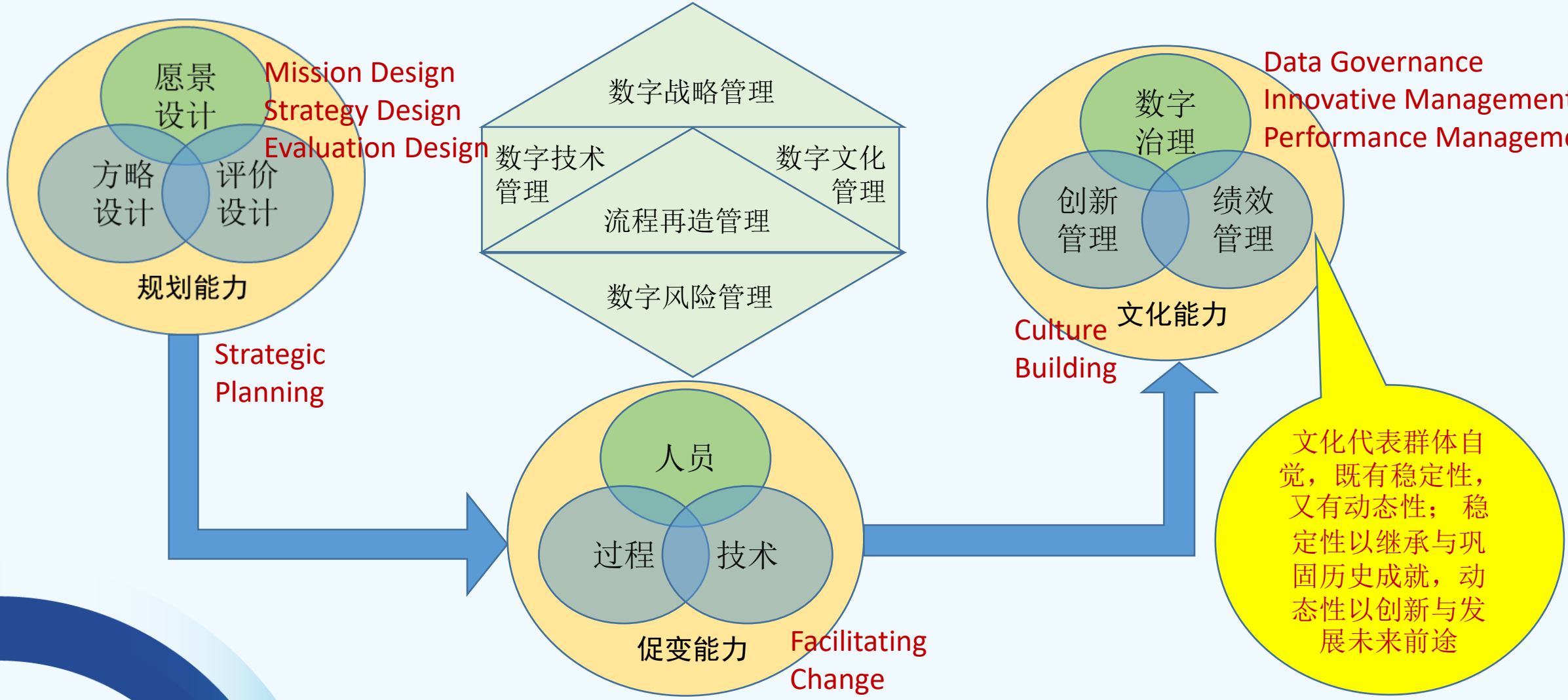


Recommendation②

Zhu's Insight

建设教育数字转型领导力

Building Capacities of education digital transformation leadership

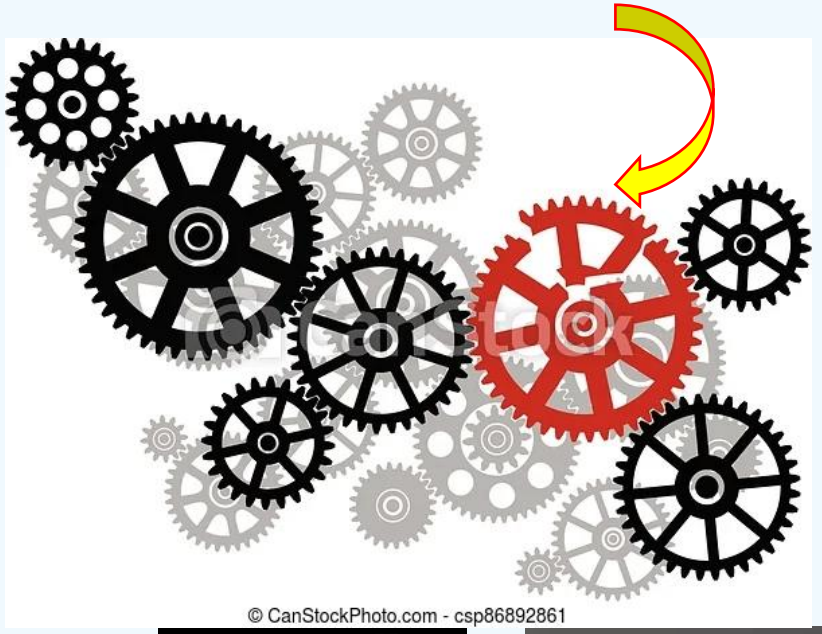


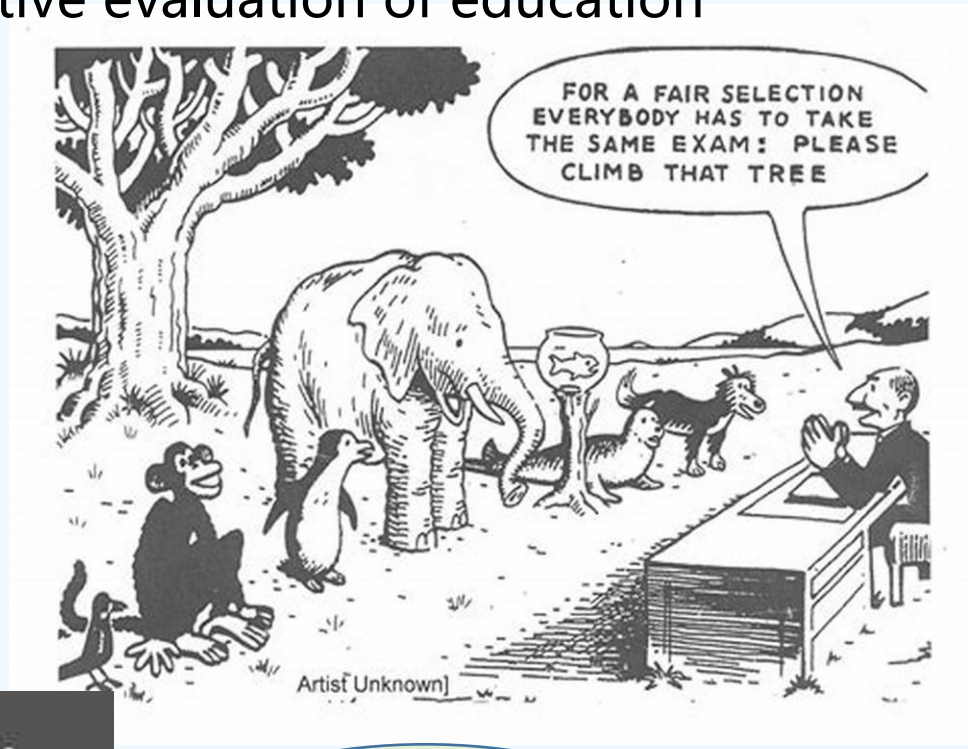
Recommendation③

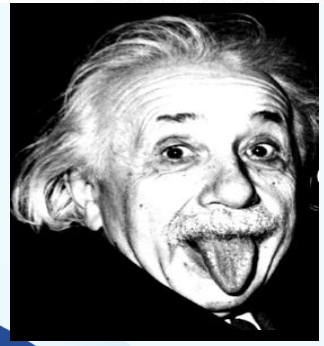
