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Assessing Tenth-Graders' Writing Skills and Identifying Their Character-Based Learning Contribution through a Mind Map Learning Model

Mesya Sukmayati[1*)]; Didik Rinan Sumekto[2]; Sukasih Ratna Widayanti[3]

[1,2,3]Widya Dharma University

*)Corresponding author: mesyaesc@gmail.com

ABSTRACT

This study aims at assessing tenth-graders' writing skills and identifying their character-based learning contribution in the writing class. This study involved thirty-six tenth-graders to be the respondents who engaged in applying for the mind maps learning model. The data collection used tenth-graders' narrative writing test and self-rated questionnaire through a 5-Likert scoring rubric accordingly. The data analysis used the SPSS program in order to obtain the expected quantitative analyses. The findings showed that tenth-graders' writing skills improved from the pre-test (M = 66.25) to the post-test (M = 70.77), whilst tenth-graders' narrative writing components significantly showed vocabulary, grammar, cohesion and coherence, mechanics, and content. The findings also emphasized the character-based learning contribution on the value of honesty, cooperation, communication, and respectfulness among the tenth-graders. Meanwhile, the factorability significance of the correlational matrix corresponded with the output of the principal component analysis (PCA) inferring the existence of five factors involving the Eigenvalue. This study was granted to be successful in assessing tenth-graders' writing skills and identifying their character-based learning contribution through the mind maps learning model.

Keywords*: writing skills, character-based learning, mind maps model*

INTRODUCTION

Writing is about how to express ideas in the written language form. Richard and Miller (2008) state that students' writing becomes their own inherent skills and represents a way of thinking, since writing refers to an important aspect of a written expression at the structural stages (Patel & Jain, 2008). Sokolik (2003) underlines that writing is the mental work of inventing ideas, thinking about how to express and organizing ideas into statements and paragraphs that produce a clearness to readers. It can make students produce some texts, letters, and reports, whilst expressing their ideas, desires, and feelings. Writing is a thinking process that can be planned and given with an unlimited number of revisions before its releases (Brown, 2001)

and enables students to present it in the written forms (Harmer, 2001). In addition, Harmer (2004) states that writing skill involves language production and refers to a productive skill and a stage of transforming an idea into words (Susilawati, 2017), paragraphs, and sentences. It is also claimed that writers, meaning and occasion determine all forms of writing and that successful writing meets the goal of the writer and the needs of the reader. Harmer (2004) continually thinks that writing process means steps of a writer creates a productive output through the finely written form. Hence, he offers four components in the writing processes, namely: planning, drafting, editing, and final version. First, planning or pre-writing refers to an activity in the classroom that motivates students to write. This stimulates thoughts for getting started by some topics. Second, drafting relies on the focus on the fluency of writing and it does not pre-occupy with the grammatical accuracy or draft neatness. Third, editing engages in polishing up writer's draft since they prepare the final draft for a review step. Thy draft corresponds with the grammar, spelling, punctuation, diction, sentence, structure, and accuracy. Fourth, final version directs to writer' product that is ready to read as an appropriate writing product. In this respect, the four components may be addressed through the genre-based writing collaboration that accommodates students' procedural problem solving, enhances, and improves the language use (Sumekto, 2017). However, some problems were still found in tenth-graders' writing class. Problems were detected in the classroom when twice observations were conducted on third week of November 2019. They related to tenth-graders' difficulties in expressing ideas, grammar and vocabulary knowledge that were still weak, and the writing structure was still unreadable.

Furthermore, this study also confirms students' mind map learning model of a concrete graphic illustration, in which a mind map flexibly portrays how a single concept relates to another concept in the same categories. A mind map naturally has an organizational structure that radiates from the center and is based on simple, brain-friendly principles using lines, symbols, terms, color and pictures in order to obtain students' creative ideas in producing writing (Trianto, 2009). Buzan (2006) points out that a mind map learning model supports a graphic, networked-method of-storing, organizing and prioritizing information in writing using keywords words and images that will 'snap on' specific memories and encourages new thoughts. In addition, DePorter and Hernacki (2005) state that mind map relies on the diagram used to represent words, ideas, tasks, or other items linked to and arranged radially around a central keywords or ideas. It means that mind map model is a technique used to producing students more creative and can

open up their brain's ability to develop ideas into words, sentences, and paragraphs through a graphic or chart as well other variations. Accordingly, Buzan (2006) confides that the procedure of mind map learning model runs with the following procedures: (1) depending on the core questions of a particular subject matter; (2) turning students' first sheet of paper (e.g.: landscape-style) directly in order to create their mind map processes by allowing independent expressions; (3) writing a keyword to connect with the subject on each topic; (4) involving a few subtopic into students mind; and (9) establishing the divisions of the second or third level for students' associated supports and secondary thinking.

