

# Basic Natural Sciences Contribution for Scientific Attitude Development and Values of Life

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**Abstract:** *Science education aimed at concepts achievement and science process skills. Moreover, science education is also aimed at scientific attitudes and positive values inherent in science learning. Based on deeply observation, it was shown that basic science class in one of university in Indonesia still neglected this. The lecture was oriented only to concepts understanding. The research is aimed to develop the learning-model, which enable to develop students' scientific attitude in addition to concept understanding and process skills. After one semester model implementation, assessment on scientific attitude has been done. The research methods was an analytical-descriptive and the subjects were two classes of non-science students who are following the basic science lectures (accounting students and prospective English teachers) from private university in Bogor. The result showed that students' scientific attitude and positive values can be developed through implementing the multi models of learning, which placed student as a focus of learning. By the research it was also showed that increase occurred gradually.*

**Keywords:** scientific attitude, value, teaching learning model.

## 1. Introduction

Basic Natural Sciences (IAD) is one of subject in society life (MBB) subjects group that must be given to college students as part of core curriculum lecture was held as general subject and held on lower semester. As part of MBB subjects, IAD subject vision at college is values source and guidelines for education provision to deliver student established personality, social sensitivity, social life skills, conservation knowledge, utilization study program resources. Based on Decree of Dirjen Dikti Depdiknas RI No. 44/DIKTI/Kep/2006 article 6, study load of MBB subject given integrity 3 (three) sks.

While IAD lectures should be in line with mission statement, which helps cultivate critical power, creative power, and student sensitivity to social values and culture after establishing his personality as social life provision as individual and social beings democratic, civilized, uphold human values, dignity, concerned with natural resources preservation and environment, have the ability to master the basics of science, technology, and art, as well as play a role in finding solutions to social problems and cultural environment wisely (Dikti, 2006). Based on a review of content and purpose essence, materials IAD includes five major components, namely content, process, meta-science, context, and affective.

Results of initial studies indicated weak IAD lectures mainly in attitudes aspects learning and values. This is possibility because a lecturer less interpret GBPP IAD which is basically developed to improve third domains. Revealed that up till now a lecturer too much emphasis only for concept aspect. Therefore, in this study has been tested developed lectures models that attempt to provide an alternative model that can be used as IAD lectures reference.

IAD lectures models developed for six themes/study materials, includes Human Mind Natural and Development, Progression and Natural Sciences Development, Earth in cosmos, Living Things Diversity and spreading, Ecosystems

and human role therein, Natural Resources and Environment. Some approaches (such as inquiry, contextual, collaborative, concept) strategies and methods (discussions, assignments, lecture meaningful, group presentations) and media (Power point + LCD, articles, instructional videos, and photos) are used in synergy to optimize lectures object achievement. Next studies conducted to determine how far model implementation can develop a scientific attitude and positive values in IAD participating students.

## 2. Method

The study was conducted with analytical descriptive method, which tried to make sense of research results about scientific attitudes development and positive values. Instrument uses a Likert scale questionnaire with observation format and interviews questionnaires for lecturer and student. Research subjects were 92 students of Accounting department (representing non-science non-educational student group) and 94 students of English Education Department (representing non-science non-educational student group) which abreasting IAD lecturing and 3 lecturer of IAD subjects.

## 3. Result and Discussion

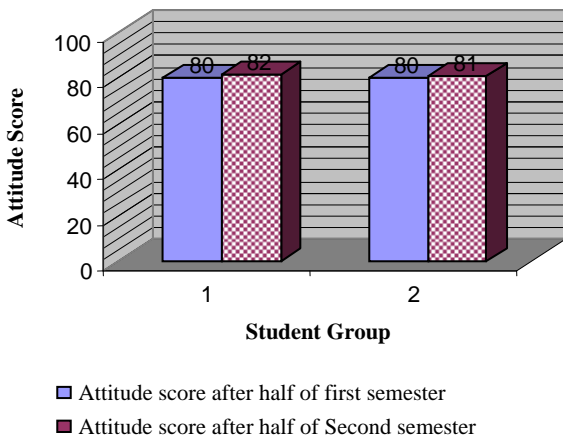
The results showed that generally, model implementation for one semester was able to develop attitude in scientific students.

Clearer picture from achievement of scientific attitudes development presented on the Figure 1. Generally seen that scientific attitude which demonstrated both by students of English Education and Accounting including excellent category, and did not show a difference between students acquisition in both groups. Similarly, it appears that student scientific attitude on both groups seen consistent and maintained on both test results. Test results at half of semester beginning and finish average placement is almost the same.

**Table 1:** Acquisition Student Scientific Attitude After Lectures Attending

Department	Half of First semester	Half of Second semester	Ability Criteria
English Education (education, non science)	80	82	Very Good
Accounting (education, non science)	80	81	Very Good

**Figure 1:** Student Scientific Attitude of English Education Department (group 1) and Accounting Department (group 2) After IAD Lectures Attending



Data processing/research invention about students scientific attitude further conducted to give an idea of how far each indicators of scientific attitude ingrained in students after lecturing. As mentioned in the previous section, Basic Natural Science lecturing aims in addition to understanding science and technology, and the environment, it also aims to inculcate scientific attitude. This positive attitude is a concomitant effect (nurturant effect) of learning process (Carin & Sund, 1980).

Revealed that achievement of scientific attitude in both departments showed excellent results, and showed less regularity or consistency after going through a certain period of time (in this case after half of semester exams beginning and end). This suggests that scientific attitude has been ingrained in students after lecture period attending during half of first semester and remained awake until next period, with assumption that developing attitude in student mainly due to use of learning model implemented. Attitude indicator revealed by this study include (1) Curiosity, (2) Humanitarian (3) Skeptic, (4) Open think, (5) Positive reaction to failure, and (6) Think objective.

