Study of Learning Strategy Integration of Science and Religion on the Development of Student Character

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Abstract. The purpose of education in Indonesia is to form a complete Indonesian man. It entirely means that human development requires a balance between the cognitive, affective, psychomotor, and religious domains. Religion cannot be separated from the development of one's personality, because in essence man in the world is to live and worship God. Learning science is basically a digging, review, disclosure, understanding on research symptoms, structures, and functions of nature around which then brought into the classroom as learning activities with scientific rules that are commonly developed. This activity is not an independent activity, but it is a scientific activity associated with the belief in the greatness of the creator for the development of student character. Position of student character development is very important before the scientific education is done. This research was conducted for 1 semester by using sample of 49 students who took course of plant ecology. The purpose of this research is to understand the development of student character by studying nature based on Islamic religion. The research method was analyzed by RapRiCons with modification, and with multi-dimensional scaling (MDS) which was then followed by Monte Carlo analysis. The results showed that learning strategies by integrating religion and science showed a positive increase in student character.

Keywords: Learning strategy, integration religion and science, RapRiCons, Multi-dimensional scaling, Monte Carlo analysis.

INTRODUCTION

The outcome of an education can be understood in everyday life including the characters that are presented to each individual. Education is practiced in everyday life, such as a small activity to open the door for others [11]. Plenary education is education that can be practiced in real life, not limited to knowledge alone, has become habit, behavior and individual character in their life [15].

Based on the definition issued by the Ministry of National Education Indonesia [19], [8], the character can be described as a good individual when a person knows virtue, has the willingness to do good deeds and behaves well, as a result of intellectual, spiritual and emotional development, healthy physical development, affective development and creativity, rooted in religious values, Indonesian national culture and responsive to the changing demands of the times.

Science education is an education that leads students to the understanding of nature through the five senses which is then processed on the framework of the conceptual field of science. Truth in Science is not only pointing at the evidence-based reasoning but also at making questions about identity, meaning, purpose, and belief [7], [2]. In Islamic rules, the understanding of nature is directed to the exaltation of the creator, Allah. The integration of this understanding is the embodiment of students' knowing and feeling skills in real life [15].

The character in Islam is one of the main values written in the Qur'an [13], [11] uses term as old as Education itself. Achievement of good character can be done with the character education in school [21]. However, this Education will be better if is not only done at school [22], [18]. Character education in higher education must be maintained. This is supported by [5], that based on a holistic approach, character education must be done continuously. Education at the university level does not necessarily use a nationally proclaimed curriculum, however there are guidelines for curriculum development for universities called Higher Education Curriculum (HEC) based on the achievement of competencies to be achieved [9].

Unfortunately, currently not all of the subjects taught have integrated knowledge in the cognitive domain with understanding of affective and conative actions, in accordance with the demands that have been proposed by the college curriculum [9], [6], [12], [20]. One of the institution of religion-based university in Malang is University of Muhammadiyah Malang (UMM). The university has asserted that the character of the student needs to be established through Education because the character is not merely the concern of cognitive domain of education but it must be practiced in everyday life. In Islam there are 3 things emphasis Character education for human beings are; (1) Faith, (2) Charity and (3) good morals [17]. Thus, Education is basically a learning that is capable of forming one's personality, doing good and right actions, by putting faith into the conscience.

The development of character education requires a model learning strategy in building the character of the students. This strategy specifically has its own character formation program integrated with all student activities.
Model integration of science and religion in UMM is a learning strategy that needs to know its influence on student character. This integration has been done in the learning process at UMM but has not revealed any research that relate to the development of student character.