Some previous studies proved that the implementation of mind map learning model indicated the improvement of students' writing skills. Waloyo (2017) showed that mind map had a good influence on students' writing skills. Mind map enhanced unity and coherence, subject-paragraph structure and writing length (Bukhari, 2016). Mind map learning model could contribute students' character-based learning that focused on two factors: human nature and hallmark institution of individual learners (Kamaruddin, 2012). In this study, two research questions were addressed to focus tenth-graders' writing skills assessment and their contribution on character-based learning. The questions were (1) Does the mind map learning model influence tenth-graders' writing skills and character-based learning contribution? and (2) Can the mind map learning model assess tenth-graders' writing skills and identify their character-based learning contribution? Therefore, this present study attempts at assessing tenth-graders' writing skills and identifying their character-based learning contribution that undertake at the Vocational High School of *Sekolah Menengah Kejuruan* (SMK) *Negeri* 1 Klaten in the academic year of 2019-2020.

METHOD

This study was conducted at the Vocational High School of *Sekolah Menengah Kejuruan* (SMK) *Negeri* 1 Klaten in academic year of 2019-2020 in order to obtain writing's teaching and learning using the mind map learning model. To do the quantitative research, the study worked with the narrative essay test and self-rated questionnaire using a 5-Likert scale rubric system which were examined to the tenth-graders. Points of Likert scale ranged from 5 to 1. The equivalent score was 5 = excellent, 4 = good; 3 = average, 2 = poor, and 1 = fail. Meanwhile, for the character-based learning contribution primarily used tenth-graders' character education instruments that involved thirty-six tenth-graders to be the respondents. This study used the

interval data by interpreting into the rubric of a 5-point Likert scale that ranged from 5 to 1. The equivalent score was 5 = always, 4 = usually; 3 = often, 2 = sometimes, and 1 = never.

Prior to examining the narrative essay test and self-rated questionnaire, Cronbach's Alpha reliability coefficient was dealt to standardize the criteria. Cronbach's Alpha (α) result gained .705, whereas the overall score among the fourth components ranged in between .647 to .792 with the sample size of 40 other tenth-graders. If the alpha (α) value of the reliability coefficient was >60, hence it was regarded to be reliable. However, the values corresponded with the components of vocabulary (.748), grammar (.710), cohesion and coherence (.690), mechanics (.702), and content (.699). This research found that students' writing skill test on the descriptive study was *M*=17.69; *SD*=2.49 on the scale ranging from 5 to 1. Data analysis used the IBM SPSS program to quantify and analyze the descriptive statistics, Pearson correlations, and factor analysis.

RESULTS AND DISCUSSION

First of all, the findings obtained tenth-graders' pre-test (*M* = 66.25) of the narrative essay that definitely improved writing skills, whilst the post-test (*M* = 70.77) after the English teacher applied for the mind map learning model in her writing class. The number of components of writing used in the rubric of scoring corresponded to the vocabulary, grammar, cohesion and coherence, mechanics, and content. Tenth-graders' vocabulary skills identified the following frequencies and descriptive statistical results: 18 (50.0%) tenth-graders performance indicated their average category, 14 (38.9%) showed in good category, and 4 (11.1%) tenth-graders showed in excellent category (Table 1). The findings also reported the lowest vocabulary component score by scaling 3 and 5 for the highest score through a 5-Likert scale system. Meanwhile, tenth-graders' vocabulary mean = 3.61and standard deviation = .688 with *n* = 36. The overall achievement of tenth-graders' vocabulary skills showed **average** category with 50.0%.

