

Collaborative Learning Factors and Academic Performance in Physics of Senior High School Students Toward an Enhanced Collaborative Learning Strategies Plan

Alely D. Balotcopo

<https://orcid.org/0009-0000-1824-1038>

alelybalotcopo@gmail.com

Philippine Christian University Manila

1648 Taft Ave, Malate, Manila, 1004 Metro Manila, Philippines

Abstract

Physics develops critical thinking and problem-solving skills essential in various fields such as medicine, technology advancement, and engineering. However, its complexity and reliance on traditional, memorization-based teaching methods often hinder student progress, leading to poor performance. Many STEM instructors use discussions that limit interaction, causing isolation and learning struggles in physics. This issue is particularly concerning in the Philippines, where physics is crucial for higher education and career prospects. With this regard, this study aims to describe the correlation of collaborative learning factors in terms of positive interdependence, individual and group accountability, interpersonal and small group skills, face to face promotive interaction, and group processing to the perceived and actual academic performance of 112 grade 12 STEM students (48 female 64 male students) in Recto Memorial National High School. The study used a descriptive-correlational research design and selected the respondents through convenience sampling. It revealed that the positive interdependence ($r = .654$), face-to-face promotive interaction ($r = .710$), and group processing ($r = .716$) of collaborative learning factors show a strong correlation with the respondents' actual learning attainment. Meanwhile, individual and group accountability ($r = .420$) and interpersonal and small-group skills ($r = .511$) exhibit a moderate correlation. Regarding perceived learning attainment, group processing ($r = .761$) demonstrates a strong significant correlation, while positive interdependence ($r = .374$) shows a weak correlation. A moderate correlation is observed in individual and group accountability ($r = .572$), interpersonal and small-group skills ($r = .597$), and face-to-face promotive interaction ($r = .567$). The researcher suggests that students participate in regular group evaluations, feedback sessions, and collaborative projects. The value of mutual dependence and collaboration must be enhanced by giving complementary roles within groups. Moreover, consistently integrating collaborative learning into the curriculum should be highly considered to maximize its benefits.

Keywords: collaborative learning, academic performance, Physics, STEM students, group interaction