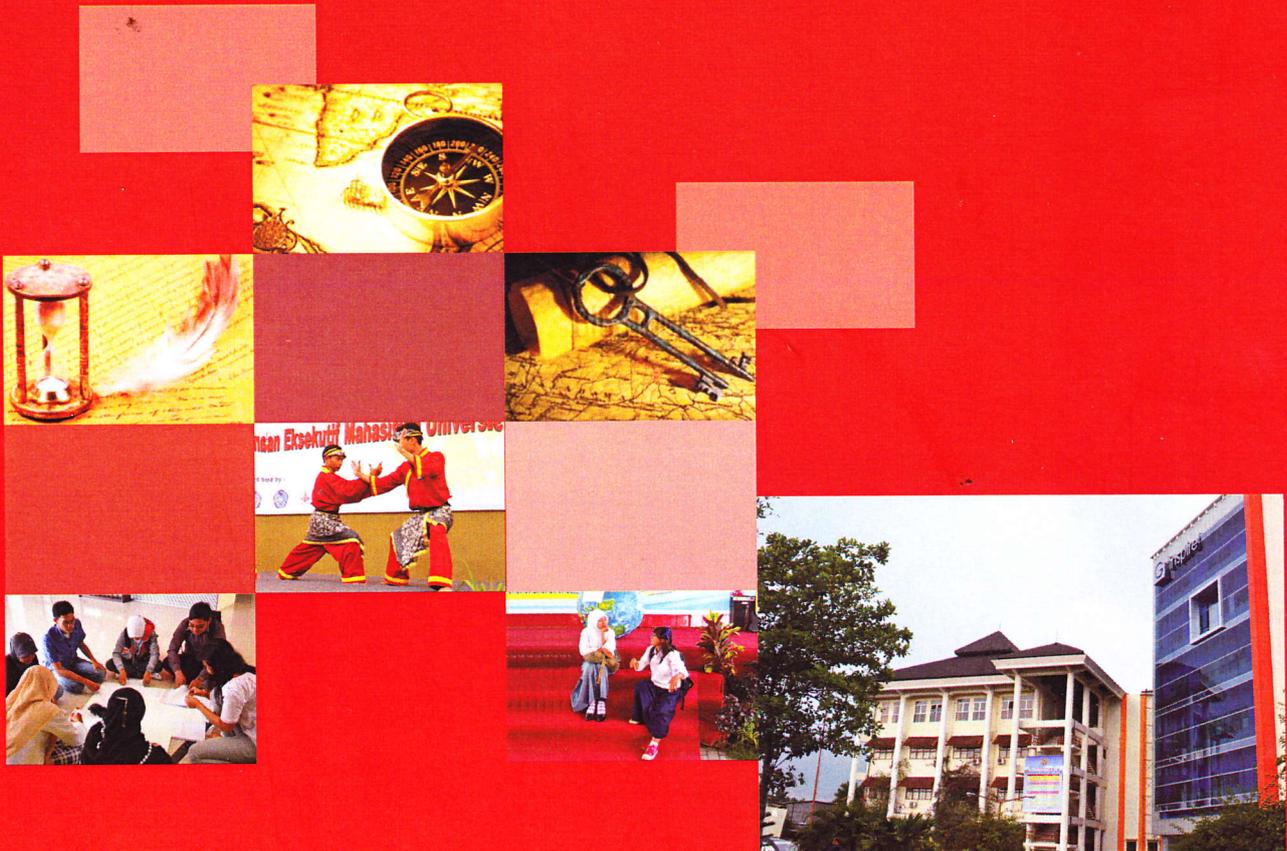


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## Students Character Education by Using Computer Program in Course Data Processing Statistics

