THE KNOWLEDGE BASE AND ITS USE DURING RESEARCH ON PROBLEM SOLVING: A COMPARISON OF HIGH ACHIEVING AND LOW ACHIEVING HEALTH SCIENCES STUDENTS

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The performance during solving research problems of high achieving (HA) and low achieving (LA) students was compared using a think-aloud procedure. For the identification of HA and LA students test scores on two midterm statistics examinations and a judgment of a statistic tutor who worked during two semesters with the students on an introductory statistics course were used. The performance of problem solving activities was recorded while the students were working on two research problems. Students were stimulated to solve these problems first in a free recall situation without any help. This situation was followed by prompting the students to the knowledge base that was relevant for the research problem at hand. All problem-solving sessions were recorded on audiotape. These tapes were transcribed and analysed using a system for coding protocols. The coding schedule used provides for

(a) identification of information,

(b) control or management,

(c) generation of new information,

(d) metacognitive knowledge use and

(e) error.

Detailed analysis of the problem-solving protocols indicated striking differences between the two groups but also within each of the groups. Bad problem-solving strategies were observed in both groups, indicating that the availability of core knowledge does not automatically leads to good problem-solving behaviour. The consequences of the observations for teaching and learning of statistics as well for the procedures of knowledge assessment are discussed.