Zhu's Insight

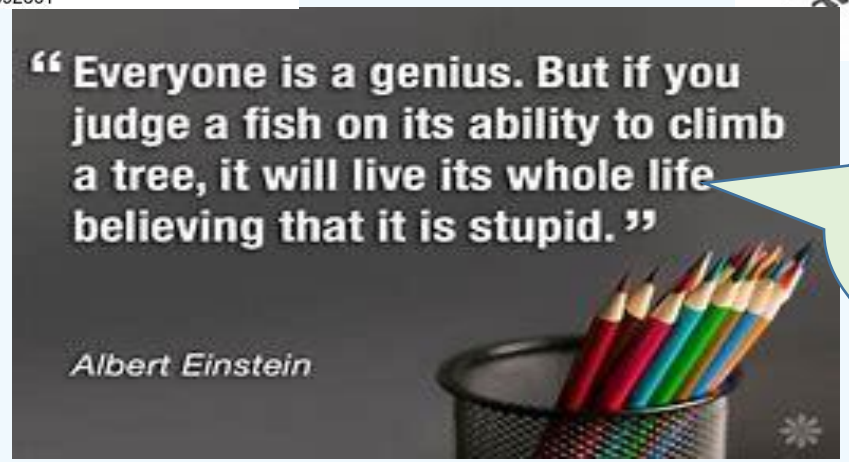
聚焦于创新技术赋能的**教育评价创新**

Focus on technology enabling Innovative evaluation of education







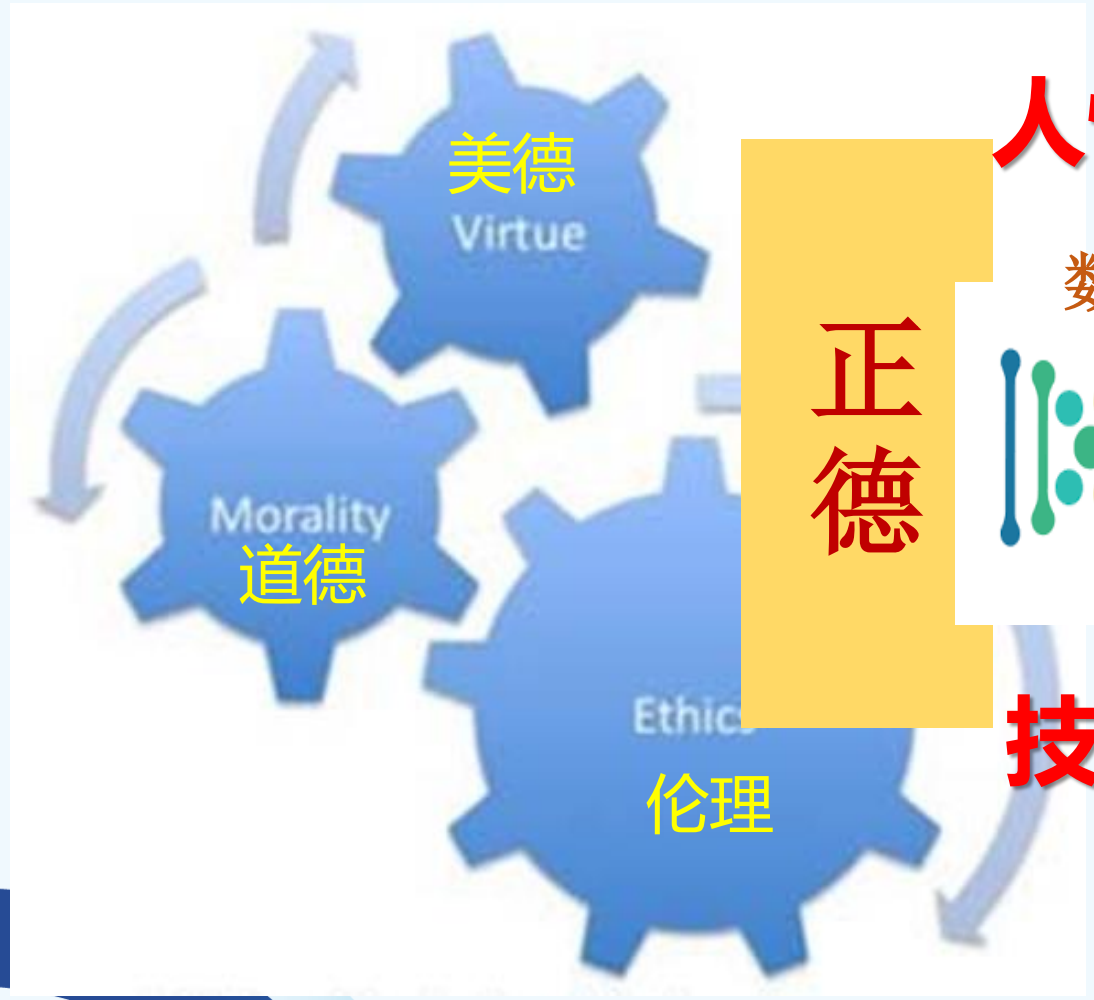


人人生而天才，
但若你以鱼儿能否
爬树来论才的话，
那么它将终生无法
摆脱愚笨的标签。

Recommendation ④

构建人技共善的数字德育体系