Table 1 Frequency of Tenth-Graders' Vocabulary

	Score Range	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3.00	18	50.0	50.0	50.0
	4.00	14	38.9	38.9	88.9

5.00	4	11.1	11.1	100.0
Total	36	100.0	100.0	

As outlined in Table 1, the histogram (Figure 2) of tenth-graders' vocabulary skills was also graphically represented, as follows:

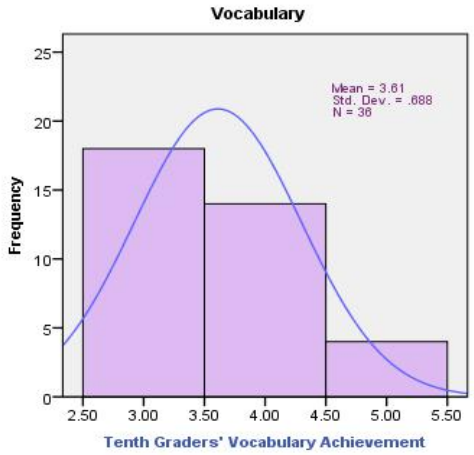

Figure 1 Histogram of Tenth-Graders' Vocabulary

Secondly, data analysis of tenth-graders' grammar skills described the frequencies and descriptive statistics results through Table 2 and Figure 2, as follows: 2 (5.6%) indicated tenth-graders' grammar skills with the poor category, 18 (50.0%) proved with the average category, and 16 (44.4%) showed with the good category. The findings also recorded that the lowest score of grammar skills with the range of 2 and the highest score was 4 through a 5-Likert scale category. Meanwhile, tenth graders' grammar mean = 3.39 and standard deviation = .599 with n = 36. The overall achievement of tenth-graders' grammar skills showed **average** category with 50.0%.

Table 2 Frequency of Tenth-Graders' Grammar

Score Range		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	2	5.6	5.6	5.6
	3.00	18	50.0	50.0	55.6
	4.00	16	44.4	44.4	100.0
	Total	36	100.0	100.0	

As summarized in Table 2, the score distribution on tenth-graders' grammar skills was graphically shown in the histogram (Figure 2), as follows:

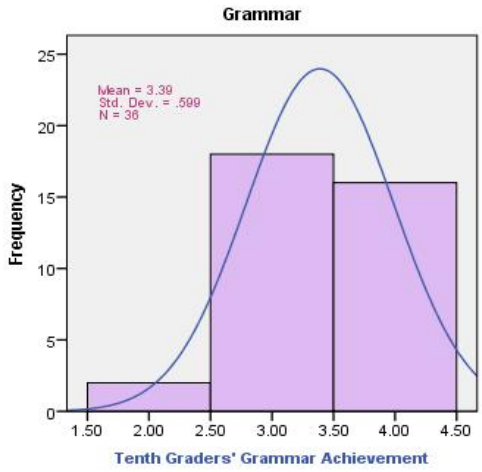

Figure 2 Histogram of Tenth-Graders' Grammar

Thirdly, data analysis of tenth-graders' cohesion and coherence skills described the frequencies and descriptive statistics results through Table 3 and Figure 3, as follows: 8 (22.2%) tenth-graders performed their cohesion and coherence skills with the poor category, 15 (41.7%) was the average category, and 13 (36.1%) was the good category. The findings also recorded that the lowest score of tenth-graders' cohesion and coherence skills was 2 and the highest score was 4 through a 5-Likert scaling system. Meanwhile, tenth graders' cohesion and coherence mean = 3.14 and standard deviation = .762 with n = 36. The overall achievement of tenth-graders' cohesion and coherence skills showed **average** category with 41.7%.

Table 3 Frequency of Tenth-Graders' Cohesion & Coherence

Score Range		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	8	22.2	22.2	22.2
	3.00	15	41.7	41.7	63.9
	4.00	13	36.1	36.1	100.0
	Total	36	100.0	100.0	

As summarized in Table 3, the score distribution on mechanics component was graphically interpreted by applying the histogram (Figure 3), as follows:

