

Teaching with Astrobiology

Enhancing Science and Technology Awareness in Humanities and Social Science
Students

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- approx. 100 students in teacher-training-programs in sociology and theology
- Knowledge of and about technology and science subjects
- Assessment of societal impact and ethical issues
- Standardized questionnaire study

Concepts	Know about this
NASA	76%
GPS	83%
Robotics	55%
...	...
ESA	38%

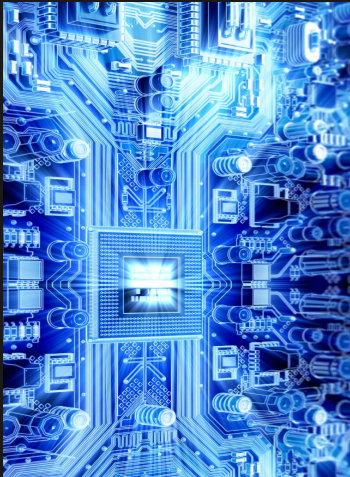
Items less than 10% of the students have knowledge about

Mars One, Hyperloop, Human Enhancement, SETI, Break Through Starshot

Technology awareness in humanities and social-science students
Assessing Worldviews
The Deviant Nature of Interdisciplinary Research
How to be (properly) deviant

Preliminary Study
Existing Knowledge
Assessing Impact
Personal interest and growth potential

Positive connotation



Information Technology



Aerospace Technology

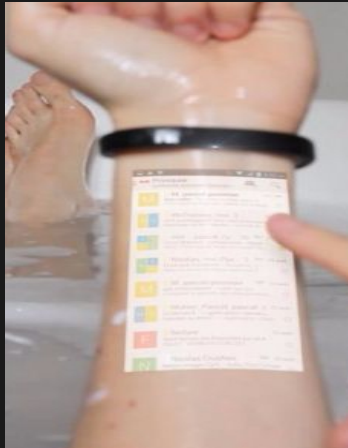


Innovative Transportation

Negative connotation



Healthcare Robots



Computer Implants



Nuclear Energy

Technology	Ethically questionable
Artificial Intelligence	77%
Robotics	76%
Nuclear Technology	74%
Brain-Computer-Interface	70%

'Innovative Technologies'

About 40% connotate 'Innovative Technologies' neutral, negatively or strongly negative.

Technology Awareness - the good, the bad and ...

- The students have knowledge about specific STEM topics
- They are interested in learning more
- They already ethically evaluate (even unknown) STEM topics
- Certain concepts and areas are unknown to the students
- The students are not interested in learning more about certain concepts and areas.

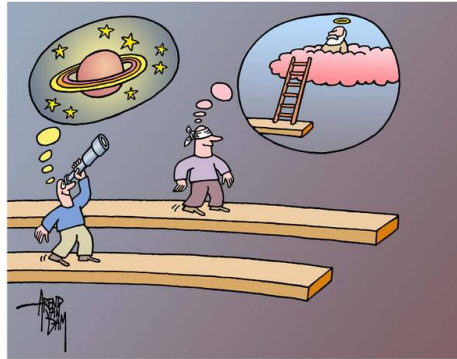
Unfortunately...

... the last two areas are identical!


The NOMA Model




... and why it is wrong




science and religion



Religion = Why?



Science = How?



Religion = How?



Science = Why?

Student NOMA Worldview



Humanities and
Social Sciences

Science, Technol-
ogy, Engineering
and Mathematics

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The Deviant Nature of Interdisciplinary Research
How to be (properly) deviant

Division of Worldviews
Re-Emergent Division
Reified Division
Crossing boundaries



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Academic disciplines as social systems

- Inherent sets of rules and norms
- Transgression as deviant behaviour
- Deviance is negatively sanctioned
- Sanctions re-establish social order

Paradox

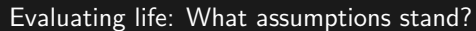
The deviant among us hold the system together!

Interpretation

Analysing interdisciplinary academic work as deviant behaviour helps us understand how the NOMA Model is constantly self-reproducing

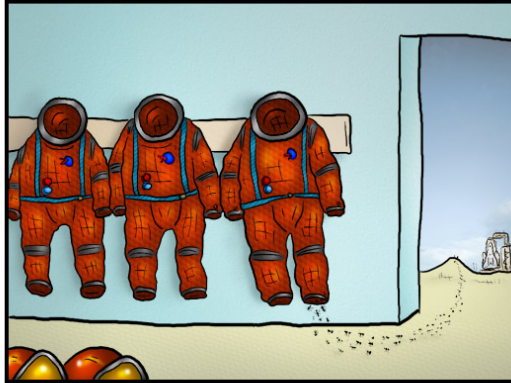
Dilemma

- coherent disciplines and disciplinary expertise
- socially pressing need for work across boundaries of disciplines



DOCTOR FUN

18 June 2001

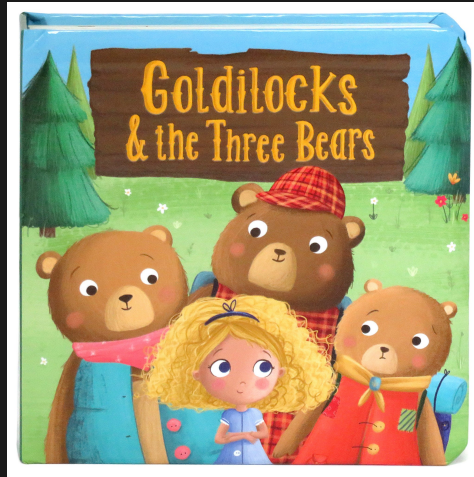


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NASA's unplanned fire ant-in-space program

Rethinking biodiversity for human space exploration.



Habitability: Communicating against social preconception