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### Abstract

University is a place to study. In the last decade the development of science and technology has encouraged each university to increase student interest in the field of appropriate technology. One way that can be done to improve the quality of students, University of Muhammadiyah Surabaya is trying to utilize the use of computers in the application of theories given to certain subjects, in this study is the statistics course. The purpose of the research is to develop students' thinking character to become intelligent, creative, analytical, critical and problem solving individuals through learning by using computer programs to improve students' skills in data processing in statistics courses. In this study, lecturers try to provide healthy and reasonable opportunities for students to respond by utilizing their experiences in the hope of improving the quality of teaching, which can have a positive effect in arousing students' interest and enthusiasm. The method used is descriptive method. While the instrument used is an observation sheet that contains indicators of student character adapted from indicators of student activity. Data collection techniques are carried out by observing student activities during the learning process. The results of research during the learning process by applying the use of computer programs in statistics courses show the most developed character of thought, besides that not only these characters can be formed but other characters such as hard work, love of reading, communicative and others also develop.

**Keywords:** character, statistics, thinking, descriptive method

### 1. Introduction

University is a place to study. In the last decade the development of science and technology has encouraged each university to increase student interest in the field of appropriate technology. One way that can be done to improve the quality of students, University of Muhammadiyah Surabaya is trying to utilize the use of computers in the application of theories given in certain subjects. Based on the researcher's observations of lecture activities, it shows that the teaching method, especially in statistics courses, still seems passive. Lectures are only given through lectures that explain existing theories, so that students' understanding in these courses is still lacking. Lecturers should provide healthy and reasonable opportunities for students to respond by taking advantage of their experiences. Therefore, lecturers are required to improve the quality of teaching, so that it can arouse students' interest and enthusiasm. Lecturers must dare to try various approaches that can create a conducive learning climate that allows students to feel happy and interested in participating in statistics lessons, where with this approach it is expected to develop abilities and shape student character values that can be done through the learning process.

The learning process that has occurred so far seems to be only concerned with cognitive aspects, while psychomotor and affective aspects are almost neglected in the learning process, so that the goal of character building may not be achieved, but lecturers in developing and shaping student character values use computer programs in applying theory. which has been submitted to improve students' skills in data processing in statistics courses. The purpose of the research is to develop students' thinking character to become intelligent, creative, analytical, critical and problem solving individuals through learning by using computer programs to improve students' skills in data processing in statistics courses.

Based on the background that has been explained, the researchers are interested in studying how the implementation, the effectiveness of learning and what characters can be built using computer programs in data processing in statistics courses.

### 2. Literature Review

Article 3 of Law no. 20 of 2003 (SISDIKNAS) states "National education functions to develop capabilities and shape the character and civilization of a dignified nation in the context of educating the nation's life, aiming to develop the potential of students to become human beings who believe and fear God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent, and become a democratic and responsible citizen." Meanwhile, according

to the Book of Development of National Culture and Character Education, DIKNAS (Widodo, 2010) "character, character, morals, or personality formed from the internalization of virtues that are believed and used as a basis for perspective, think, behave and act are called character. . Virtue consists of a number of values, morals, and norms such as honesty, courage to act, trustworthy (trust), and respect for others.

Furthermore, Widodo (2010) concluded that cultural values and national character include values: religious, honest, tolerance, discipline, hard work, creative, independent, democratic, curiosity, national spirit, love for the homeland, respect for achievements. , friendly / communicative, love peace, love to read, care for the environment, social care, and responsibility. The development and formation of these character values can be done through a learning process.

Understanding learning according to Slameto (2003:2) is a business process carried out by a person to obtain a new behavior change as a whole, as a result of his own experience in interaction with his environment. Meanwhile, according to Sudarmanto (1993:2) learning is an effort to use every means or source, both inside and outside educational institutions, for personal development and growth. This definition relates to learning activities in a broad sense, not only regarding the addition of knowledge which according to Bloom's term only concerns the cognitive domain but also concerns the affective and psychomotor domains. One that a person has learned is a change in behavior within him. These behavioral changes involve both changes in knowledge (cognitive) and skills (psychomotor) as well as those concerning values and attitudes (affective). From a number of notions of learning that have been described above, there are words that are very important to discuss, namely the word change. Therefore, someone who has carried out learning activities and at the end of his activities has obtained changes from within himself by having new experiences (Djamarah, 2002:12).

