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Flipped Classroom and Collaborative Learning Model and Its Effectiveness: Research and Development

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Abstract. This research uses a qualitative approach. The research method used is research and development using a combination of development models from Borg & Gall and 4D Thiagarajan. This research aims to find out how the development, feasibility, and effectiveness of the learning model is being developed. This research uses a sample of students majoring in English. The feasibility test was carried out by three experts: design, media, and learning materials experts. The effectiveness test was carried out by comparing the results of the pre-test and post-test. This research shows that the model developed is suitable for application in learning. Apart from that, the results of the comparison of results show that the post-test value is 7.84 greater than the pre-test result. This shows that the model developed is effective. This research can be used as a reference for policymakers in higher education, and this learning model is feasible to implement. Further research can be carried out for courses with other development models.

Keywords: flipped classroom, collaborative learning, rnd, borg & gall and 4d

INTRODUCTION

Academic writing competency is needed by students to write scientific ideas and attitudes in writing through scientific work. These ideas can be written down in writing based on scientific methods. These ideas are expressed in paragraphs consisting of several effective sentences (Widyartono, 2021). Students need to master competency because several advanced courses require writing skills to complete their assignments. Not only writing is a course, but also a competency to write a thesis proposal and a final assignment. Intensive course learning has been carried out online during the pandemic. The results of the midterm exam 2021/2022 showed that the students who got below 70 were 104 from 170 samples. The results of the final exam showed that 83 out of 170 samples got below 70.

Changes in learning models before the COVID-19 pandemic, face-to-face learning became online learning during the COVID-19 pandemic. These changes make learning activities less effective due to the readiness of lecturers, students, and campuses (Maqableh & Alia, 2021; Tang et al., 2021). These changes have negative impacts (Debbarma & Durai, 2021; Engelhardt et al., 2021). Most Universities apply the same thing. However, after the COVID-19 pandemic, learning changed to vary.

Other research findings show that several factors that influence writing anxiety are the assignments that must be done in class. This factor is the most dominant in writing anxiety experienced by students. Research that supports this study reports that male and female students suffer from anxiety due to a lack of linguistic competence (Salikin, 2019). Collaborative work in pairs or small groups for idea development and essay construction is a common strategy adopted to minimize anxiety (Jawas, 2019). Based on the survey and several studies above, it can be concluded that several factors that cause low writing results are large classes, insufficient time, anxiety, and lack of linguistic competence. So a new learning model is needed to improve learning outcomes.

The world of education is always related to technological developments. One of them is the emergence of the blended learning model. Blended learning is a learning model that combines online educational materials and online interaction opportunities with place-based face-to-face learning methods. Horn et al., (2014) stated that Blended Learning is any formal educational program in which students learn at least in part through online learning, with some element of student control over time, place, path, and/or pace. Blended Learning has several models, namely 1) the rotation model consisting of station rotation, lab rotation, flipped classroom, and individual rotation, and 2) Fle The Flipped Classroom (FC) model is part of the Station Rotation method. The traditional lecture method is reversed so that students receive initial learning material at home and class time is used for cooperative learning

(Saira et al., 2021). The Flipped classroom learning model is based on online videos and audio lectures provided outside the classroom and problem-solving discussion sessions conducted in the classroom (Graham et al., 2013). The tools used for the flipped classroom model include learning management systems and social media.

Meanwhile, collaborative learning (CL) can be defined as a set of teaching and learning strategies that promote student collaboration in small groups (two to five students) to optimize their own and each other's learning (Johnson & Johnson, 1999). Students can utilize each other's resources and skills. Cooperative learning is based on a model where group members actively interact and share different experiences to gain new knowledge. Group members depend on each other and assume their respective responsibilities. Collaborative learning activities can include collaborative writing, group projects, joint problem-solving, debates, study teams, and other activities.

Several studies strengthen the solutions that will be carried out in research and development. Estrada (2019) revealed significant differences in students' average scores; those who participated in the flipped classroom scored higher than students who followed the traditional methodology. Elmaadaway (2018) revealed that participants in the experimental group were more active and involved compared to the control group. In terms of classroom engagement specifically, participants in the experimental group demonstrated greater behavioral and emotional engagement. Blázquez et al. (2019) The flipped classroom teaching methodology compared to the traditional lecturer-based learning methodology has shown itself to be a more effective tool regarding academic performance evaluated quantitatively and qualitatively about Social Work education at the university level. Various studies on flipped classrooms conducted for example,(Awidi & Paynter, 2019; Haghighi, 2019; Strelan, 2020; Webb, 2020) show that flipped classrooms can improve students' cognitive and affective abilities. x model, 3) A la Carte model, and 4) Enriched virtual model.

