



## **Increasing Competency 4C using The G-Suite Application for Education**

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### **Abstract**

4C competencies (Communication, Collaboration, Critical Thinking and Problem Solving, Creativity and Innovation) is the learning achievement needed at this time. Learning in the Industrial Revolution 4.0 era provides an opportunity to increase 4C competencies without space and time limits, by utilizing information and communication technology. This study aims to use the G-Suite for Education as a substitution of learning models and or strategies to improve 4C competence in the Wawasan Pedagogi Course in the Physics Study Program of Mathematics and Natural Science Faculty of Sebelas Maret University. The research mechanism includes two strand cycles, namely learning with a student-centered learning (SCL) approach as follows: 1). Classical and 2). Online using G-Suite for Education. Reflections from the two research cycles show students could follow both classical (face-to-face) and online learning strategies, in the delivery of material and or assessment of learning outcomes.

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## INTRODUCTION

To meet the needs of graduate learning outcomes according to the profile as an educator, the Physics Study Program of Mathematics and Natural Science Faculty of Sebelas Maret University specifically offers Wawasan Pedagogi Courses as two credits elective courses that are held in the even semester each year. The purpose of the Wawasan Pedagogi Courses was to provide educational knowledge and its implementation so that student who has an interest in becoming educators has basic knowledge in planning, implementing, managing and evaluating educational / learning programs both independently and / or in groups (Legowo, 2019).

The era of the industrial revolution 4.0 encouraged the process of student interaction with lecturers and sources of learning in a learning environment in a network (online). Learning was no longer limited by time and space. The learning process could be done anytime and anywhere. Learning could be a blend between online and classical (blended learning) or be online full / massive open online course (MOOC) (Legowo, 2019). SCL learning approach in the form of face to face (F2F) and web based (WB) could be held to complement each other and or replace each other face to face activities, structured assignment activities and independent activities according to the form of learning used (Wahyuningsih, 2016).

The Google for Education (G-Suite for Education) application made it easy to organize cloud-based learning, simplifies education administration and encourages lecturer and student interaction more effectively and efficiently. G-Suite for Education could function as supplement, complement or substitution. The purpose of this study was to improve the 4C competence of Wawasan Pedagogi students in the Physics Study Program of Mathematics and Natural Science Faculty of Sebelas Maret University with online learning interactions using the G Suite for education application.

## METHODS

G-Suite for education was Google's service for the world of education ranging from basic

education, secondary education to higher education. This Google service was a solution for integrative and collaborative communication in learning activities (Bahtiar, 2014).

The Wawasan Pedagogi Course in this study was conducted using a SCL approach with collaborative and cooperative learning methods. The strategy chosen was lecture, class discussion, and focus group discussion (FGD) which was held classically and online / online. Assessment of student learning outcomes includes aspects of attitudes, knowledge and skills using a portfolio of individual and or group work (Legowo, 2019).

This research was a Class Action Research model of Kemmis and Taggart in two strand cycles (Sumini, 2010). Each cycle refers to the Semester Learning Plan and the Learning Contract which was divided into the classical learning cycle strand and the online learning cycle strand.

## RESULT AND DISCUSSION

Learning activities Wawasan Pedagogi as elective courses in Physics Study Program has been carried out according to the even semester semester 2018/2019 schedule. The participants consisted of students from year 2014, 2015, and 2016 totaling 37 students. Evaluation of the implementation of classic learning activities was carried out at the end of the 1st strand cycle and the implementation of online learning activities was carried out at the end of the 2nd strand cycle.

Online learning was carried out in the form of collaboration and communication using the google document and google slide applications, as shown in Figure 1.



**Figure 1.** Online collaboration and discussion using Google Slides

The example of class interaction in Figure 1 shown students could contribute to adding slide

citations while providing comments and answers to online discussions. The lecturer could authentically assess all class interactions because there was a digital footprint of all participants' activities.

The digital footprint of online collaboration in Figure 2 could be used as a basis for assessing students' cognitive abilities and contributing to jointly prepared papers.