The factors that influence learning outcomes according to Djamarah (2002:142) are: (a) Environmental factors consisting of: natural and social culture. Both have a significant influence on learning and student learning outcomes. (b) Instrumental factors, consisting of: (1) Curriculum is a plan for learning which is a substantial element in program education, each school has an educational program, (2) Educational programs are structured to be carried out for the sake of educational progress. The success of education in schools depends on whether or not the educational program is designed, (3) Facilities and facilities, facilities have an important meaning in education. (c) Physiological Conditions, consisting of: physiological conditions and psychological conditions.

Learning development is planning with common sense to identify learning problems and seek problem solving by using a plan for implementation, evaluation, testing, feedback and results (Schauer in Suparman, 1997:29). There are two kinds of development procedures, namely (1) with an empirical approach, and (2) by following or making a model (Gafur, 1989:24). The process with an empirical approach is carried out without using the theoretical foundations systematically. The learning package that is prepared is based on the experience of the developer, students are asked to study and then the results are observed. If the results are not as expected. then the learning package is revised and the arrangement is repeated. Meanwhile, with the approach of following or making a model, the expected learning outcomes can be classified according to certain types. For each specific type of learning goal, certain ways to achieve it can be chosen, certain conditions for observing responses can be created, and changes if necessary. In the learning development model, according to Thiagarajan, Semmel and Semmel (1974: 5) proposed a development model consisting of four stages called the Four-D Model. The four stages are define, design, develop, and disseminate. In principle, the development of learning uses the framework of thinking with some appropriate adaptations.

### 3. Methodology

The method used in this research is descriptive method. The data analysis technique used is descriptive qualitative, which describes the results of research based on the data obtained to determine learning outcomes. The data obtained were analyzed using descriptive statistical analysis techniques with percentage techniques. Based on the background and problem formulation that have been described, this research is a development research by applying the principles of classroom action research. This research was conducted at the Mathematics Education Study Program, Faculty of Lecturers and Educational Sciences, University of Muhammadiyah Surabaya. The research period was 6 months (April 2010 to September 2010). The subjects of this study were second semester students who took statistics courses for the 2009-2010 academic year at the Mathematics Education Study Program, Faculty of Lecturers and Educational Sciences, University of Muhammadiyah Surabaya. In this study there were 25 (twenty five) respondents, consisting of 3 (three) male respondents and 22 (twenty two) female respondents.

In accordance with the elements of cultural values and national character as concluded by Widodo (2010), namely the values: religious, honest, tolerance, discipline, hard work, creative, independent, democratic, curiosity, national spirit, love of the land water, appreciate achievement, friendly/communicative, love peace, love to read, care for the environment, care about social, and responsibility. Then the indicator of national character is interpreted as student participation observed during the learning process including student activities as follows:

1. Observation indicators from reading books (books on statistics and modules given by lecturers), then the indicator of character that can be formed is the character of reading fondness.
2. Observation indicators from listening and paying attention to lecturers' explanations and asking questions, then the character indicators that can be formed are curiosity and communicative characters.
3. Observation indicators from giving suggestions/interrupts, then the character indicators that can be formed are democratic, creative, and communicative characters.

4. 4. Observation indicators from the use of computer programs in processing and analyzing statistical data, the indicators of character that can be formed are intelligent, creative, analytical, critical and problem solving.
5. 5. Observation indicators from the provision of individual projects (independent tasks in data search), then the character indicators that can be formed are creative, hard working and independent characters.
6. 6. Observation indicators from making decisions and making conclusions, the indicators of character that can be formed are creative, hard working and independent characters.

