Chapter 4

Result and Discussion

4.1 Introduction

In this study three experiments were performed, each experiment has number clusters, in the following sections the three experiments will be discussed as well as the results.

4.2 First Experiment

In this experiment, we used WEKA Explorer interface to load the dataset from CSV file format, then applied the pre-processing to remove student number since it cannot be used in clustering. Finally we implemented K-mean Algorithm to cluster dataset in similar classes. The model build by determine the number of clusters to estimate the best degree and where it will be allocated. The performance of this algorithm is measured with the highest degree mean. In this experiment 5 clusters was generated (shown in figure (4.1)), here three clusters clustering around the e-learning and two clusters clustering around the t-learning. E- Learning clusters contained the students with higher degree and also have the highest attendance (which is obtained in cluster 0).
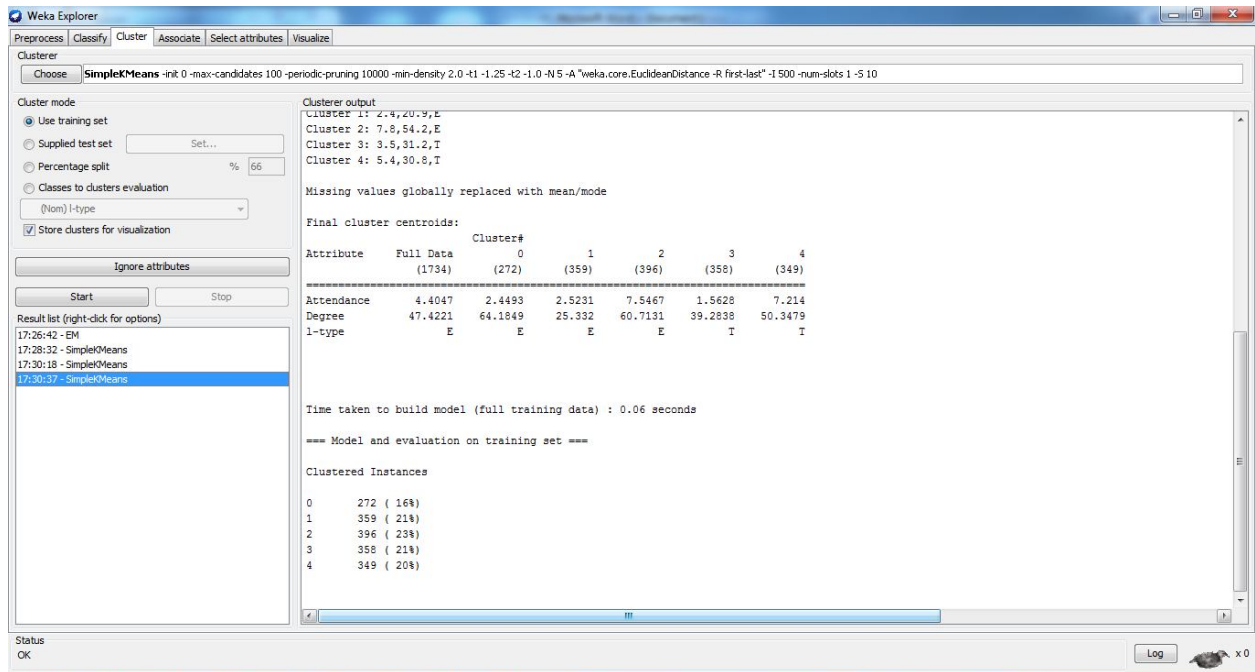
Figure 4.1: Result of the first experiment

Mean of Cluster 5

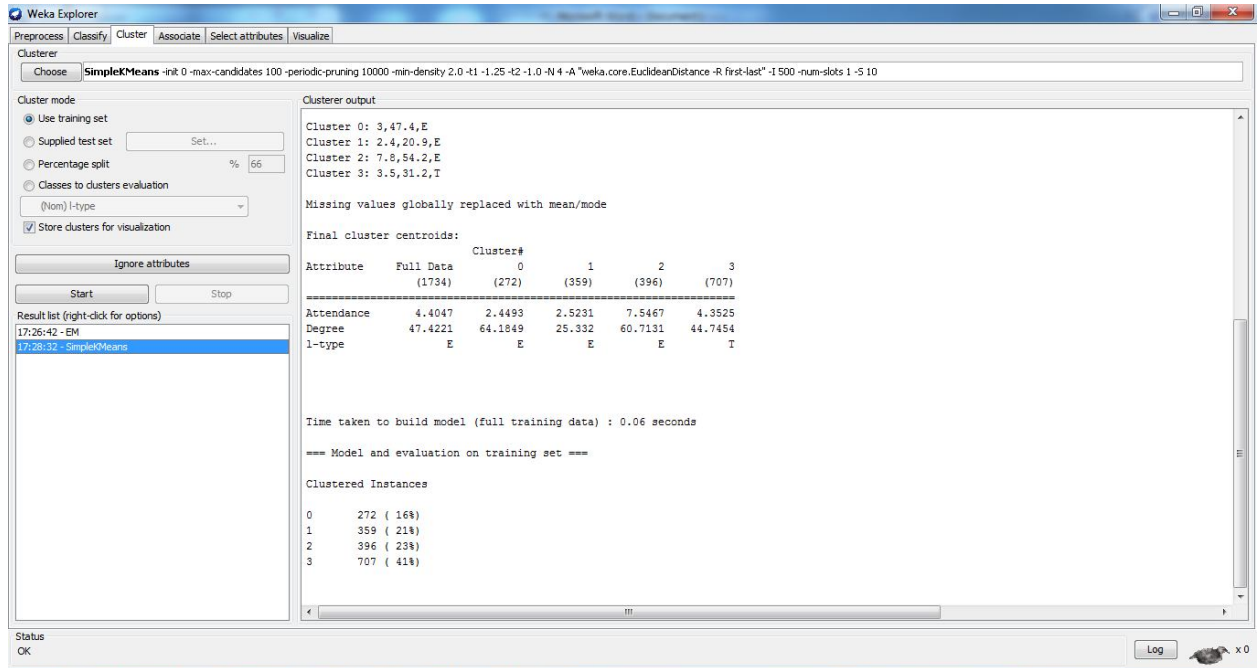| Attributes	Cluster 0	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Attendance	**7.4493**	2.5231	5.5467	1.5628	7.214
Degree	**64.1849**	25.332	60.7131	39.2838	50.3479
L-Type	**E**	E	E	T	T

