

Designing the Lesson Instructional Plans for Exploring the STEM Education and Creative Learning Processes to Students' Logical Thinking Abilities with Different Learning Outcomes in Chemistry Classes

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Abstract : The aims of this are compared between the students' logical thinking abilities of their learning for designing the 5-lesson instructional plans of the 2-instructional methods, namely; the STEM Education and the Creative Learning Process (CLP) for developing students' logical thinking abilities that a sample consisted of 90 students from two chemistry classes of different learning outcomes in Wapi Phathum School with the cluster random sampling technique was used at the 11th grade level. To administer of their learning environments with the 45-experiment student group by the STEM Education method and the 45-controlling student group by the Creative Learning Process. These learning different groups were obtained using the 5 instruments; the 5-lesson instructional plans of the STEM Education and the Creative Learning Process to enhance the logical thinking tests on Mineral issue were used. The efficiency of the Creative Learning Processes (CLP) Model and the STEM Education's innovations of these each five instructional lesson plans based on criteria are higher than of 80/80 standard level with the IOC index from the expert educators. The averages mean scores of students' learning achievement motives were assessed with the Pre and Post Techniques and Logical Thinking Ability Test (LTAT) and dependent t-test analysis were differentiated between the CLP and the STEM, significantly. Students' perceptions of their chemistry classroom environment inventories with the MCI with the CLP and the STEM methods also were found, differently. Associations between students' perceptions of their chemistry classroom learning environment inventories on the CLP Model and the STEM Education learning designs toward their logical thinking abilities toward chemistry, the predictive efficiency of R2 values indicate that 68% and 76% of the variances in students' logical thinking abilities toward chemistry to their controlling and experimental chemistry classroom learning environmental groups with the MCI were correlated at .05 levels, significantly. Implementations of this result are showed the students' learning by the CLP of the potential thinking life-changing roles in most their logical thinking abilities that it is revealed that the students perceive their abilities to be highly learning achievement in chemistry group are differentiated with the STEM education of students' outcomes.

Keywords : design, the lesson instructional plans, the stem education, the creative learning process, logical thinking ability, different, learning outcome, student, chemistry class

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