#### 4. Results of Analysis and Discussion

Based on the research results obtained from data processing on the questionnaire given to students participating in the Mathematics Statistics course, the following data were obtained:

1. Students who feel happy with the use of computers in statistical learning are 100%.
2. Students who feel happy with the computer practicum guide module are 100%.
3. Students who feel new to the statistical program as developed in this study are 72%.
4. Students who feel that with the practical use of computers, the existing statistical data can be easily analyzed, so that decision-making can be done well, as much as 100%.
5. Students who agree that in the future curriculum development, statistics practicum courses are added as much as 100%.
6. Students who feel that the statistical practicum can increase their knowledge and skills in data processing in statistics courses are much as 100%.
7. Students who expect courses related to statistics to be given practicum are 92%.

The results showed that the response of students to the use of computer programs and computer practicum modules in order to improve students' skills to process data in statistics courses was quite good. In the study, the large percentage indicates that the use of computers in statistical learning can easily analyze statistical data, because so far lecture activities have shown that teaching methods, especially in statistics courses, still seem passive. Passive in the sense that students only listen to theoretical explanations from the lecturers so that they do not pay attention to the literature books that have been recommended by the lecturers when explaining the syllabus for statistics courses. Most of the students find it difficult to understand and study the existing books.

The author as a lecturer is required to improve the quality of teaching, so that it can arouse students' interest and enthusiasm. Therefore, one must dare to try various approaches that can create a conducive learning climate that allows students to feel happy and interested in participating in statistics lessons, the approach is to introduce the use of computer programs. In accordance with the times, the statistical data found are large amounts of data, where there is a possibility that it will reduce the accuracy of the validity of the conclusions obtained if only by calculating manually. The solution method has developed not only with manual calculations, but is easier to use and apply in computer programs. To improve students' skills in data processing in statistics courses, lecturers try to use computer programs in applying the theory that has been conveyed. This use of appropriate technology will be applied to statistics courses in terms of inferential or decision-making terms. This is done because the inference process is still done manually.

Another advantage of the learning development in this study is that it has been adapted to the syllabus used, so that students can easily understand the theory along with its application. The computer practicum guide module provides convenience for students both in terms of understanding in statistics courses, besides that students can also use it when preparing their final project. The research has covered 4 stages of the Four-D Model, namely the stage of defining, designing and developing. The last stage of the Four-D Model is the dissemination stage, where at this stage is the stage of using the device, namely the computer practicum guide module which will be developed on a wider scale, for example in other classes, by other lecturers and so on, so that the effectiveness of the use of tools in KBM (teaching and learning activities) can be achieved.

After observing during the learning process and reviewing several research results, the researchers obtained several findings in the formation of students' character by carrying out the following activities:

1. Initial Activities.
  - a. Lecturers convey goals & motivate students; in this step the lecturer conveys the learning objectives to be achieved after the learning process. The lecturer provides the syllabus and modules that must be understood before doing the practicum and advises students to read books related to the material to be delivered, then introduces computer programs to students for statistics courses. Students are guided to be able to follow the learning process. The character that can be built in this activity is a love of reading.
  - b. The lecturer determines the topics of discussion.
2. Core activities.
  - a. Lecturers make observations from the use of computer programs in processing and analyzing statistical data, it is hoped that the characters that can be formed are intelligent, creative, analytical, critical and problem solving.

- b. Lecturers give independent assignments by conducting case analysis on different data for each individual. In this activity step, the characters that can be built are creative, hard work, independent, analytical, critical and problem solving.
  - c. Students study assignments. Characters that can be built in this activity are fond of reading, independent, curious, analytical, critical and problem solving.
  - d. Students perform the final task of analyzing, concluding and interpreting the data that has been obtained. Characters that can be built in this activity are creative, hard work, independent, analytical, critical and problem solving.
3. Final activity
- a. Lecturers and students discuss assignments. Characters that can be built in this activity are democracy, and friendly/communicative,
  - b. Lecturers and students conclude the results of the assignment. Characters that can be built in this activity are tolerance, democracy, friendly/communicative, hard work, and creative.

During the learning process using computer programs in statistics courses, several findings were obtained showing that not only thinking characters can be formed, namely intelligent, creative, analytical, critical and problem solving personal characters, but other characters can also develop during the process. learning. