

## Curriculum Vitae

**Name:** Fang-Ying Yang



**School:** Graduate Institute of Science Education,  
National Taiwan Normal University

**Position:** Professor

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Fang-Ying Yang is currently the Chair professor and the director of Graduate Institute of Science Education (GISE), and an adjunct professor in the Department of Earth Sciences, National Taiwan Normal University. Prof. Yang's research interests include the development of scientific reasoning, learners' conceptual and epistemological development in science, science-text reading and comprehension, multimedia learning, and the effects of social/cultural factors on science learning. Her current research is centered on issues related to how learners construct scientific concepts, and how they reason when encountering uncertain science information. Prof. Yang has established an eye-tracking lab in GISE and has been using various types of eye trackers in recent years to explore the processes of science learning and scientific reasoning. Supported by Taiwan's Minister of Science and Technology, Prof. Yang is now involved in an interdisciplinary project aiming to combine the eye tracking method and Magnetoencephalography (MEG) to explore behaviors of problem solving in math and physics domains.

### Education

Ed. D.	Science education	Teachers College, Columbia University, NY, USA	Sep. 1995- Feb. 1999
Ed. M	Science Education	Graduate School of Education, Rutgers, The State University of New Jersey, NJ, USA	Jan. 1993- Dec. 1994
B.A.	Geophysics	National Central University, Taoyuan, Taiwan	Sep. 1986-June 1990

## Experiences

- Director, Graduate Institute of Science Education, National Taiwan Normal University Aug. 2017~Now
- Deputy Dean, Office of Research & Development, National Taiwan Normal University, Taipei, Taiwan Sep. 2013- Aug. 2015
- Visiting Scholar, Department of Psychology, University of California, San Diego, CA, USA Jan. 2012- Aug. 2012
- Professor, Graduate Institute of Science Education, National Taiwan Normal University, Taipei, Taiwan Aug. 2008-now
- Adjunct Professor, Department of Earth Sciences, National Taiwan Normal University, Taipei, Taiwan Aug. 2008-now
- Assistant/Associate Professor, Department of Earth Sciences, National Taiwan Normal University, Taipei, Taiwan Aug. 2000- July 2008
- Assistant Professor, Graduate Institute of Science Education, National Kaohsiung Normal University, Kaohsiung, Taiwan Aug. 1999- July 2000
- Web Developer, Teachers College, Columbia University, NY, USA Dec.1998 – July 1999
- Science Teacher, Ji-Sun Vocational High School, Taoyuan, Taiwan Jan. 1995- July 1995
- Research Assistant, Institute of Earth Science, Academic Sinica, Taipei, Taiwan July1990- July1992

## Academic Interests

- Development of scientific reasoning
- Cognitive development and science learning
- Learners' epistemic beliefs
- Science-text reading and comprehension
- Academic and social motivations
- Multimedia learning
- History and philosophy of Science

## Laboratory

- **Eye Tracking**

- Systems include faceLAB 5.0, EyeLink 1000, and Tobii Pro Classes 2. Tobii 3X 120

### Academic Awards

- 2017 Outstanding Research Award by Minister of Science and Technology, Taiwan
- Lin, Y. T., Wu, C. C., Hou, T. Y., Lin, Y. C., **Yang, F. Y.**, & Chang, C. H. (2016). Tracking students' cognitive processes during program debugging – An eye-movement approach. *IEEE Transactions on Education*, 59(3), 175-186. *(This paper received The Outstanding Paper Award)*
- 2007 Ta-You Wu Memorial Award by Minister of Science and Technology, Taiwan
- Yang, F. Y. & Chang, C. C. (2006). High-School Learners' Environmental Preferences, Personal Beliefs and Concept Achievements in the Web-based Context. Best paper presented in ICS 2006 Biennial Meeting, Taipei.

### Academic services

- Editorial Board Member of *Journal of Research in Science Teaching* (2016-2019)
- Strand Coordinator for the Annual Meeting of National Association of Research in Science Teaching (NARST 2017-2018)
- Reviewer for *Journal of Research in Science Teaching*, *Science Education*, *Computers & Education*, *International Journal of Science Education*, *Educational Research Review*, *Educational Technology & Society*, *The Asia-Pacific Educational Researcher*, *International Journal of Science and Mathematics*, etc.