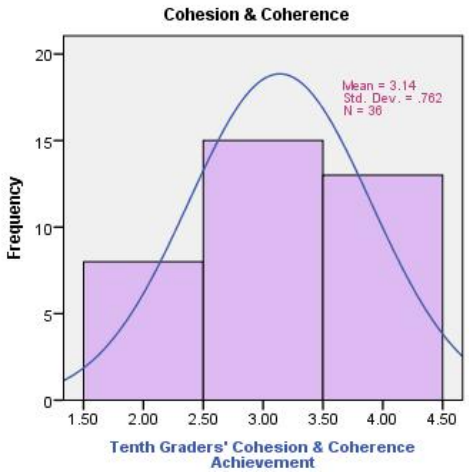

Figure 3 Histogram of Tenth-Graders' Cohesion & Coherence

Fourthly, data analysis of tenth-graders' mechanics skills described the frequencies and descriptive statistics results through Table 4 and Figure 4, as follows: 3 (8.2%) tenth-graders performed their mechanics skills with the poor category, 12 (33.3%) with the average category, 19 (52.8%) with good category, and 2 (5.6%) with the excellent category. The finding also recorded that the lowest score of tenth-graders' mechanics skills ranged in between 2 for the lowest score and 5 for the highest score through a 5-Likert scaling system. Meanwhile, tenth graders' mechanics skills mean = 3.56 and standard deviation = .735 with n = 36. The overall achievement of tenth-graders' mechanics skills showed **good** category with 52.8%.

Table 4 Frequency of Tenth-Graders' Mechanics

Score Range		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	3	8.3	8.3	8.3
	3.00	12	33.3	33.3	41.7
	4.00	19	52.8	52.8	94.4
	5.00	2	5.6	5.6	100.0
	Total	36	100.0	100.0	

As summarized in Table 4, the score distribution on tenth-graders' mechanics skills was graphically shown in the histogram (Figure 4), as follows:

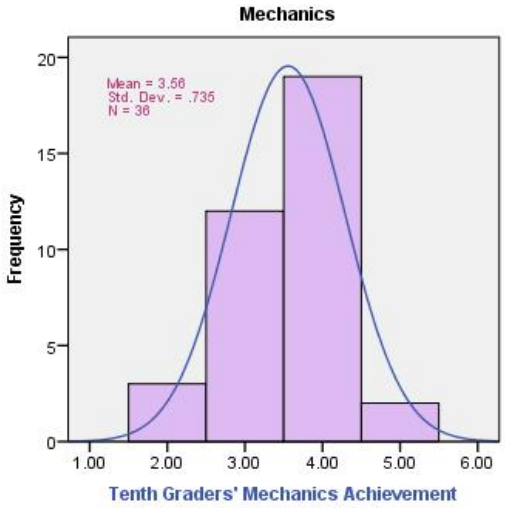

Figure 4 Histogram of Tenth-Graders' Mechanics

Fifthly, data analysis of tenth-graders' writing content skills described the frequencies and descriptive statistics results through Table 5 and Figure 5, as follows: 9 (25.0%) tenth-graders performed their content skills with the average category, 18 (50.0%) with the good category, and 9 (25.0%) with the excellent category. The findings also recorded that the lowest score of tenth-graders' writing content skills earned 3 for the lowest score and 5 for the highest score through a 5-Likert scaling system. Meanwhile, tenth graders' content mean = 4.00 and standard deviation = .717 with n = 36. The overall achievement of tenth-graders' writing content skills showed **good** category with 50%.

Table 5 The Frequency Result of Tenth-Graders' Content

Score Range		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3.00	9	25.0	25.0	25.0
	4.00	18	50.0	50.0	75.0
	5.00	9	25.0	25.0	100.0
	Total	36	100.0	100.0	

As summarized in Table 5, the score distribution on tenth-graders' writing content skills was graphically shown in the histogram (Figure 6), as follows:

