

PROMPTS, TECHNOLOGY AND PROBLEM SOLVING

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In this communication we present an analysis of situations that arise when solving problems using GeoGebra. The goal of our research is to identify those events that take place during a problem-solving scenario that relies on technology, and to generate prompts based on these events. A prompt is an event that has occurred in mathematics classroom and raises issues that illuminate the mathematics understanding that would be beneficial for secondary teachers (Heid, Wilson, & Blume, 2015, p. 3).

Data were collected from a Problem-Solving Workshop implemented during nine two-hour sessions of the course *Mathematics for Teaching* for undergraduate mathematics students. In this workshop students solve the tasks in pairs, using GeoGebra. In this Oral Communication we show an in-depth analysis of the work done by a pair of students while solving the *Equal chords* problem (Figure 1).

Equal chords: There are two circles with centers at A and C. Two lines are drawn from each center that are tangent to the other circle. The points where these tangents intersect with the circles define two chords, IJ and KL. Prove that the lengths of these two chords are the same.

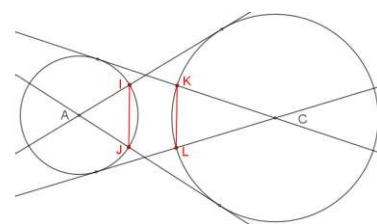


Figure 1: The Equal chords problem

We identify three prompts related to: (i) tangent lines, (ii) arc lengths and (iii) a no typical configuration for similar triangles. They depend on how the episodes in which technology is used to solve problems are framed: *Comprehension Episode*, *Problem Exploration Episode*, *The Searching for Multiple Approaches Episode* (Santos-Trigo & Camacho-Machín, 2013). These prompts serve as resources for promoting the development of Mathematical Understanding for Secondary Teaching, offering opportunities to reflect on the mathematics related to them.

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References

- Heid, M., Wilson, P. S., & Blume, G. W. (Eds.). (2015). *Mathematical Understanding for Secondary Teaching: A Framework and Classroom-Based Situations*. United States of America: NCTM and IAP.
- Santos-Trigo, M., & Camacho-Machín, M. (2013). Framing the use of computational technology in problem solving approaches. *The Mathematical Enthusiast*, 10(1&2), 279-302.