

***Chemistry teacher's intention to embed triplet representations in classroom teaching practice***

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Since early eighties, chemistry educators argued the importance and success of teaching/learning chemistry with the idea of triplet representations (macro-micro-symbolic chemistry). Many studies have concluded with successes of teaching/learning chemistry with the triplet representations explicitly, for instance, experimental study compared students' chemistry conceptual understanding between one group of control students who learn chemistry by traditional method and the experimental group of students who learn chemistry with the approach of triplet representations, findings come to positive conclusions saying that students learn chemistry with the idea of triplet representations develop better conceptual understanding.

Although teaching/learning chemistry with the idea of triplet representations have been proven with good results, especially on students' cognitive learning outcomes, it does not seem to be a common classroom teaching practice. Teachers' intentions to adopt a novice teaching/learning approach could be grounded on different concerns, maybe students' learning outcomes, maybe teaching difficulties, maybe teaching resources, etc. In this case,

students' learning outcome seems not to be the trivial factor for chemistry teachers having no/low intention to embed triplet representations in their classroom teaching.

This exploratory study will investigate the factors which affect chemistry teacher's intention to embed triplet representations in his/her classroom teaching. Some speculated factors will be used as part of the framework of this study, but other factors will be most likely emerged throughout the study. There are three major speculated factors: 1. How much and how deep does chemistry teacher understand the triplet representations, and how does such degree of understanding affect teacher's intention of embedding triplet representations in his/her classroom teaching? 2. How competent is chemistry teacher to plan/design and implement triplet representations, and how such degree of competency affect the intention? 3. How much does chemistry teacher value his/her students' learning outcomes, and how do such learning outcomes affect the teacher's intention?

This is a qualitative study and mainly using case study design. Samples of this study are in-service teachers who have initial intentions to embed triplet representations in his/her classroom teaching. Teachers' backgrounds are varied from novice teacher to very experienced teacher, they are basically convenient and purposive samples, recommended by local chemistry educators. Data collection will be conducted through different phases and by different means. Teacher's understanding of triplet representations will be initially measured

by a test paper, and which will be most likely adapted from previous studies. Gradual changes of understanding of triplet representations and how it affect teacher's intention will be investigated through informal interviews after classes. During the phase of planning/designing triplet representations lesson, I will conduct formal semi-structured individual interviews with each chemistry teacher in order to unpack their competencies and how such competencies affect their intentions. I will be a participant observer during the implementation phase, field notes, artefacts and video recordings will be used for secondary data collection. Informal interviews will be conducted to add on the ideas how competent the teacher implements his/her triplet representations lesson. After class chat will also be conducted with teachers in order to explore if students' learning outcomes are collected formatively and how such affect teacher's intention.