

Study on the relationship between character and the improvement of learning achievements of science-biology students

K. Arifin

Universitas Halu Oleo, Indonesia

ABSTRACT: Junior High School science-teachers in Kendari city, Indonesia were reportedly faced difficulties in implementing the Indonesian 2013 curriculum because the attitudinal competence assessment is considered too complicated and requires a lot of time to manage. This study aims at obtaining empirical information about the relationship extent between the character-achievement with the increase of science-biology learning outcomes of seventh graders in three categories. The character achievement is obtained by the technique of attitude competence assessment. Learning is done through seven multi-model learning variations throughout one semester (18 meetings) which have been developed through lesson study activity. Improvements in learning outcomes were obtained by the gain formula using the pre-experimental *One-Group Pre-test - Post-test Design*. The data analysis results show that, in general, there is a significant relationship between the character aspects achievement obtained through observation, self-assessment and peer assessment as well as the total average with improvements in student learning outcomes in each school category. Exceptions were obtained on the specific character in medium-grade schools that did not correlate significantly with improvements in student learning outcomes. In addition, there is no significant relationship between the value of the portfolio with the improvement of student learning outcomes, both in each school category as well as the overall analysis.

1 INTRODUCTION

The Indonesian National Education System number 20/2003 article 1 of paragraph 1 mandates that one of the functions of national education is, "... to develop the potential of students to have intelligence, personality, and noble character." This implies that Indonesians must be intelligent, have a personality or character that will produce future generations based on the noble values of the nation and religion.

Realizing the current issues of community character, the government of Indonesia takes the initiative to prioritize the nation's character building. This is reflected in the 2005-2025 National Long Term Development Plan, which places character education as the first mission to realize the vision of national development (Kemendiknas 2010). This is increasingly apparent with the existence of Core Competence (KI) characters in the Curriculum 2013 in addition to the Process Competencies and KI-content areas of study (Kemdikbud 2013).

The results of interviews with science teachers of MGMP-based lesson study participants in Kota Kendari (2015) showed that out of 22 participant teachers, there were 20 (90.91%) stated that in

applying the 2013 curriculum the attainment of attitudinal competence achievement was too complex and required a lot of time to manage. Competence of attitude consists of spiritual attitudes associated with the formation of students who believe, cautious and grateful to God Almighty, and social attitudes associated with the formation of students who have the noble character, independent, democratic, and responsible (Kemendikbud). There are four models of techniques and forms of attitude assessment instruments that are recommended for use in schools, namely; observation techniques, students' self-assessment, peer ratings and journal or portfolio (Kemendikbud 2014).

The result of the observation showed that in general the junior high school science-teachers in Kota Kendari, Indonesia had not used the technique of achieving the achievement of attitude competence, but only doing the assessment of knowledge competency achievement. However, the techniques of attitude competence assessment have their own advantages and limitations. This study aims to obtain empirical information about the extent of the relationship between the achievement of character with the improvement of science-biology learning outcomes of students in grade

seven in three categories (high, medium and low) public junior high school in Kendari city, Indonesia. The achievement of character is recorded through the technique of attainment of attitudinal competency; Observation, self-assessment, peer assessment, and portfolio as well as through multimodel learning. Schwartz (2008) emphasizes that one of the effective educational programs of characters that have a significant and lasting impact is the use of multiple strategies, the multi-strategy learning approach. Arends (2007) explains that applying two main strategies to meet the needs of all students means applying multimodel (multiple models of instruction) teaching.

2 RESEARCH METHOD

Research method employed in this study formulated as follows:

2.1 Types of Research

This study is a type of experimental research through pre-experimental treatment conducted in 3 (three) group of school categories (high, medium and low).

2.2 Research Procedures

This research was conducted by involving lesson study teacher group based on the science teacher association in the city with the following procedure: 1) Preparation and 2) Implementation Phase in Class (Preliminary and Research).

2.3 Location, Population and Research Sample

This research was conducted at a public junior high school in Kota Kendari of Southeast Sulawesi, Indonesia. The study population is all year seven students in 18 schools. The sample was determined using stratified purposive random sampling technique.

2.4 Data Analysis Technique

To analyze the data obtained in this study, then the analysis is done in two stages, namely descriptive analysis and inferential analysis..

