ABSTRACT

The learning process starts from lectures in the new semester. This process includes several things such as managing the Learning Outcome Program (PLO), mapping Course Outcome Learning (CLO), managing assessment tools, managing questions, inputting value management, and measuring PLO and CLO achievements. Telkom University has utilized online-based information technology, namely the Integrated Academic Information System (i-Gracias). One of the applications available on i-Gracias is Outcome-Based Education (OBE). This application is for Heads of Study Programs (Kaprodi) and Coordinator Lecturers of Courses who will prepare lectures. Significantly increasing OBE users are certainly generating a large amount of recorded data in the form of event logs. Data processing is required to obtain knowledge from the event log, one of which is process mining. This research starts from the discovery stage to the conformity check. Prior to the mining process, preprocessing of the data will be carried out to produce good quality logs and define the case id, activity, and timestamp. The event log will use ProM 6.11 tools using the Heuristic Miner modeling technique, which aims to model the process and find the best fitness value. The Heuristic Miner algorithm was chosen because of its ability to handle event logs with noise and display the main behavior of existing business processes. In this study, the learning process obtained was based on the input of courses in one semester in the academic period. Then the process is divided into three sub-logs: PLO preparation, CLO preparation, and RPS preparation from the academic period 1819, 1920, and 2021. The best process model produced results from testing the threshold parameters of the Heuristic Miner algorithm, namely, Relative to Best Threshold, Positive Observation Threshold, and Dependency Threshold. After getting the model process from each sub-log, check the model process's suitability and event log to get the fitness, precision, and generalization values. ProM 6.11 plug-in used to implement conformance checks based on replay techniques. The purpose of this replay is to measure the fitness value of the resulting model. This technique replays the event log on the process model by simulating the sequence of events observed in the event log of the process model. In this study, the average fitness obtained from all sub-logs showed a good value,

ranging from 0.91 to 0.99. This pretty good fitness value means that the process model created is very good at describing the behavior is in the event log. With a precision value that is still not good ranging from 0.20 to 0.46, showing results that are not optimal, this shows that the behavior of the resulting model process does not describe the behavior in the event log as a whole well. And the value of generalization is good enough with ranging from 0.71-0.89. The resulting process model describes the generalization of the process examples seen in the event log. This study also analyzes the performance of the model process by analyzing exact waiting times between activities from a time perspective. Activities with a high average of waiting times as causing obstacles to the lecture preparation process. Using the heuristic miner algorithm in this study can produce a good fitness value for the model process. However, the process model generated by yahoo Heuristic Miner still has weaknesses. In this study, the authors found that the resulting process model still contains nodes that are not connected. The analysis carried out is expected to give an insight and improve the lecture preparation process at Telkom University.

*Keywords—**i-Gracias, process mining, discovery, conformance checking***