Several studies relevant to collaborative learning methods were added. Findings from research Tan & Vicente (2019) students can apply theory in real-life situations, improve the ability to identify needs and opportunities, develop actual products/services based on identified needs, work with interdisciplinary teams, improve interpersonal skills, develop leadership skills, improve communication skills, and encourage them to continue learning. Other research shows that collaborative learning instills independence, responsibility, self-confidence, motivation, skills, and positive interdependence necessary for the promotion of autonomy (Yasmin & Naseem, 2019). Several other studies on collaborative learning show that collaborative learning can facilitate learning and improve students' cognitive and affective abilities (England et al., 2020; Gemmel et al., 2020; Oswald & Zhao, 2021; Shayakhmetova et al., 2020).

After the final results of the intensive writing course, several factors that influence student writing results through surveys and relevant research results are presented. Researchers decided to develop an Intensive Writing flipped classroom learning model based on collaborative learning. The researchers developed an Intensive Writing flipped classroom learning model based on collaborative learning to improve student writing outcomes in intensive writing courses. The model's development, appropriateness, and effectiveness were analyzed based on survey results and relevant research results.

METHODS

The research was conducted in the odd semester from 2021-2022 to the 2023-2024 academic year. There were 170 students in the English education program involved. The approach to this research is qualitative because the data produced is in the form of documents, field notes, sayings, documents and so on which are presented in the form of words. Meanwhile, the research method used is development research called R&D (Research and Development). Education research and development are processes used to develop and validate educational products (Gall et al., 2003).

The development of an Intensive Writing learning model based on Flipped Classroom and Collaborative Learning refers to the stages of the research and development model that will be planned in this research following the flow of the Borg & Gall model by Meredith D. Gall, Joyce P. Gall, and Walter R. Borg (2003) and 4D model by Thiagarajan, Dorothy S. Semmel, and Melvyn I. Semmel (1974). The Borg & Gall stages used are Research and Collection Preliminary while the 4Ds are Define, Design, Develop, and Dissemination.

After all the activities carried out are completed, the next process is analyzing the data. Data analysis is an activity after data from all

Table 1. Material expert evaluation results

Min Score	Max Score	Score Result 1	2	3	4	5	Total Score	Average	Category
16	80	11	5	0	0	0	75	4.69	Very Good
25	125	21	4	0	0	0	121	4.84	Very Good
20	100	13	7	0	0	0	93	4.65	Very Good

respondents or other data sources has been collected. Qualitative data analysis uses the Miles and Huberman Model (1994) which consists of reduction, data presentation, and conclusion. The data reduction stage is the stage of reducing or simplifying the data so that it suits your needs and of course, it is easy to obtain information. Data obtained from interviews, surveys, observations, and so on certainly has a complex form. All the data that has been obtained is then grouped into very important, less important, and unimportant data. Data that is included in the unimportant and less data group is then discarded or not used, leaving data that is important. This data is by research needs and is considered capable of representing all the data that has been obtained. So it is easier to process to the next stage.

At this stage, the researcher can present data that has been reduced or simplified in the previous stage. Various forms of data presentation can be presented in the form of graphs, charts, pictograms, and other forms. So that this data collection can be more easily conveyed to other people. Apart from that, it also contains clear information and readers can easily get this information. The data presentation process is needed in qualitative data analysis to be able to present or display data neatly, systematically, and neatly arranged. At the conclusion-drawing stage, the data that has been compiled and grouped is then presented with a technique or pattern for concluding. This conclusion becomes the information presented in the research report and is placed in the closing section. The process of conclusion can be carried out when all the varied data is simplified, arranged, or displayed using certain media, only then can it be understood easily.

This quantitative data analysis was obtained by researchers during the research steps of expert evaluation, one-to-one student trials, small group trials, and field trials. Validity is carried out to test the feasibility and effectiveness of the learning materials and learning media developed. The scores obtained are analyzed using an assessment rubric consisting of several categories.

RESULTS AND DISCUSSION

The instrument has been declared suitable for use by the instrument validator, then the learning materials are evaluated by experts. Learning material products and instruments were given to experts for review to see their suitability so that they could be used in the research and development of Intensive Writing learning models based on Flipped Classroom and Collaborative Learning. Learning materials and instruments are handed over to material, instructional design, and learning media experts for evaluation. After evaluation, several parts need to be improved. Furthermore, the learning materials, instructional design, and media were revised according to suggestions and directions from experts.

One-to-one with student

The one-to-one test here was carried out on 3 randomly selected groups of students. Each group consists of 5 students. Group members are selected by the lecturer based on heterogeneous interests, abilities, attitudes, or characteristics. The method for selecting group members uses a single-statement Likert scale. Students are asked to choose one of five numbers on a Likert scale. Students are asked to form groups with numbers 1, 2, 3, 4, and 5 in each group.

Furthermore, each group member was given the same treatment, namely applying the learning model developed. Each group is given one unit of learning material from the intensive writing course which has been uploaded to the LMS. Students study the material, discuss it, and take formative tests individually based on the material provided. The next activity is face-to-face learning. After the lecturer evaluates the results of the formative test, the lecturer discusses and explains difficult material to students in the classroom. The lecturer provides similar difficult material for discussion in class. Students present, ask questions, and discuss with other groups and lecturers. The lecturer provides reinforcement and students take notes/summarize. After one unit of learning

material is completed, the lecturer gives a questionnaire to members of each selected group.