### Affiliations/Memberships

- National Association of Research in Science Teaching (NARST)
- European Association of Research in Learning and Instruction (EARLI)
- European Science Education Research Association (ESERA)

### Publications

(Journal Articles)

1. **Yang\***, **F. Y.**, Tsai, M. L., Chiou, G. L., Lee, S. W. Y., Chang, C. C., & Chen, L. L. (2018). Instructional suggestions supporting science learning in digital environments based on a review of eye tracking studies. *Educational Technology & Society*, 21 (2), 28-45.

2. **Yang\*, F. Y.** (2017). Examining the reasoning of conflicting science information from the information processing perspective – an eye movement analysis. *Journal of Research in Science Teaching*, 10, 1347-1372. DOI: 10.1002/tea.21408. (SSCI)
3. Huang, R. T., Tang, T. W., Lee, Y. P., & **Yang, F. Y.** (2017). Does proactive personality matter in mobile learning? *Australasian Journal of Educational Technology*, 33(2), 86-96.
4. **Yang, F.Y.**, Liu, S.-Y., Hsu, C.-Y., Chiou, G.-L.\*, Wu, H.-K., Wu, Y.-T., Chen, S.-F., Liang, J.-C., Tsai, M.-J., Lee, S. W.-Y., Lee, M.-H., Lin, C.-L., Chu, R.-J., Tsai, C.-C. (*Accepted*). High school students' epistemic knowledge of science and its relation to learner factors in science learning. *Research in Science Education*.
5. Huang, R. T., Tang, T. W., Lee, Y. P., & **Yang, F. Y.** (2017). Does proactive personality matter in mobile learning? *Australasian Journal of Educational Technology*, 33(2), 86-96.
6. **Yang, F. -Y.**, Chang, C. C., Chen, L. L., & Chen, Y. C. (2016). Exploring learners' beliefs about science reading and scientific epistemic beliefs, and their relations with science text understanding. *International Journal of Science Education*, 39(10), 1591-1606. DOI: 10.1080/09500693.2016.1200763
7. Lin, Y. T., Wu, C. C., Hou, T. Y., Lin, Y. C., **Yang, F. Y.**, & Chang, C. H. (2016). Tracking students' cognitive processes during program debugging – An eye-movement approach. *IEEE Transactions on Education*, 59(3), 175-186. (SCI)
8. **Yang, F. Y.**, Huang, R. T., Tsai, I. J. (2016). The effects of epistemic beliefs in science and gender difference on university students' science-text reading: An eye-tracking study. *International Journal of Science and Mathematics Education*, 14, 473-498. (SSCI)
9. Chen, Y. C., & **Yang\*, F. Y.** (2014). Probing the relationship between process of spatial problems solving and science learning – An eye tracking approach. *International Journal of Science and Mathematics Education*, 12, 579-603. (SSCI)
10. Lai, M. L., Tsai, M. J., **Yang\*, F. Y.**, Hsu, C. Y., Liu, T. C., Lee, S. W. Y., Lee, M. H., Chiou, G. L., Liang, J. C., & Tsai, C. C. (2013). A review of using eye-tracking technology in exploring learning from 2000 to 2012. *Educational Research Review*, 10, 90- 115. (SSCI)
11. **Yang, F. Y.**, Chang, C. Y., Jien, W. R., Jien, Y. T. Tseng, Y. H. (2013). Tracking learners' visual attention during a multimedia presentation in a real classroom. *Computers & Education*, 62, 208-220. (SSCI)
12. **Yang, F.-Y.**, Chen, Y. H., Tsai, M.-J. (2013) How university students evaluate online information about a socio-scientific issue and the relationship with their epistemic beliefs.. *Educational Technology & Society*, 16(3), 385-399. (SSCI).
13. **Yang, F. Y.**, Tseng, J. S. & Lin, M. H. (2012). The Interaction between Junior-High Students' Academic and Social Motivations and the influences of the motivational factors on Science Performance. *The Asia-Pacific Educational Researcher*, 21, 92-106. (SSCI)