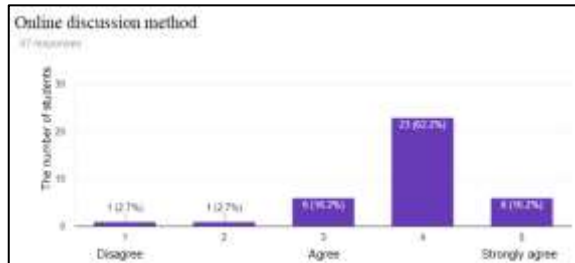
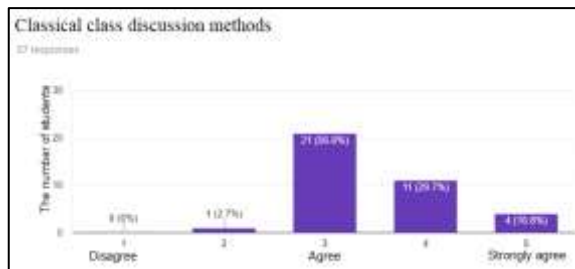


**Figure 2.** Collaboration of online papers using Google Document

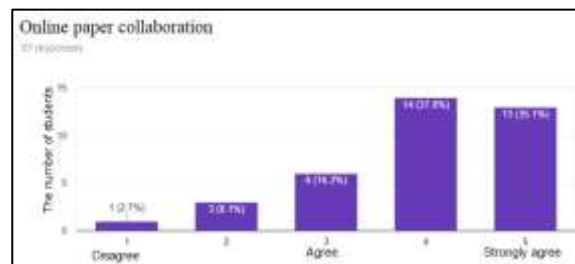
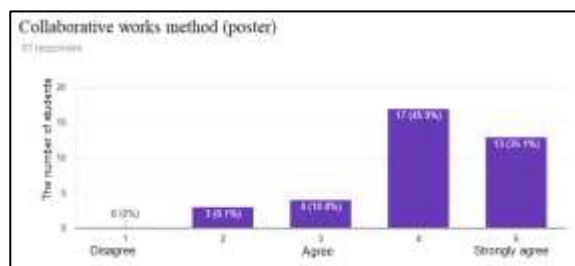
The ability to analyze problems could be followed by lecturers from the online paper preparation process. Student soft skills, especially interpersonal and intrapersonal competition could also be improved because online interaction could be done without space and time restrictions. The implementation of the 1st and 2nd strand cycles in learning shown that students could follow recovery with conventional learning methods (lectures and offline discussions) and or with online learning methods (Figure 3). As many as 56.8% of students stated that they could follow the learning well in the conventional learning 1st strand cycle. As many as 62.2% of students were able to take part in online in the 2nd strand cycle.

The assignment of group collaboration in the form of poster making could be well followed by more than 45% of students in the 1st strand cycle. The implementation of the 2nd strand cycle in the form of online paper collaboration and online discussion could be well followed by more than 70% of students.

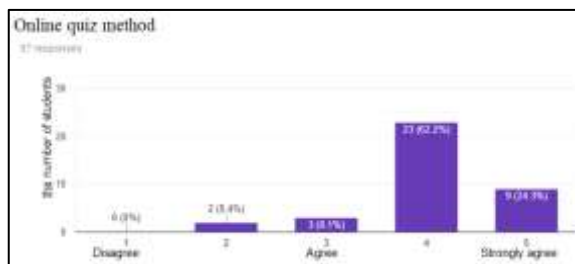
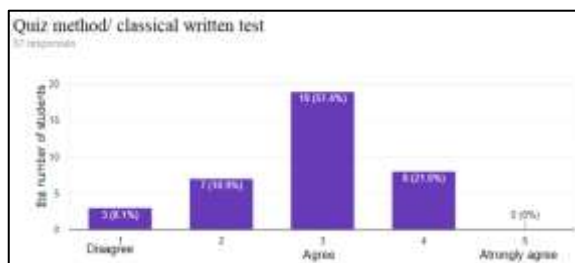
For conventional tests (paper and pencil test) on Quiz 1 and Middle Semester Exams could be followed well by more than 50% of participants. Authentic assessment in the 2nd strand cycle online was preferred by students, as much as more than 80% of students (Figure 4).



**Figure 3.** Learning Method



**Figure 4.** Assignment Method



**Figure 5.** Learning Assessment Methods

The results of evaluating the implementation of the 1st and 2nd strand cycles in learning shown that students could follow recovery with conventional learning methods (lectures and offline discussions) and or with online learning methods (online learning interactions) well.

## CONCLUSION

Collaborative and cooperative learning methods with lecture strategies, class discussions, and FGD held classically and online / online could be well followed by students. The results of the assessment of classroom interactions and assignments show that students have the ability to do 4C better on online learning than classically.

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