**Are we reaping the didactical value of Heuristic V reports? Improving Teacher Training strategies by researching students’ difficulties**

**What went wrong? Exploring students difficulties with heuristic V reports towards teacher training improvement**

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Heuristic V reports are acknowledged globally as educational resources that can promote meaningful learning by assisting students in integrating new information into existent knowledge. The case study to be reported here focuses on exploring the didactic value of heuristic V reports by investigating students’ difficulties that emerged during one laboratory activity (‘DNA extraction’). This activity involved the production of students’ individual heuristic V reports in the context of 10th grade biology classes taught by two pre-service teachers. Qualitative analysis was undertaken of 20 individual reports and one semi-structured group interview involving seven students. Results indicate that one major obstacle towards meaningful learning is related to students’ difficulties in formulating adequate research questions. Of the 20 students, 4 did not formulate a research question at all. Of the remaining 16 students, only 50% were able to formulate ‘researchable questions’ - that is, questions that (i) establish comparisons, (ii) establish cause-effect relationships, (iii) make predictions and / or hypotheses or (iv) seek to deepen understanding of a phenomenon through systematic exploration. Finally it is worth noting that only 6 students’ structured their conclusions in alignment with the formulated research questions. Students’ lack of awareness of the fundamental role of the research question in heuristic V reports, and their fear in formulating higher cognitive questions (since this would imply a risk in writing poor reports) was also stated during interviews. Based on these results, specific recommendations for teacher training strategies focused on developing students’ questioning skills are outlined.

**Keywords**

Heuristic V Report, Science Education, Didactics of Biology, Secondary Level, Questioning