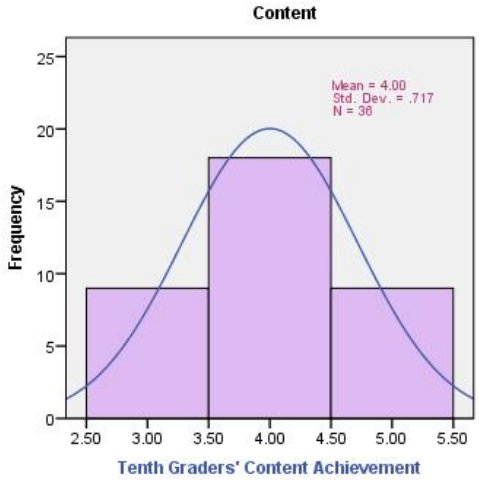

Figure 6 Histogram of Tenth-Graders' Writing Content

Tenth graders' writing skills addressed to the contributing component of vocabulary, grammar, cohesion and coherence, mechanics, and content. Thirty-six vocational high school of the tenth graders of SMK Negeri 1 Klaten participated in writing class. The results of tenth graders' writing as shown in Table 5 categorically gained in the following components: vocabulary (*M* = 3.61; *SD* = .688), grammar (*M* = 3.39; *SD* = .599), cohesion and coherence (*M* = 3.14; *SD* = .762), mechanics (*M* = 3.56; *SD* = .735), content (*M* = 4.00; *SD* = .717).

Further, the descriptive statistics for vocabulary's skewness (.691) and kurtosis (-.590), grammar's skewness (-.389) and kurtosis (-.617), cohesion and coherence's skewness (-.244) and kurtosis (-.1.198), mechanics's skewness (-.431) and kurtosis (-.004), and content's skewness (.000) and kurtosis (-.967) were inconsiderable for thirty-six examinees. Of the results of skewness and kurtosis in tenth graders' writing components, these data were normally distributed. The lowest mean of this writing component was cohesion and coherence (3.138) and the highest mean was content (4.000).

Table 6 Descriptive Statistics of Tenth-Graders' Narrative Writing

	N	Range	Min.	Max.	Sum	Mean		Std. Dev.	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Vocabulary	36	2.00	3.00	5.00	130.00	3.6111	.11463	.68776	.473	.691	.393	-.590	.768

Grammar	36	2.00	2.00	4.00	122.00	3.3889	.09982	.59894	.359	-.389	.393	-.617	.768
Cohesion and Coherence	36	2.00	2.00	4.00	113.00	3.1389	.12695	.76168	.580	-.244	.393	-1.198	.768
Mechanics	36	3.00	2.00	5.00	128.00	3.5556	.12244	.73463	.540	-.431	.393	.004	.768
Content	36	2.00	3.00	5.00	144.00	4.0000	.11952	.71714	.514	.000	.393	-.967	.768
Valid N (listwise)	36												

This analysis corresponded with five perceived writing components that influenced tenth-graders' writing skills. The significant correlations were r = .167, n = 36, p<.000. The highest level of effectiveness of mechanics components with writing activity associated with the lowest level of grammar component. However, the effectiveness of these components was accordingly positive and significant with p<.01 level for 2-tailed predictions. Table 7 showed the Spearman's Rho correlations coefficients in the following orders: .477**, .470**, 429**, and .371*.

Table 7 Spearman's Rho Correlations

			Vocabulary	Grammar	Cohesion and Coherence	Mechanics	Content
Spearman's rho	Vocabulary	Correlation Coefficient	1.000	.167	.333*	.371*	.276
		Sig. (2-tailed)		.330	.047	.026	.103
		N	36	36	36	36	36
	Grammar	Correlation Coefficient	.167	1.000	.407*	.429**	.477**
		Sig. (2-tailed)	.330		.014	.009	.003
		N	36	36	36	36	36
	Cohesion and Coherence	Correlation Coefficient	.333*	.407*	1.000	.371*	.470**
		Sig. (2-tailed)	.047	.014		.026	.004
		N	36	36	36	36	36
	Mechanics	Correlation Coefficient	.371*	.429**	.371*	1.000	.354*

	Sig. (2-tailed)	.026	.009	.026		.034
	N	36	36	36	36	36
Content	Correlation Coefficient	.276	.477**	.470**	.354*	1.000
	Sig. (2-tailed)	.103	.003	.004	.034	
	N	36	36	36	36	36