METHODS

This study objective is to identify the model integration of science and religion as a tool for the development of cognitive and religious domains as the basis of faith in the felling of student characters in Islamic-based university. The subjects of the study were 49 students of 4th semester. Research instruments to collect data were questionnaires and observation sheets. Indicators in the development of questionnaires are as follows: Descriptions of faith, good deeds and morals are described in 5 consecutive pillars: (1). the pillars of spiritual value, (2). the pillars of behavior, (3). the pillars of ethics, (4). the pillars of self-concept, and (5). the pillars of self-development. These five pillars are the key words of character development of students. The integration model uses RAPRICons developed by Rahardjanto (2013) with modifications. RAPRICons uses several sequence attributes to illustrate the assessment of several aspects, then set the binary scale. The ordination of a series of attributes is processed on a multi-dimensional scale (MDS) followed by scale and rotation process.

Root Mean Square (RMS) on X axis ordination will determine attribute sensitivity. On the x axis simulates the best judgment and worst [4] is simulated by choosing extreme attribute scores. The greater the value of RMS in an attribute will indicate that attributes have an increasing role in the development of student character. In another dimension, the Y-axis is activated to maintain the normality of the ordination on the second axis of the first axis. Significant differences will be demonstrated by the

<table>
<thead>
<tr>
<th>Dimensional</th>
<th>Character Development</th>
<th>MDS and Carlo Statistics Value</th>
<th>Iteration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spiritual Value Pillars</td>
<td>70,12 and 0,07</td>
<td>0,19 and 0,93</td>
<td>2</td>
</tr>
<tr>
<td>Behavior Pillars</td>
<td>68,06 and 0,38</td>
<td>0,19 and 0,93</td>
<td>2</td>
</tr>
<tr>
<td>Ethics Pillars</td>
<td>64,17 and 0,05</td>
<td>0,21 and 0,91</td>
<td>3</td>
</tr>
<tr>
<td>Self-concept Pillars</td>
<td>56,07 and 0,43</td>
<td>0,22 and 0,90</td>
<td>3</td>
</tr>
<tr>
<td>Self-development Pillars</td>
<td>57,25 and 0,12</td>
<td>0,21 and 0,91</td>
<td>3</td>
</tr>
</tbody>
</table>

Based on Table 1, each dimension has a value "stress" which is much smaller than the provision that states that the value of "stress" obtained value of 25%. As the value of "stress" diminishes, it shows that the quality of the analyzes is getting better. In the contrary, to the coefficient of determination (R\(^2\)), the quality of the analysis becomes better if the value of the coefficient of determination is greater (approaching value 1). Thus, from all parameters, the value of "stress" and R\(^2\) indicate that all the attributes used in the development of the character of the student achieved good status.

This study uses Monte Carlo analysis to assess the total confidence index score in each dimension. After repeated analysis several times, Monte Carlo analysis shows errors that do not make much changes to the total index value and each dimension. Based on Table 1 it can be seen that the value of the student character development index has a
coefficient of determination of 90%-93%. These results indicate a small difference between the results of MDS analysis and Monte Carlo analysis. The small differences between student’s character development index values between the MDS analysis method and the Monte Carlo analysis show the following: 1) errors in each pillar score are relatively small; 2) the assessment variation is relatively small because of the difference of respondent opinion, and 3) data entry errors and lost data can be avoided on the analysis performed.

In line with the opinion of [3] Character education is the essence of education that has been practiced since several centuries ago. This education leads to the excavation of a good value on life to complement the knowledge and skills acquired in the classroom [14]. The development of this good character is not only in the religion of Islam, but also in Christianity [24]. The development of student character can be done by habituation to study the value of religion in science learning. The activities of the students are to study the verses that are in accordance with the subject matter being studied, to appreciate differences of opinion at the time of discussion, to assist other students who have difficulty in the chapters studied.

CONCLUSION

Integrating science and religion is one of the development of student learning strategies that can be used to develop student character. Three advantages that can be achieved by using this strategy are: (1) increasing the understanding of religion for students; (2) deepening the field of value-based science; (3) the practice of science in everyday life. Thus, the development of students' good character can be rated with the daily behavior of students in the classroom or outside the classroom.

REFERENCES


[18] Suherman, A., “The Implementation Of Character Education Values In Integrated Physical Education
Subject In Elementary School”. SHS Web of Conferences 42, 2018.