3 RESULTS

The analysis results of the character achievement relationship in the learning process with the improvement of student learning outcomes include: character aspect relationships on each attainment of competency assessment techniques, both in whole school and in each school category, the average achievement of each character aspect in both the school category and between the school categories and the improvement of student learning outcomes.

3.1 Relationship Analysis between Average Total Achievement of characters on Each Assessment Techniques Achievement Competence Attitudes with Improved Learning Outcomes.

The result of the analysis of the relationship between the mean total attainment of the characters in each assessment technique of attainment of attitudinal competence with improvement of learning outcomes is listed in Table 1; as follows:

Table 1.

Result of Calculation p-value Value Relationship Total Achievement of character Each Technique of Assessment of Achievement Competence Achievement with Improved Learning Outcomes (p-value $< \alpha = 0,05$; no significant relationship).

Assessment Technique	<i>p-value</i>									
	1	2	3	4	5	6	7	8	9	
Observation	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,751
Self-assessment	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*		
Peer-assessment		0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*		
Combination(GAK)	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*		

Description: 1. Gratitude; 2. Honesty; 3. Responsibility; 4. Curiosity; 5. Creative Thinking and Innovative; 6. Hard work; 7. Cooperation; 8. Communication; 9. Portfolio; * = sig. $< \alpha = 0,05$

Based on Table 1; It appears that except for the portfolio, the p-value value of each character aspect in each component is $\alpha = 0.05$. This means that except for the portfolio, there is a significant correlation between the attainment of all aspects of the character in each assessment technique of attainment of attitudinal competence and its combination (GAK) with the improvement of student learning outcomes.

3.2 Analysis of Relationship between Achievement of Character with Increased Student Learning Results on each technique of attainment achievement attitudinal attitudes In Each Category School.

The result of the analysis of the relationship between the achievement of the character and the improvement of student learning outcomes in each assessment technique of attitudinal competency achievement in each school category is listed in Table 2; as follows,

Table 2. Result of Calculation of p-value Value Relationship between Achievement Aspect Character Each Technique Assessment Achievement of Attitudinal Competence with Improved Student Results in Each Category School (value p-value is less than $\alpha = 0.05$; there is a significant relationship)

School Category	Assessment Technique	<i>p-value</i> forevery Aspect of Character								
		1	2	3	4	5	6	7	8	9
High	Observation	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	
	Self-assessment	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,004*	0,00*	0,251
	Peer-assessment		0,001*	0,00*	0,00*	0,00*	0,00*	0,039*	0,00*	
Medium	Observation	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	
	Self-assessment	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,011*	0,00*	0,869
	Peer-assessment		0,049*	0,007*	0,44	0,091	0,044*	0,193	0,02*	
Low	Observation	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	
	Self-assessment	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,677
	Peer-assessment		0,001*	0,044*	0,001*	0,00*	0,01*	0,022*	0,00*	

Description: 1. Gratitude; 2.Honesty; 3. Responsibility; 4. Curiosity; 5. Creative Thinking and Innovative; 6. Hard work; 7. Cooperation; 8. Communication; 9. Portfolio; * = sig. $\alpha = 0,05$

Based on Table 2; It appears that generally the p-value $\alpha = 0, 05$, except the portfolio in all school categories, the curiosity character, creative-innovative thinking and cooperation in the medium category schools. This means that unless portfolio assessment in all school categories, curiosity, creative-innovative thinking and collaboration in medium-grade schools, there is a significant correlation between the attainment of the character aspect of each attribute competency assessment technique in each school category with improved student learning outcomes.

3.3 Analysis of Relationship between Combined Aspects of the Same Character (GAKS) of Each Technical Assessment of Social Competence with Improved Learning Outcomes in Each School Category

The result of the analysis of the relationship between the combined aspects of the same character of each attainment of attitudinal competency assessment techniques with the improvement of learning outcomes in each school category is listed in Table 3; as follows:

Table 3. Result of Calculation of p-value Value Relationship between Combined Aspects of the same Character (GAKS) with Improved Student Results in Each School Category (p-value <of $\alpha = 0.05$; there is a significant relationship).