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

Another analysis relied on the five perceived components referred to the principal components analysis (PCA) outputs. Before indicating the PCA, factor analysis suitability was examined through the correlational matrix that exhibited the existence of obtainable coefficients of .107 above. Therefore, the Kaiser Meyer-Olkin obtained .612, reaching the entrusted value of .6 or above, whilst Bartlett's Sphericity test was significant (p = .000). Therefore, factor analysis was appropriate. This examination contended with the significance of the statistics and performed the factorability of the correlational matrix. This examination contended with the significance of the statistics and performed the factorability of the correlational matrix. The PCA's outputs inferred the existence of five components with the Eigenvalue transcending 1, indicating 50.7%, 16.3%, 11.8%, 10.8%, and 10.0% of the components correspondingly (Table 8). The scree plot examination defined a bounded part afterward granting five components. After that, the scree plot was determinable to decline two axes for an analysis beyond (Figure 8) and endorsed by the comparable analysis outputs. Moreover, the scree plot demonstrated two axes with the Eigenvalue that exceeded the corresponding criterion values for bringing about the accessible size of matrix data [5 factors x 36 students] at random. According to Sumekto and Setyawati (2018), the interpretation of these components was coherent with the pilot outputs, in which both the components commonly showed the positive affect items for component 1 and partially negative affect items for component 2.

Table 8 Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
Vocabulary	2.540	50.792	50.792	2.540	50.792	50.792	1.632

Grammar	.816	16.327	67.119	.816	16.327	67.119	1.393
Cohesion and Coherence	.594	11.872	78.991	.594	11.872	78.991	1.631
Mechanics	.541	10.820	89.811	.541	10.820	89.811	1.698
Content	.509	10.189	100.000	.509	10.189	100.000	1.666

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Figure 7 Histogram of Tenth-Graders' Narrative Writing Component

Meanwhile, the learning management scenario was collaboratively designed (Sumekto & Setyawati, 2019) by identifying the character-based learning contribution this study attempted at delivering the self-rated questionnaire to the tenth-garders. The questionnaire aimed at measuring tenth graders' character-based learning contribution using twenty items. The self-rated questionnaire consisted of four aspects, namely: honesty, cooperation, communication, and respectfulness. First, the honesty identified the frequencies and descriptive statistics results in the following description: 32 (88.9%) tenth-graders had a seldom category and 4 (11.1%) tenth-graders showed the honesty aspect in sometimes category toward their character-based learning contribution (Figure 8). The findings also reported that the lowest score of honesty aspect gained 2 and the highest score was 3 through a 5-Likert scaling system. Meanwhile, tenth-graders' mean score for honesty was 2.11 and standard deviation was .318 with $n = 36$.

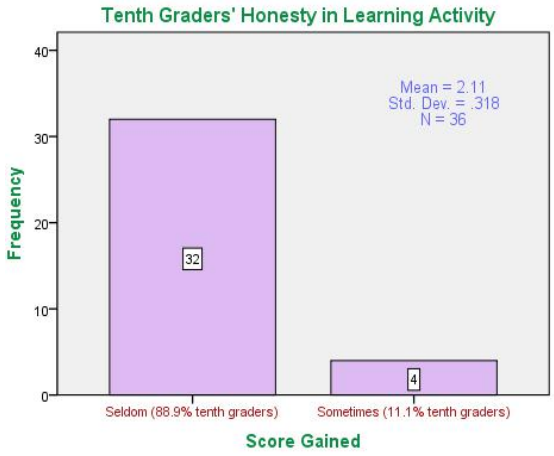

Figure 8 Bar Chart on Honesty's Character-Based Learning Contribution

Next, data analysis of tenth-graders' cooperation aspect identified the following frequencies and descriptive statistics results, as follows: 17 (47.2%) tenth-graders' cooperation was in the frequent category, 16 (44.4%) was in sometimes category, and 3 (8.3%) was in seldom category towards their character-based learning contribution (Figure 9). The findings also reported that the lowest cooperation aspect score gained 2 and 4 for the highest score through a 5-Likert scaling system. Meanwhile, tenth-graders' cooperation mean was 3.38 and standard deviation was .644 with $n = 36$.