Table 2. Questionnaire answer score

Score	Frequency	Total Score
1	1	1
2	2	4
3	54	162
4	146	584
5	97	485

Evaluation results with small groups

The small group test was carried out on 8 randomly selected groups of students. Each group consists of 5 students. Group members are selected by the lecturer based on heterogeneous interests, abilities, attitudes, or characteristics. The method for selecting group members uses a single-statement Likert scale. Students are asked to choose one of five numbers on a Likert scale. Students are asked to form groups with numbers 1, 2, 3, 4, and 5 in each group. Furthermore, each group member was given the same treatment, namely applying the learning model developed. Each group is given one unit of learning material from the intensive writing course which has been uploaded to the LMS. Students study the material, discuss it, and take formative tests individually based on the material provided. The next activity is face-to-face learning. After the lecturer evaluates the results of the formative test, the lecturer discusses and explains difficult material to students in the classroom. The lecturer provides similar difficult material for discussion in class. Students present, ask questions, and discuss with other groups and lecturers. The lecturer provides reinforcement and students take notes/summarize. After one unit of learning material is completed, the lecturer gives a questionnaire to members of each selected group.

Table 3. Questionnaire answer score

Score	Frequency	Total Score
1	1	1
2	0	0
3	59	177
4	512	2048
5	228	1140

Field Evaluation

The field evaluation was carried out in the Intensive Writing class involving 16 groups, each consisting of 5 members. Product trials in field evaluations are carried out after the prototype with a revision process and previous trials, namely evaluation with small groups. The following are the test results from the Field Test Evaluation.

Table 4. Field Test Results

Score	Letter	Pre-Test Result	Post Test Result
90-100	A	0	1
80-89.9	A-	1	9
76-79.9	B+	0	20
72-75.9	B	10	11
68-71.9	B-	15	20
62-67.9	C+	31	17
56-61.9	C	19	2
45-55.9	D	4	0
0-44.9	E	0	0

Questionnaires were given to all students who had taken part in the Intensive Writing Learning Model Based on Flipped Classroom and Collaborative Learning.

Table 5. Questionnaire answer score

Score	Frequency	Total Score
1	0	0
2	9	18
3	324	972
4	782	3128
5	484	2420

After going through various revision processes, the results of the development were compiled after carrying out small-scale and large-scale field tests, namely the creation of the final product or final product in the form of an Intensive Writing learning model along with guidebooks and learning modules. This final product will later be used in learning. To analyze the effectiveness of developing an Intensive Writing learning model based on Flipped Classroom and Collaborative Learning, it is necessary to compare the results of the pre-test and post-test during the field test. Apart from comparing the results of pre-test and

post-test field tests, the author also calculated the results of questionnaires filled out by students after taking part in Intensive Writing lessons based on flipped classrooms and collaborative learning. The differences in pre-test and post-test results are as follows:

Table 6. Comparison of pre-test and post-test means

Test	Number of Participants	Average
Pre-test	80	64.80
Posttest	80	72.74

The process of developing this model is based on an analysis of the results of the mid-semester and final semester exams in the 2021/2022 academic year. In this analysis, it was found that 74% of students got grades below 72 (B), or 125 out of 170 students, based on mid-semester learning results. Meanwhile, the final semester learning results found that 62% of students got below 72 (B), or 105 out of 170 students. From the analysis of the questions, it was found that students still lacked mastery of some of the material. Meanwhile, from the survey, the lecturer explained the material well. Most of the material is still in the form of reading books. Lecturers give more assignments at home but provide little material to study at home. Students think that there is not enough time to study face-to-face (Zoom). Students also prefer to study and do assignments in groups.

Learning model before, during, and after preliminary research. Before the preliminary research, learning was carried out face-to-face. During the preliminary research, learning was carried out online. Meanwhile, after preliminary research, hybrid learning, one week face-to-face and one week online. The Intensive Writing learning model based on the flipped classroom and collaborative learning is the newest learning model that will be implemented for the Intensive Writing course. This learning model is important considering that there is no specific model that is used. Currently, lecturers combine conventional face-to-face and online learning models.

CONCLUSION

The research reveals that previous semester learning results were less satisfactory due to students struggling with understanding the material. The study suggests that lecturers have explained the material well, but students still prefer reading books and face-to-face learning. The Intensive Writing learning model, based on Flipped Classroom and Collaborative Learning, is a development of the existing model, combining Borg & Gall and 4D models. The model was validated by three expert validators and handed over to experts in learning materials, design, and media. After conducting pre-tests, learning with the model, and post-tests, the post-test scores showed an increase in learning outcomes, with a difference of 7.94, indicating the model's effectiveness in improving learning outcomes in Intensive Writing Courses.

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