Enhancing Public Understanding of Science to Ensure Innovation-Driven and Sustainable Development

Purpose: Information
Submitted by: China
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“Knowledge is power”

Sir Francis Bacon (1597)

“the power of knowledge depends not only on the value of its won, but also depends on whether it can be spread, as well as the depth and breadth of dissemination”

https://en.wikipedia.org/wiki/Scientia_potentia_est
https://en.wikipedia.org/wiki/Francis_Bacon#Science
"Public Understanding of Science is an essential source for any scholar working in this field. Its international reach and its wide range of contributors make it even more valuable." Professor Jon D. Miller
Public understanding of science –
a new indicator of comprehensive capability of an economy
CERI provides and promotes international comparative research, innovation and key indicators, explores forward-looking and innovative approaches to education and learning, and facilitates bridges between educational research, innovation and policy development.

The Measurement of Civic Scientific Literacy - Building on two decades of national surveys in the United States and two Eurobarometer studies, the history, rationale, and structure of a measure of civic scientific literacy are described.
Surveys on Public understanding of science

**Science in the Public Mind**: A Relation Approach to Scientific Credibility
Gordon Gauchat and Kenneth Andrews, Univ Wisconsin

Public Views of Science-Based Policy and Funding The Political Context of Science in the United States: Public acceptance of evidence-bas...
Social Forces, 2015. Gordon Gauchat


**Science to the People: A32-nation**: Public Understanding of Science, 2018
Kirils Makarovs, Natl Res Univ. Russia and Tiburg Univ. Essex, UK
Peter Achterberg, Tubrug Univ. Netherland

**A Systematic Initial Study of Civic Scientific Literacy in China**: Cross-National Comparable Results from Scientific Cognition to Sustainable Literacy
Sheng Wu, Yi Zhang, Zheng-Yun Zhuang, Sustainability, 2018

**The Political Context of Science in the United States**: Public Acceptance of Evidence-Based Policy and Science Funding
Social Forces Advance Access, 26th Feb 2015
Gordon Gauchat, Univ Wisconsin
Surveys on China’s civic science literacy (CSL)


Sampling survey on Chinese citizen’s science literacy 中国公民 CSL 抽样调查
China Association of Science & Technology (CAST 中国科协) Implementation office of Outline of the National Scheme for Scientific Literacy China Research Institute for Science Popularization

A Systematic Initial Study of Civic Scientific Literacy in China: Cross-National Comparable Results from Scientific Cognition to Sustainable Literacy
Sheng Wu, Yi Zhang, Zheng-Yun Zhuang, Sustainability, 2018
Main findings from the survey of public understanding of science in China, 2018
CSL level of Chinese citizens has shown exponential growth over the decade.

Level of CSL Chinese citizens has improved significantly, with the proportion of the people qualified as scientifically literate reaching 8.47% in 2018, 2.17% higher than in 2015, laying a solid foundation for accomplishing the strategic goal of increasing the rate of CSL to 10% by 2020 (one of the goals of 13th 5-year STI Plan).


(Redrawn based on the data, ZXE)
Level of CSL increased substantially in all regions
CSL is the highest in the East, decreasing gradually from the east to the West. Beijing-Tianjin-Tangshan, Yangtze River Delta and Pearl River Delta are the most economically developed areas in China, and their citizens’ CSL enjoy the highest, while the CSL level of the west region remain low.

Change of CSL in Chinese citizens of different genders
Role of science communication in a digital age
Mainstream Internet sources from which Internet users accessed S&T information

- WeChat: 95.8%
- Portal websites such as tencent.com: 82.6%
- Search engines such as baidu.com: 79.6%
- Specialized websites such as guokr.com: 67.6%
- E-books: 50.9%
- Weibo: 49.6%
- Online newspapers: 47.7%
- Online journals: 44.4%
- Popular science APP: 30.4%
- Digital science museum: 28.9%
- Science blogs: 24.7%

Participation of science popularization activities among Chinese citizens

- **S&T exhibitions**: 21.5% (2018) vs 14.6% (2015)
- **Popular science lectures**: 18.7% (2018) vs 12.4% (2015)
- **S&T training**: 16.7% (2018) vs 11.0% (2015)
- **S&T Week, S&T Festival and Science Day**: 15.3% (2018) vs 7.8% (2015)
- **S&T consultation**: 14.3% (2018) vs 8.1% (2015)