School Categories	GAKS1	GAKS2	GAKS3	GAKS4	GAKS5	GAKS6	GAKS7	GAKS8
High	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*
Medium	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*
Low	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*	0,00*

Description: 1. Gratitude; 2.Honesty; 3. Responsibility; 4. Curiosity; 5. Creative Thinking and Innovative; 6. Hard work; 7. Cooperation; 8. Communication; * = sig. < $\alpha = 0,05$

Based on Table 3; It appears that all p-value values <of significance level $\alpha = 0,05$. This means that there is a significant relationship between all the combined aspects of the same character of each attainment of attainment competency assessment techniques with the improvement of student learning outcomes in each category of school.

4 DISCUSSION

The results of inferential analysis both in whole and in every school category show that except the portfolio, in general, the character aspects of students obtained through observation assessment techniques, self-assessment, and peer-to-peer assessment indicate a significant relationship with the improvement of learning outcomes. Exceptions also occur in peer ratings in medium and low school categories. In the medium category schools, the character aspect of peer assessment is not significantly related to the improvement of student learning outcomes, gratitude, responsibility, curiosity, hard work, and communication, while in the low-grade category aspects of gratitude and hard work.

The positive impact of character education on academic success has been reported by many researchers, such as Berkowitz (2002), Benninga et. al. (2003), Richard (2002), and Crider (2012), and has been described in the literature review section. In addition, Olowookere et al. (2015) reported that over time students develop performance characters involved in time management practices to achieve academic excellence, there is a significant positive relationship between character building and academic achievement. The results of this research indicate that the dimension of the persistence of character development predicts the academic performance, while the dimension of discipline and responsibility has no significant relationship with student achievement. Thompson (2010) states the need for students to learn how to be good, respectful, and responsible is always there and is

human nature. What matters is the promotion, passion, and execution of a good character education, which results in the most positive experience for all students. This needs to be done at all levels; whether at home, school, college, or government. If someone wants to know how students feel about school, then ask students. Students will reveal what is needed, and then become the duty of educators, parents, volunteers, and government officials to then do something about it.

Seideret (2013) research shows the role of moral character and performance in predicting student success. As noted in the results, the percentage of variance in academic achievement and school-behaviour predicted by student character strength is relatively small. Therefore, teachers should utilize every means they have to support student success. This study shows that the strength of moral character and character of student performance is an important tool in an effort to support its success. In recent years, a number of organizations have identified a characteristic culture of student performance as a key lever (lever) in promoting its success. Tough The school even started issuing "character card reports" of students who provided feedback on eight character strengths including performance patience, courage, self-control, optimism, and passion (Seideret 2013).

In addition, Chamundeswari et al. (2014) states, in each individual has a relatively unlimited potential to develop a positive self-concept and realistic. The potential can be realized by people, places, policies, programs, and processes deliberately designed to realize that potential. One of the factors that contribute to the achievement of learning achievement is the variation of the students' ability to organize the work to learn efficiently. Therefore, it is suggested the importance of special guidance and training so that students know how to learn and work efficiently. The number and type of the subject differ in terms of age and grade level. Techniques and learning habits tailored to changes in learning materials, objectives and desired results.

Anwar's (2013) research results show that there is a significant relationship between learning habits and student achievement in high school. The academic achievement of students who have good study habits is higher compared to students who have poor study habits. Various controlled factors such as learning methods, family background, socio-economic status and student environment are the determinants of study habits.

The results of Kumari's (2014) study indicate an important role of personality to academic performance that provides answers to the question of why some students are academically inclined to increase, while the other students are not at the level of the same intelligence. The results showed that personality has a relationship with academic achievement, not just intelligence that determines academic performance. The factor of desire (factor W); The willingness of the students to do, and the general factor (factor G) is just as important in determining academic achievement as compared to intelligence. It is further explained that personality traits conscientiousness (self-awareness and thoroughness) are the most important key factors for predicting student performance.

Ibrahim et al. (2014) in his research to examine the relationship between the five dimensions of the high personality traits or the Big Five (neuroticism, Extraversion, openness to experience, friendliness and self-awareness) with student academic achievement. The research data is based on the latest empirical literature relationship between Big Five personality traits with student academic achievement. The study found that among the five dimensions of personality, consciousness is the best dimension highly correlated with student academic achievement.

Portfolio in this research is one component of character assessment. The result of data analysis shows that there is no significant relationship/difference with the achievement of student learning outcomes, either in interaction analysis with learning style, overall or analysis in every school category. The results of this analysis become interesting to be studied further considering the portfolio is one of the main techniques of assessment in determining the achievement of character and achievement of student cognitive learning outcomes.