Establish a digital moral education system for goodness of Human& technology



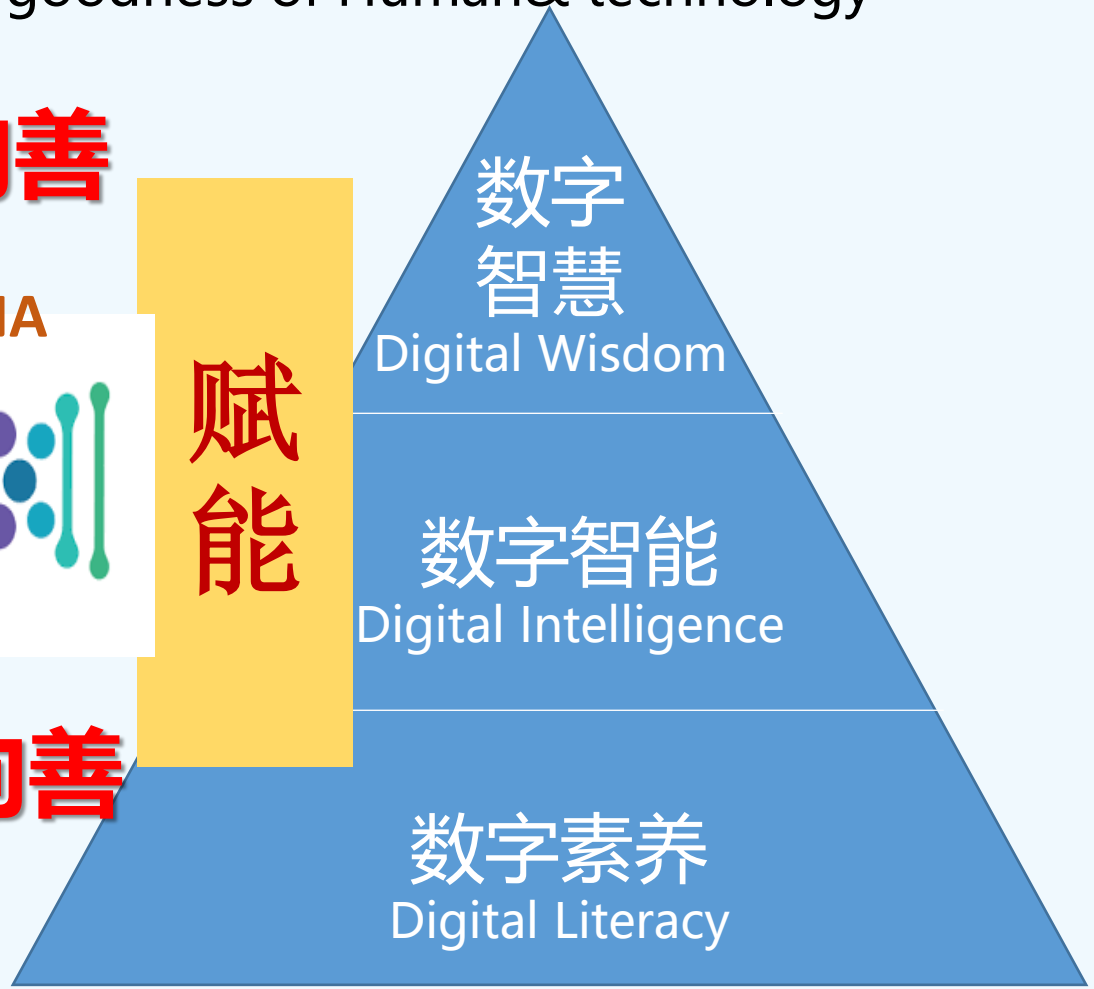
人性向善

正德

数字DNA

赋能

技术向善



Recommendation⑤

建立国际合作与经验共享平台
Building global platform for collaboration and exchanges

- 联合国际力量深入研究教育数字化转型的理论与实践原则
  A joint force studying the theory and principle for DxE
- 发现高教数字化转型的最佳实践供国际共享
  Identify best practices in higher education Dx
- 举办年度国际论坛（线上、线下混合方式）
  International seminar (online/ offline/ blended

- 绘制知识图谱创造国际范围内的知识共识
  Mapping competencies and resources to build a common ground
- 凝练关键洞察支撑政策咨询
  Generate key insights to support policy consultation

谢谢！