Public interests in S&T
Respondent’s attitudes towards AI (2018)

- The development of AI will help boost human productivity and bring great convenience to people's life
  - Agree: 90.7%
  - Neutral: 78.5%
  - Disagree: 10.0%
  - Don't know: 6.9%

- The development of AI might give rise to a large number of unemployed people, but at the same time it will create new employment opportunities
  - Agree: 74.9%
  - Neutral: 11.6%
  - Disagree: 14.9%
  - Don't know: 8.3%

- Human will never lose control of AI and have the ability to develop, manage and utilize AI
  - Agree: 59.1%
  - Neutral: 14.9%
  - Disagree: 14.9%
  - Don't know: 11.1%

- In the face of the potential threat of AI, we should establish strict regulatory measures to limit the excessive development of self-learning ability
  - Agree: 31.5%
  - Neutral: 17.7%
  - Disagree: 37.0%
  - Don't know: 13.7%

- Alpha Go's victory over the world champion Ke Jie indicates that AI will eventually outperform human wisdom and replace humanity
  - Agree: 31.5%
  - Neutral: 17.7%
  - Disagree: 37.0%
  - Don't know: 13.7%

Integrity in science communication
Fake science, can you tell?

Survival guide in the age of error information

Science Web: false news online is faster than truth.

400,000 researchers in the world publish articles in fake scientific journal (Sueddeutsche Zeitung, July 23, 2018)

Science papers: People are more partial to false information?

Stop the False news is a big science?
Cell paper (Oct 1980): Dietary fiber intake may induce liver cancer

Hi, man, the study only refers to inulin, the message is confusing and frightened the public by the use of the term “dietary fiber”.

“Dysregulated microbial fermentation of soluble fiber induces cholestatic liver cancer”. The title of the message confuses and frightens the public, because dietary fibers, including soluble and insoluble, many kinds, widely exist daily foods. If the title of the paper clearly defined the experimental materials, it should very good, otherwise causes public scare. So, the scientists must be responsible for transmitting integrated knowledge.

Well, thanks Xian-En for explaining this to me. I first heard about inulin.
Study: False news 70 percent more likely to spread on Twitter
Scientists verify that fake news outruns truth on Twitter — and call for a fix
http://blog.sciencenet.cn/home.php?mod=space&uid=39731&do=blog&id=1103248

Science papers, 09 Mar 2018: 359(6380)
- The spread of true and false news online
- The science of fake news

Automatic robots (which automatically simulate human accounts) can magnify the order of magnitude of fake news dissemination by ordering, sharing, and searching for information.

False news travels farther, faster, deeper and wider than true news. False news is generally more novel than true news, indicating that people prefer to share new news. False news provokes fear, nausea, and surprise, while true news provokes expectation, sadness, joy, and trust.

http://blog.sciencenet.cn/blog-951291-1104246.html
To this end, the WeChat public platform has set up a WeChat anti-rumor center. The center jointly dispelled rumors by introducing more than 800 third-party authoritative agencies, including 289 agencies of former National Food and Drug Administration System, 5 state-level media, and 32 online correspondence accounts in China. In 2017, the Wechat Anti-rumor Center punished about 180,000 Wechat public addresses, and transmitted about 490 million of popular science messages, an average of about 1.4 million times a day.

World Congress on Public Understanding of Science
.... .... with the theme "Science Literacy for a Shared and Better Future" and the UN Sustainable Development Goals (SDGs*). The conference was participated by 23 international organizations, 60 organizations and agencies, and over 1000 participants from various regions. The participants fully exchanged their views, reached the consensus, .......
Beijing Declaration on world public scientific literacy

promoting positive interactions between society and S&T in their broadest sense, understanding our mission and responsibilities, working together to narrow the gap in science literacy, persistently promoting universal benefit and fairness, and building a mechanism for collaboration and exchanges. The declaration promised to actively promote the upgrading of VSL to the UN's sustainable development agenda.

http://www.wcsl.org.cn/index.php?m=content&c=index&a=en_index
Suggestions to CSAE

- conduct a survey on public science literacy in APEC region. The findings will be provided as reference to all member economies. The survey could be carried out by the working group of Policy Partnership on Science, Technology & Innovation (PPSTI).

- promote application of advanced IT technology in the popularization of science by supporting the cooperation between information network enterprises and the scientific community. This could be carried out cooperatively across the APEC's working groups, for example, PPSTI and Telecommunication and Information (TI).
Thanks