The portfolio results achieved by each student in this study is a collection of works of each student, whether generated through individual or group work done in the classroom during the learning process and also as a result of homework. The achievement of each student's portfolio during this study unrelated to the improvement of his learning outcomes indicates the need for better planning in assigning tasks to the students so that the results obtained can give a clear picture of each student's

performance. Kemendikbud (2014) suggests that observations on the strengths and weaknesses of students attending to attitudes and behaviors are recorded immediately so that the portfolio/journal is original and objective that can be used to understand students more precisely. In addition, observation aspects are determined first by the teacher according to the characteristics of the subject matter. Aspects of observations that have been determined are then communicated with the learners early in the semester.

Susan & Maureen's (2014) study shows that positive attitudes about work have a positive effect on homework scores, which means that students who do well on the job receive positive reinforcement of good grades, thus affecting their opinions about homework. Collaboration offers students the opportunity to be examined for their work by others, learn from others, and perhaps to get answers from others, seek help, use books and other resources, and share answers that are not normally available. It was found that, to the extent that homework prepares students for the exam, the effect on test scores can be substantial but indirect.

Working with others positively affects homework scores but negatively affects the test scores. Moreover working with others seems to be most beneficial for homework for middle motivation student groups. Motivation from middle group students can be enhanced by the social effect of working with others. Homework has a stronger effect on test scores for less motivated students, however, working with others on homework has a stronger negative impact on test scores for students who are less motivated. Susan and Maureen's (2014) study concludes that there is a significant positive correlation between study habit skill, homework and assignment can predict good academic performance, so homework is recommended and tasks should continue to be provided and a major component of the final assessment of students. Felder et al. (2002) reported that the application of active group exercises in the classroom and cooperative learning groups for homework will help overcome the difficulties of extrovert students and feelers.

The results of the Gudaganavar and Halayannavar (2014) study show that the establishment of effective learning habits in students is a result of the home environment and work planning, reading and recording of habits and preparation for results-oriented examinations to perform well in tests and exams. The findings indicate that the better the study habits, the higher the academic performance of the students. Bad study habits will result in poor academic performance, while good learning habits will produce a good academic performance. Establishing effective learning habits creates awareness for regular and stable learning. Correspondingly,

Mashayekhi et al. (2014) report on the results of their studies, study habits have a significant impact on academic achievement, important for academic performance and educational progress that ultimately affects the academic future and career of students. It is therefore advisable to consider and plan for improving methods and learning the habits of students.

The results of Kumar's research (2015) show that most students do not follow effective study habits. The average time spent by the majority of students studying per week is less. The majority of students do not revise lessons on the same day. Students sometimes collaborate in assignments although assessed individually. Environmental changes affect the value of students which causes the majority of students in the first semester to have a low percentage score achievement. Thus, teachers need to motivate students to adapt themselves to effective learning habits. In addition, students with low percentage scores need to be given more motivation than students with a higher percentage score. Survey data show that students who earn lower percentage scores because of insufficient independent study time, do not revise lessons, do not follow learning, and do not consult with teachers.

5 CONCLUSION

In general, there is a significant relationship between the achievement of aspects of the character of gratitude, honesty, responsibility, curiosity, creative-innovative thinking, hard work, cooperation and communication obtained through observation, self-assessment, and peer assessment and average Total with improvements in student learning outcomes in each school category. Exceptions were obtained on the character of curiosity, creative-innovative, collaboration in medium-grade schools that did not correlate significantly with improvements in student learning outcomes. In addition, there is no significant relationship between the value of the portfolio with the improvement of student learning outcomes, both in the analysis in each school category as well as the overall analysis.

To obtain maximum portfolio activity result as one of the achievement technique of attitude competence, the portfolio is not only a collection of works of each student, either generated through individual or group tasks done in the classroom during the learning process and also as result Homework assessed at the end of the program activity. However, the portfolio should be an observation of the strengths and weaknesses of students who are attached to attitudes and behaviors recorded immediately, so that the portfolio is original and objective that can be used to understand students more precisely. In addition, observation

aspects are determined first by the teacher according to the characteristics of the subject matter. Aspects of observations that have been determined are then communicated with the learners early in the semester.

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