Author	Garcia-Palanca, Carmencita
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ABSTRACT

This study explored the changes in knowledge level and in structural complexity of knowledge held by students about chemical equilibrium, oxidation-reaction and electrochemistry by using the process workshop approach. The study also attempted to determine if changes in knowledge restricting is affected by learning mode employed by students.

The study was quasi-experimental in research design, involving twenty freshman B.S. Environmental Science students enrolled in Chemistry 18/L during the Second Semester of AY 2002-2003 at the College of Science, Palawan State University in Puerto Princesa City.

The Inventory of Learning Process, pre- and post-intervention cognitive test, pre- and post-intervention concepts maps, and interviews served as the instruments for gathering data. Two meaning learners (MLs) and two rote learners (RLs) were selected for the qualitative aspect of the study.

The teaching method used in the study was the process workshop approach. There were seven process workshop activities, two in chemical equilibrium, three in oxidation-reduction and two in electrochemistry.

To determine the changes in knowledge level, student subjects took the pre- and post-intervention cognitive test. The cognitive test consisted of thirty-seven open-ended multiple choice-type of questions. The pre- and post-intervention concept maps determine the students' knowledge structure before and after intervention. Metacognitive reflections of two MLs and two RLs were added after the intervention for insights on how these groups learn new concepts.

Findings revealed that MLs have a higher pre-intervention knowledge level compared to RLs based on their pre-intervention cognitive test scores. MLs and RLs have comparable overall pre-intervention knowledge structures based on their overall pre-intervention concept map scores.

The study also revealed that both the MLs and the RLs improve their knowledge level after the process workshop activities in the selected chemistry topics. But the MLs improved their knowledge level far better than the RLs after the process workshop activities.

The study also showed that both the MLs and the RLs improved their knowledge structure after the process workshop activities in the three topics. But the MLs have more complex knowledge structure than the RLs.

Furthermore, turning and restricting were the predominant nature of structural change in both MLs and RLs after the process workshop activities in the three selected topics. In turn, the earlier knowledge framework was completely revamped or change by the addition of an introduced concept, resulting in the construction of an entirely new knowledge framework. But in restricting, the earlier knowledge framework was simply modified and rearrange because of the addition or deletion of a concept in the first one or two hierarchies of the concept map.