Department of Mathematics Study on Mathematical Competence-Oriented Learning and Teaching

My research interest mainly focus on students' reading comprehension of geometric construction, the interaction between reading comprehension and problem solving, the design of mathematical grounding activities (MGAs), MGAs-in-class, statistical competence-oriented learning tasks and instruments for assessing pedagogical reasoning.

I also devote myself to planning and implementing teacher education courses for pre-service mathematics teachers and professional programs for in-service mathematics teachers.

Andy and Susan live in a small town in the USA Nearby is a meadow, which is a good place to fly a kite. But close to the meadow, in about 39 m height, are some power Andy looks for a new kite, which can fly as high as

possible. He had to decide between two different offers (see Table) and bought the "Breeze Rainbow Kite". A few days later he meets his friend Susan, who admires the rainbow colours of the new kite, so that they can play with it. They go to a meadow and let the kite fly. In the picture you can



see Andy and Susan with the kite. They stand approximatly 50 m apart from each other and the kite string is in its full length. Susan is standing right below the kite.



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What minimum distance is required, so that it is safe that the kite does not touch the Adopted from Chang et al. (2020)

In the abovementioned situation, how many metres above the ground approximately

does the kite fly? Find one possible solution and briefly explain your solution. 2. It is very dangerous, if the kite touches the power lines, which are close to the meadow

power line? Find one possible solution and briefly explain your solution.

Adopted from Yang et al. (2019)

Kai-Lin Yang, Professor **Department of Mathematics** kailin@gapps.ntnu.edu.tw

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Publications

1. Chang, Y. P., Krawitz, J., Schukajlow, S., & Yang*, K. L. (2020). Comparing German and Taiwanese secondary school students' knowledge in solving mathematical modelling tasks requiring their assumptions. ZDM, 52(1), 59-72. (SSCI) 2. Yang, K. L., Tso, T. Y., Chen, C. S., Lin, Y. H., Liu, S. T., Lin, S. W., & Lei*, K. H. (2019). Towards a conceptual framework for understanding and developing mathematical competence: A multi-dual perspective. Innovations in Education and Teaching International, 1-12. (SSCI) 3. Yang*, K. L., & Li, J. L. (2018). A framework for assessing reading comprehension of geometric construction texts. International Journal of Science and Mathematics Education, 16(1), 109-124. (SSCI)