Mastery of student scientific attitude after IAD lecture attending turns out evenly for each indicator at score level about 20 from maximum score of 25, or achievement means about 80% from score of 100%. Further means that IAD lecture with a model has been designed to accommodate development of all scientific attitude indicator. This is thought to be advantage of methods using and diverse

approaches, which although diverse but remain focused on student activities.

Inquisitive attitude of students can be developed in lectures among others by giving them opportunity to ask and find out about all things related to current or future context discussed. Incorporation of contextual approach with assignment method and computer media (the Internet) are techniques used in lecture which turned out very well develop this indicator.

Through lectures first show facts or natural events such as earthquakes in various places, blasting various places by using a powerful bomb, as well as other phenomena, lead students to hone his humanity, and to think about solutions that can be done to prevent or minimize humanitarian disaster. Lectures which brings students to scientific discussion about how to respond a news or expert opinions about a phenomenon will train students to be skeptical, open, and objective.

Results of research about attitude, in line with Anderson opinion (1981), that affective domain types which can be developed in science learning are attitude, interest, motivation, school related values, preference, academic self concept and self control. Attitude is a readiness to act, reflect feelings of like or dislike, positively or negatively to an object. The object can be a friend, teacher, lesson, lessons, or other activities. So it has been clearly revealed that IAD lecture not merely to instill concept of course, but more focused on personality formation, thinking skills, attitudes and noble values that college graduates can put themselves in the workplace and the community well. IAD curriculum can be regarded as media to convey mainly lecture message, as a vehicle for science literacy, and also as a tool to develop thinking skills and attitude instill.

According Mar'at (1981), in addition to using attitudes scale, attitude measurement can be equipped with observation. Observations result can support attitudes acquisition based on Likert scale measurement. Generally, observer stated that students show interest or high enthusiasm during lectures are shown in discussion activities that are collaborative, responses to questions or lecturers and colleagues statements, and open to suggestions and criticism.

Attitude consistently shown to realizing value. Result of research indicate a trend constancy scientific attitude during a semester period. This is proven from scientific attitude which stable average of attitude scores on half of first and last semester, on two of department which studied. Similarly, constancy also reflected on every scores of scientific attitude indicator.

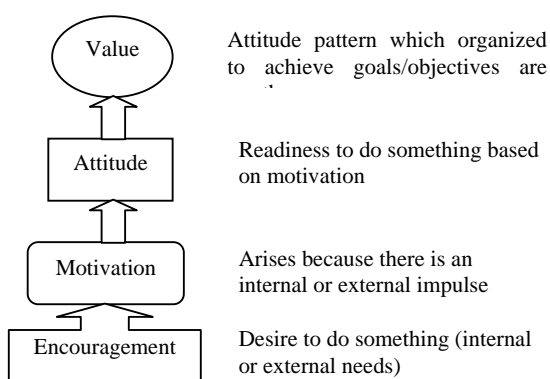
Attitude is a product of socialization process which a person reacts according with receives stimuli, are generally influenced by the social environment (Mar'at, 1981). Further explained that attitude is a cognition unity which has valence and finally integrated into a broader pattern. Attitude is very closely related to values, motivation and encouragement. The hierarchy illustrates that development of individual behavior stems from encouragement (drives) and ends on values stage.

Attitude is a person's readiness to react the object in a certain environment as an object appreciation. Attitude is not an act,

but only a trend (tendency) behavior. Positive attitude as important with other learning outcomes such as knowledge and thinking skills. Built competency learners will be more useful if they have a positive affection towards these competencies. Learners will become lifelong learners if they are aware that they are able to learn and take responsibility for their academic achievement. Attitudes development in learning also in line with two of five education pillars proclaimed by UNESCO, that is learning to be and learning to live together (Delors, 1996). Delors further revealed that: "... education must contribute to the all around development of each individual-mind and body, intelligence, sensitivity, aesthetic sense, personal responsibility, and spiritual values."

Study failure often not because it is not capable, but because they do not want. Further failure to learn is also caused by insufficient motivation to learn, do not understand how to learn, and find it very difficult to learn. Similarly, they do not have ability to control himself to then lead to distrust themselves. Therefore, building attitude, affection and positive values in the lecture are critical dimension of learning process. Build an attitude is bridge to learning successful.

**Figure 3:** Selection Development Hierarchy and Individual Behavior Degeneration (Source: Mar'at, 1981)



Belief in what is supposed to be desirable, it is considered essential and procedures standard the existence of something social personally accepted called value. Value very influential or make reference to behavior, interests, attitudes, and someone satisfaction. Values are generally stable in a person for a long time, studied, and has a wide range and broad, with a tendency rooted in self.

#### 4. Conclusion and Recommendation

The results further indicate that IAD learning model designed to accommodate a variety approachh such as contextual, science technology and society, with a collaborative and cooperative strategy, and supported by methods such as discussions, assignments, as well as brain storming, using variety media such as computer-based media (power point and learning VCD), can at least minimize curriculum objectives asymmetry with implementation in the field. Learning model designed to improve student scientific attitude. Scientific attitude which student possessed was

consistent during a lecture period, thus it can be concluded that an attitude owned tend towards development positive values.

In order to model implementation properly implemented by a lecturer, necessary expertise and insight from lecturer both in subject mastery and learning management practice. Given peculiarities and very diverse expertise areas IAD subject lecturer, then education and training for lecturer before becoming IAD subjects lecturer is a priority that must be realized. Training material should include teaching materials analysis aspects, pedagogical, lectures model design and media, and simulation or learning practice.

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