14. Tsai, M. J., Hou, H. T., Lai, M. L., Liu, W. Y. & **Yang, F. Y.** (2011). Visual attention for solving multiple-choice science problem: An eye-tracking analysis. *Computers & Education*, 58, 375-385. (SSCI)
15. Tsai, C. C. & **Yang, F. Y.** (2011). Editorial: Research about science learning in Asian countries. *The Asia-Pacific Education Research*, 20, 201-206. (SSCI)
16. **Yang, F. Y.** & Tsai, C. C. (2010). Reasoning on the science-related uncertain issues and epistemological perspectives among children. *Instructional Science*, 38, 325-354. (SSCI)
17. Chang, C. C. & **Yang\*, F. Y.** (2010). Exploring the cognitive loads of high-school students as they learn concepts in web-based environments. *Computers & Education*, 55, 673-680 (SSCI)
18. **Yang, F. Y.** & Chang, C. C. (2009). Examining High-School Students' Preferences toward Learning Environments, Personal Beliefs and Concept Learning in Web-Based Contexts. *Computers & Education*, 52, 848-857. (SSCI)
19. Chang, C. Y., Chang, Y. H., **Yang, F. Y.** (2009). Exploring secondary science teachers' perceptions on the Goals of Earth Science Education in Taiwan, *International Journal of Science Education*. (To be published) (SSCI)
20. **Yang, F. Y.**, Chang, C. Y., and Hsu, Y. S. (2008). Teacher Views about the Constructivist Instruction and Personal Epistemology – A National Study in Taiwan. *Educational Studies*, 34, 527-542. (SSCI)
21. **Yang, F. Y.** & Tsai, C. C. (2008). Investigating learner preferences and beliefs about learning in the web-based context. *Computers & Education*, 50, 1284-1303. (SSCI) (Motivation)
22. **Yang, F. Y.** (2005). Student views concerning evidence and the expert in reasoning a socio-scientific issue and personal epistemology. *Educational Studies*, 31, 65-84. (SSCI)
23. **Yang, F. Y.** (2004). Exploring High School Students' Use of Theory and Evidence in a Life Context: The role of scientific thinking in environmental science decision-making. *International Journal of Science Education*, 26, 1345-1364. (SSCI)
24. **Yang, F. Y.** & Anderson, O. R. (2003). Senior high school students' preference and reasoning modes about nuclear energy use. *International Journal of Science Education*, 25, 221-244. (SSCI)

(Book Chapters)

1. **Yang, F. Y.** (2016). Learners' epistemic beliefs and their relations with science learning – Exploring the cultural differences. In M. H. Chiu (Ed). *Science education research and practices in Taiwan* (pp. 133-146). Singapore: Springer.
2. Yen, M. H. & **Yang, F. Y.** (2016). Methodology and application of eye-tracking techniques

in science education. In M. H. Chiu (Ed). *Science education research and practices in Taiwan* (pp. 249-277). Singapore: Springer.

3. **Yang, F. Y.** & Chang, C. C. (2012) Interactive learning in secondary education: The effects of learner beliefs, preferences and cognitive loads. In Jia, J. (Ed.) *Educational Stages and Interactive Learning: From Kindergarten to Workplace Training* (pp. 18-30). PA: IGI Global.
4. **Yang, F. Y.** & Tsai, C. C. (2012). Personal Epistemology and Science Learning: A Review of Empirical Studies. In Fraser, B. J., Kenneth, T., & Campbell, M. (Eds.) *Second International Handbook of Science Education* (pp. 259-280). NY: Springer.
5. **Yang, F. Y.** & Chen, Y. C. (2012). Learner preferences and achievement. In Seel, N. (Ed.) *Encyclopedia of the Sciences of Learning (Chapter 594)*. NY: Springer.
6. **Yang, F. Y.** & Tsai, C. C. (2010). An epistemic model for scientific reasoning in the informal context. In Bendixen, L. D. & Haerle, F. C. (Eds.) *Personal Epistemology in the Classroom: Theory, Research, and Implications for Practice* (pp. 124-162). UK: Cambridge University Press.