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# Problem Solving in an Online Project Based Learning for Biology Subject

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## ***Abstract***

Problem solving is the way by which solutions are developed to remove an obstacle from achieving an ultimate goal. However, students' 21st century skill-focused problem-solving skills are more than just the ability to solve specific problems. Successful problem solving requires a person to be able to express opinions, argue based on evidence and be able to apply biological knowledge to real-life problems. This requires the activation of a project-based learning strategy through the application of the 4C elements, namely communication, collaboration, critical thinking and creativity. An analytical study to identify problems through observation, document analysis and interviews was conducted on 7 students involved in Project Based Learning. The objective of the second level study is to test the initial theory by using the ISP Model through the method of observation, interview and document analysis. The objective of the third level study is to refine the findings or theories implemented through interviews, observations and document analysis. This study is a Qualitative Case Study to understand more deeply about the application of 4C' elements in online Project Based Learning to help students' problem solving skills for the subject of Biology. All data obtained through interviews, observations and document analysis were analyzed using the Triangulation technique. This finding concludes that there is a need to apply 4C' elements in online Project-Based Learning for Biology Subjects. This concept paper provides a framework that enables the construction of strategies and meaning that will be done through modelling, guidance and strategy application of 4C elements in project-based learning. Project-based learning (PBL) is an educational model that prioritizes projects in teaching and learning which is also an instructional method that allows students to build skills and gain knowledge through projects, cooperative learning and 'hands on' techniques. Through project implementation, students can build knowledge and skills through the inquiry process. The integration of project-based learning may encourage students who are unable to solve a problem by learning the strategies proposed in the phase that has been set.

***Keywords :*** *4C's Elements, Biology, Inquiry, Project- Based Learning, Problem Solving, Strategy, Skills, Inquiry*

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