STUDENT'S ATTEMPT TO SOLVE SEVERAL-STEP PROBLEMS IN PROBABILITY

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The main focus of the research is on student's meaning-making process when working with several-step problems in probability. These problems can be introduced in connection with stochastic phenomenon with *simultaneous stochastic objects* or in *causal stochastic situations.* The throwing of two dice exemplifies the first, while the device Binostat exemplifies the latter. The participants are students in lower secondary school. In a survey by Green (1983) a total of 1620 students from lower secondary school participated. The written test used consisted of problems in probability. One of the problems was a three-step problem with a robot (the Robot problem). Only 9% of the participants were able to solve this problem. In a research by Fischbein (1975) a total of 42 students from lower secondary school used a set of experimental devices when working with different problems in probability. Two three-steps problems were included. As many as respectively 58% and 69% had a correct response to these problems. As a part of my research 168 students undertook a written test where the Robot-problem was included. A significant higher percentage of these students had a correct response to the Robot-problem than in Green survey. In the main part of my research pairs of students works in an ICT-environment with both simultaneous and causal stochastic problems. This part of the research is not finished but the analysis of the data collected so far indicate that students in lower-secondary school are quite able to solve the chosen causal problems. The simultaneous several-step problems seem to be much harder for the students. Earlier research by Pratt (1999) and Stohl (2000) show that even young children construct important intuitions about simultaneous two-step problems. I wants my research to dig deeper into students understanding of the multiplicative relationship involved in several-step problems in probability. The presentation will show the software that is developed so far aimed at being helpful for the students in their meaning-making process. This includes the software *Flexitree* and *Spinners*.

References

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