Table 4.1: Result of the first experiment

As it demonstrated in table 4.1 above cluster 0 obtained the highest mean of the attendance and the degree.

4.3 Second Experiment

K-mean algorithm, implemented in this experiment, using the same dataset, same data preprocessing in first experiment and same performance measure.

In this experiment 4 clusters was generated (shown in figure (4.2)). Here three clusters clustering around the e-learning. E- Learning clusters contained the students with higher degree and also have the highest attendance (which is obtained in cluster 2).

Figure 4.2: Result of the second experiment

Mean of cluster 4

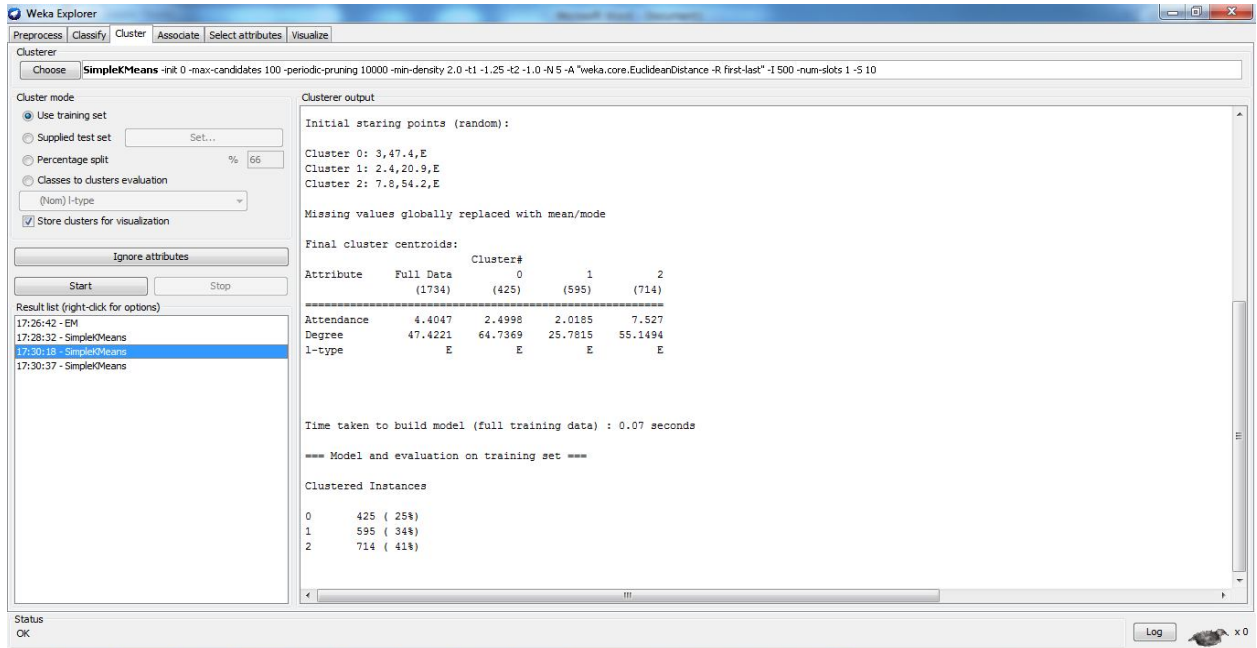| Attributes	clusters 0	Clusters 1	Clusters 2	Cluster 3
Attendance	2.4493	2.5231	**7.5467**	4.3525
Degree	60.1849	25.332	**64.7131**	44.7454
L-Type	E	E	**E**	T

Table 4.2: Result of the second experiment

As it demonstrated in table 4.2 above cluter2 obtained the highest mean of the attendance and the degree.

4.4 Third Experiment

K-mean algorithm, implemented in this experiment, using the same dataset, same data preprocessing in first experiment and same performance measure.

In this experiment 3 clusters was generated (shown in figure (4.3)). Here all clusters clustering around the e-learning. E- Learning clusters contained the students with highest degree and also have the highest attendance (which is obtained in cluster 0).

Figure 4.3: Result of the third experiment

Mean of cluster 3

Attributes	clusters 0	Clusters 1	Clusters 2
Attendance	7.4998	2.0185	4.527
Degree	64.7369	25.7815	55.1494
L-Type	E	E	E

Table 4.3: Result of the third experiment

As it demonstrated in table 4.3 above cluster 0 obtained the highest mean of the attendance and the degree.

4.5 Results

1. First experiment showed that e-learning best from traditional learning in cluster 0.
2. Second experiment showed that e-learning best from traditional learning in cluster 2.
3. Third experiment showed that e-learning best from traditional learning in cluster 0.

4.6 Discussion

The results of the study show that:

✓ There is relation between course attendance and students' grades.

✓ The students had lower grades due to less of course attendance as well as with the students have full course attendance. So, due to this low attendance degree of the students' grades is affected.

✓ The proposed work is used with different number of clusters to analyze the relation between course attendance and students' grades.