ABSTRAK

RAHMI RAMADHANI. Pengembangan Model *Ethno-Flipped Classroom* dalam Meningkatkan Kemampuan *Informal Statistical Reasoning* dan *Self-Regulated Learning* Siswa Sekolah Menengah Atas. Disertasi. Medan: Program Pascasarjana Universitas Negeri Medan, 2024.

Model pembelajaran merupakan salah satu komponen pembelajaran yang penting dalam kesuksesan proses pembelajaran. Model pembelajaran yang diterapkan saat ini belum tervalidasi dengan baik, dan belum menerapkan pembelajaran bermakna dan memfasilitasi fleksibilitas dalam proses pembelajaran Integrasi konteks *ethnomathematics* menjadi penting dalam menerapkan pembelajaran bermakna, dan fleksibilitas dapat diperoleh dengan menggunakan model *flipped classroom* yang menawarkan dua fase pembelajaran. Konteks *ethnomathematics* yang tidak hanya artefak, namun juga mentifak memberikan kontribusi penting dalam menghadirkan pengalaman belajar yang kontekstual dan dekat dengan budaya serta tradisi siswa. *Fatalifusö* merupakan konteks mentifak yang dekat dengan budaya dan tradisi siswa khususnya di daerah Nias Pesisir yang dapat digunakan dalam konteks *ethnomathematics*. Integrasi *fatalifusö* sebagai bagian dari *ethnomathematics* dan fleksibilitas yang terfasilitasi oleh model *flipped classroom* memberikan kemudahan bagi siswa dalam meningkatkan kemampuan *informal statistical reasoning* dan *self-regulated learning*. Kedua kemampuan tersebut menjadi fokus penting dalam meningkatkan level kemampuan penalaran siswa yang rendah, khususnya yang berkaitan dengan statistika informal.

Merujuk pada pentingnya kontribusi konteks *ethnomathematics* dan model *flipped classroom* dalam pembelajaran matematika yang bermakna, maka perlu dilakukan pengembangan model baru yang dinamakan model *ethno-flipped classroom*. Model *ethno-flipped classroom* merupakan model yang mengintegrasikan konteks *ethnomathematics* (baik artefak maupun mentifak budaya) dengan konsep fleksibilitas pada model *flipped classroom*. Tujuan penelitian ini adalah (1) mengembangkan model *ethno-flipped classroom* yang valid, praktis, dan efektif untuk meningkatkan kemampuan *informal statistical reasoning* dan *self-regulated learning* siswa; (b) untuk mengeksplorasi perubahan kemampuan *informal statistical reasoning* dan *self-regulated learning* sebelum dan setelah diberi intervensi model *ethno-flipped classroom* pada level individu siswa dan individu item tes; dan (c) untuk menganalisis peningkatan kemampuan *informal statistical reasoning* dan *self-regulated learning* siswa setelah memperoleh pembelajaran model *ethno-flipped classroom*.

Pengembangan model *ethno-flipped classroom* menggunakan metode *development study* dengan model plomp. Hasil penelitian menujukkan bahwa seluruh komponen model *ethno-flipped classroom* dinyatakan valid baik secara konten maupun konstruk. Model *ethno-flipped classroom* juga dinyatakan praktis berdasarkan kriteria keterlaksanaan model yang memperoleh kategori “Baik”. Model *ethno-flipped classroom* memenuhi empat kriteria keefektifan; (1) ketercapaian tujuan instruksional 87%; (2) kemampuan guru mengelola pembelajaran kategori “Baik”; (3) partisipasi waktu ideal aktivitas siswa; dan (4)

respon positif siswa 95%. Temuan lainnya adalah terdapat perubahan positif pada kemampuan *informal statistical reasoning* dan *self-regulated learning* ditinjau dari level individu siswa dan level item tes/angket. Temuan diperkuat dengan hasil uji hipotesis dimana terdapat peningkatan yang signifikan kemampuan *informal statistical reasoning* dan *self-regulated learning* siswa setelah diperoleh intervensi model *ethno-flipped classroom*. Implikasi penelitin ini berupa model *ethno-flipped classroom* yang dapat meningkatkan kemampuan *informal statistical reasoning* dan *self-regulated learning* berdasarkan level kompetensi siswa. Berdasarkan hasil temuan tersebut, maka model *ethno-flipped classroom* direkomendasikan untuk diterapkan lebih luas dan diintegrasikan pada pembelajaran diferensiasi untuk mendukung implementasi Kurikulum Merdeka.

Kata Kunci: *Ethnomathematics, Fatalifusö, Flipped Classroom, Informal Statistical Reasoning, Self-Regulated Learning*

ABSTRACT

RAHMI RAMADHANI. Development of an Ethno-Flipped Classroom Model for Improving the Informal Statistical Reasoning Ability and Self-Regulated Learning of High School Students. Dissertation. Medan: Postgraduate Program, State University of Medan, 2024.

The learning model is one of the most important components for the success of the learning process. The current learning model has not been well validated, has not implemented meaningful learning, and facilitates flexibility in the learning process. The integration of ethnomathematics is important in implementing meaningful learning, and flexibility can be achieved by using a flipped classroom model that provides two phases of learning. The ethnomathematics context, which includes not only artifacts but also mentifacts, makes an important contribution in presenting learning experiences that are contextual and close to the students' culture and traditions. Fatalifusö is a mentifact context that is close to the culture and traditions of students, especially in the Nias area, which can be used in an ethnomathematics context. The integration of fatalifusö as part of ethnomathematics and the flexibility facilitated by the flipped classroom model make it easy for students to improve their informal statistical reasoning and self-regulated learning skills. These two skills are important for improving students' low-level reasoning skills, especially those related to informal statistics.

Given the importance of the contribution of the ethnomathematics context and flipped classroom model to meaningful mathematics learning, it is necessary to develop a new model called the ethno-flipped classroom model. The ethno-flipped classroom model integrates the ethnomathematics context (both cultural artifacts and mentifacts) with the concept of flexibility in the flipped classroom model. The objectives of this study were (1) to develop a valid, practical, and effective ethno-flipped classroom model to improve students' informal statistical reasoning and self-regulated learning skills; (b) to explore changes in informal statistical reasoning and self-regulated learning skills before and after the intervention of the ethno-flipped classroom model at the individual student level and individual test items; and (c) to analyze the improvement of students' informal statistical reasoning and self-regulated learning skills after learning the ethno-flipped classroom model.

The ethno-flipped classroom model uses a developmental study method with the Plomp model. The results showed that all components of the ethno-flipped classroom model were valid for both the content and construct. The ethno-flipped classroom model was also declared practical based on the model implementation criteria, which obtained the "Good" category. The ethno-flipped classroom model met four criteria of effectiveness; (1) 87% achievement of instructional goals; (2) teacher's ability to manage learning in the "good" category; (3) ideal time participation of student activity; and (4) 95% positive student response. Another finding is that there are positive changes in the ability of informal statistical reasoning and self-regulated learning at the individual student and test item/questionnaire levels. The findings are strengthened by the results of hypothesis testing, where there was a significant increase in students' informal statistical

reasoning and self-regulated learning skills after the ethno-flipped classroom model intervention. The implication of this research is that an ethno-flipped classroom model can improve the ability of informal statistical reasoning and self-regulated learning based on students' competency levels. Based on these findings, the ethno-flipped classroom model is recommended to be more widely applied and integrated in differentiated learning to support the implementation of the Merdeka Curriculum.

Keywords: *Ethnomathematics, Fatalifusö, Flipped Classroom, Informal Statistical Reasoning, Self-Regulated Learning*