Learning through interdisciplinary research and innovation

Exploration at TEEP and Open FIESTA on future education

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Changing, fast and slow
Creativity and innovation becomes most essential

(Re-) Define problems

Solve classical problems with novel ideas

Solve classical problems

Creativity
A paradigm shift in education is needed

What we have for the past - to train A model students

- 专注于培养知识与技能  
  Focus on knowledge and skills
- 围绕单一学科体系开展培养  
  Confined mostly to one lab/department
- 不同的学生，统一的培养方案  
  One curriculum for all
- 以个人为单位，强调竞争  
  Individual based competition mode
- 为本地文化或局域视野所困  
  Limited by local vision and culture
- 学术象牙塔，脱离现实社会与时代发展  
  Rarely connected about the real world

What we need for the future - to cultivate X model students

- 突出培养创造性为主导的综合能力  
  Focus on creativity and innovation
- 高度开放性与交叉性的知识与能力体系  
  Highly interdisciplinary training
- 个性化、多元化的培养过程  
  Personalized & diverse training program
- 强调团队与协作能力  
  Team based cooperation mode
- 国际化视野、能力与资源网络  
  International vision and engagement
- 知行合一，在现实情境中学习与创新  
  Innovate in and for the real world
Case 1: Tsien Excellence in Engineering Program

“Why cannot our universities cultivate outstanding talents?”
- Hsue-Shen Tsien, 2005

A major transition: from C model to CRC model

C model: Disciplinary knowledge based learning

CRC model: “Learning through research”

Course-centered curricula

Liberal arts

Social practice

Interdisciplinary research and innovation projects

Essential courses

Liberal arts

TEEP program inauguration (2009)
Open Research for Innovation Challenges (ORIC)

• Autonomy
  • Students are recognized as junior principle investigators with freedom to design their worn research projects

• Mentorship
  • Outstanding mentors help students develop their vision, curiosity and passion in research and innovation

• Supporting network
  • An open network of top labs from diverse fields in Tsinghua and cooperative institutions in China and other countries

• Evaluation
  • A muti-dimensional evaluation system to encourage original, interdisciplinary and innovative research projects: publication is not the purpose; growth of creativity is!

• Resource
  • Dedicated financial support that students have authority to plan and use for their research and projects

(Quanshui Zheng, the Chief Professor of TEEP)
“在选题和研究的过程中都不要完全被导师牵着鼻子走，要充分发挥主观能动性。自己的兴趣和思考对于课题的成果至关重要。”
- 胡脊梁，TEEP 2013

How cytoplasm “feels” to a cell’s components
In study that may guide drug design, researchers find organelles encounter varying levels of resistance.
Case 2: Open FIESTA as a pilot program

Open FIESTA is a pilot program in Tsinghua University to explore and develop novel models, methods and technologies to nurture future-oriented interdisciplinary innovators and change makers.
Novel model to cultivate interdisciplinary innovators

Key Genes of Open FIESTA

- 开放性 Open campus
- 自主性 Self-leading
- 交叉性 Interdisciplinarity
- 协作性 Team-working
- 国际化 Internationalization

City is University.
Learning as scientist or entrepreneur.
Interdisciplinary Curriculum and rotation
Team based projects
Franco-Chinese duel degree program and international workshops
Interdisciplinary innovation through the whole program
Interdisciplinary innovation through the whole program

“Social Innovation Design” Course by Prof. Xiaomei Nie and Prof. Jianyu he
Interdisciplinary innovation through the whole program

Rotations and projects

4 Rotation projects in different fields

1 integrated interdisciplinary project
Next level: Global challenge based learning

iSDG Shenzhen Assembly

Co-design innovative solutions for global sustainability

21st - 26th

2017

中国·深圳

www.isdg-shenzhen.org

Co-design innovative solutions for global sustainability
Next level: Global challenge based learning

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  - City is University.
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Vision, passion, and social value

Knowledge

Capability and meta-skills

Challenge is the best invitation for innovation.
Thanks!

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