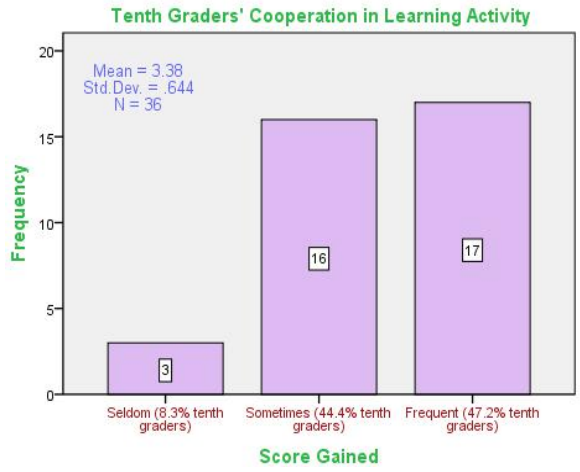

Figure 9 Bar Chart on Cooperation's Character-Based Learning Contribution

Then, data analysis of tenth-graders' communication aspect identified the following frequencies and descriptive statistics results, as follows: 27 (75%) tenth-graders indicated their communication in seldom category and 9 (25%) was in sometimes category towards the character-based learning contribution (Figure 10). The findings also reported that the lowest communication aspect score ranged in between 2 and 3 for the highest score through a 5-Likert scaling system. Meanwhile, tenth-graders' communication mean was 2.25 and standard deviation was .439 with n = 36.

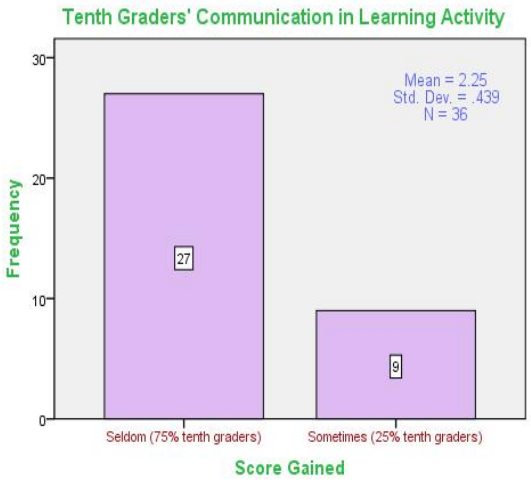

Figure 10 Bar Chart on Communication's Character-Based Learning Contribution

After that, data analysis of tenth-graders' respectfulness aspect identified the frequencies and descriptive statistics results, as follows: 2 (58.3%) tenth-graders showed their respectfulness in frequent category, 11 (30.6%) was in sometimes category, and 4 (11.1%) was in seldom category towards the character-based learning contribution (Figure 11). The findings also reported that the lowest score in terms of respectfulness aspect earned 2 and 4 the highest score through a 5-Likert scaling system. Meanwhile, tenth-graders' respectfulness mean was 3.47 and standard deviation was .696 with n = 36.

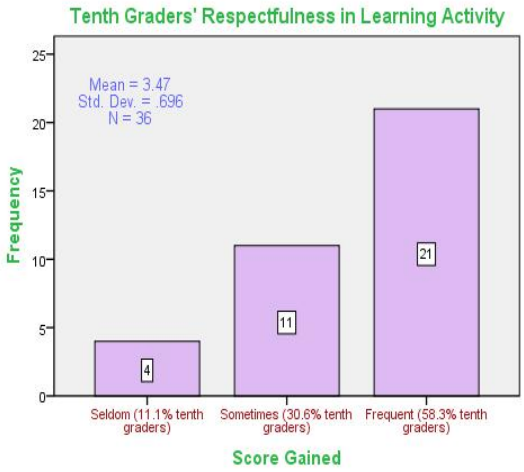

Figure 11 Bar Chart on Respectfulness' Character-Based Learning Contribution

CONCLUSION

This conclusion aims at answering the points of research questions that have been addressed regarding the mind map learning model towards the influence of tenth graders' writing skills and character-based learning contribution. Pointedly, there is no significant difference among five writing components, namely: vocabulary, grammar, cohesion and coherence, mechanics, and content towards the process of tenth-graders' narrative writing improvements. Three writing components, namely vocabulary, grammar, and cohesion and coherence rank into the *average* level, whilst other two writing components, such as mechanics and content prove in *good*. Further, Hence, the mind map learning model significantly contributes tenth-graders' writing skills and character-based learning contribution since during the teaching learning process, the class creates the positive atmosphere and also makes the tenth-graders become creative and innovative comprehensively, as well improve their writing style based on the narrative writing.

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