

*Abstract Number: 20235*

## **The Ability of Teachers In Learning Design Through Lesson Study at Science Teachers**

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One of the educational instruments that determine success in the learning process is the teacher. The existence of teacher is considered very strategic in realizing the goals of national education, considering its existence is very important it needs training, workshop and guidance comprehensively and continue to improve their ability. One way to improve teachers' ability is through lesson study. The purpose of this research is to improve the ability of science teachers in designing learning through lesson study. The technique of collecting data were conducted by giving questionnaires to the students, in-depth interview and observation. The results of data collection were analyzed deskriptive qualitatively. Based on the results of the analysis shows that there was an increase in the teachers' ability in designing learning through lesson study.

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## Lesson Study into the Role of Formative Assessment in Strengthening Pupils Understanding of Simple Circuits by a PLC

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A Professional Learning Team from Innova Primary School carried out an investigation to understand students' ability to communicate their understanding involving simple electric circuits.

The team sought to uncover gaps in literature and surface prevailing alternative models that the students in the study have about simple electrical circuit. The team designed a science assessment that was administered to 219 Primary Five students for this purpose.

From the initial investigation, the team confirmed alternative conceptions that students had on simple circuits fits into existing known model. In addition, the investigation revealed students had a lack of understanding of the working principles of a filament bulb.

The team was further guided by the following research question:

How can formative assessment be designed to improve students' abilities to communicate their understanding involving simple electric circuits?

For this purpose, the team adopted a Lesson Study methodology to study the impact of an intervention lesson used to remediate poor conceptual understanding in simple circuits.

The intervention lesson leverage on the use of formative assessment probe namely Two-tiered questioning, Annotated Drawing and Brain Writing. Further, a unique coding scheme was designed for Content Analysis of the student's responses from this lesson.

From the Lesson Study of the remediation lesson, it was observable that the students had significantly improved their proficiency in scientific communication of simple electric circuits. However, the team concluded that students' ability to communicate key ideas varied across the various ability groups

Research by Black and Wiliam (1998) and others who have shown that formative assessment significantly improves student learning and is one of the most effective ways to close the achievement gap. The team's use of formative assessment allowed students to make their ideas visible to themselves as well as their peers and teachers. This helped students be more aware of their own thinking and more apt to communicate their understanding of simple circuits.

An unintended impact of this investigation was the teachers reflected that they were more aware of their students' abilities and this has created a deeper awareness of looking from the students' perspectives. The PLT journey had raised the teachers' competency in the use of Formative Assessment for improved formal instructions.

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## Elements for the Design of Online Professional Learning Community with Lesson Study Approach

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This research paper aims to synthesize elements of the professional learning community (PLC) and the process of starting a professional learning community. The information presented here consists of information derived from the study of teachers' opinions toward the community of professional learning. This had been done by collecting of six teachers' feedbacks from a school that operates a professional learning community teaching kindergarten, elementary and secondary, and three feedbacks from teachers who teach elementary and secondary levels which have not yet begun the process of professional learning community. By interviewing teachers and studying documents from the schools, there was conducted PLC on the issues of designing, teaching and learning and lesson study approach. The results of data analysis showed that the process started with university staffs or professionals providing basic knowledge about PLC, and then school personnel set up action plans by dividing the teachers according to their grade level. Roles of members were defined in order to appoint schedule and make action plans such as observation for classroom teaching, exchange of knowledge. After the implementation of the plan, there would be a group meeting of teachers presented the problems to other members and then found a solution. In addition, the school organizes meetings among each level to send representatives to present the results of the lesson study. It also found that the components to be considered when developing an online professional learning community model within the school were: 1) School personals include: 1.1) Administrators play a role in setting policies that facilitate the development of lesson study. 1.2) Teachers play a role in lesson study approach. 1.3) Supportive groups play a role in supporting lesson study approach. 2) School environment is a conducive environment for community action such as familiarity among team members, an atmosphere of non-formal interchange learning, collaboration between personals, trust in team and helpfulness to each other. 3) Selected technologies to be used in various actions, including support for learning together, support for distribution, feedback, support for collaborative work, helping, sharing knowledge, supporting co-thinking, expressing ideas, presenting works, and creating learning and evaluation of learning to enhance the learning effectiveness of the teachers attending online professional learning community.

In addition, the study found that the online learning community, based on the concept of joint learning development, would be one of possible ways to promote the teaching of STEM education. Because the instructors at the same level are grouped together to plan and share their learning about the development of STEM lesson plan, science, mathematics, and technology teachers can see the link of the content and can provide instruction that focuses on situations, problems or issues related to daily life. As a result, learners have a knowledge connection that leads to meaningful learning and skill development.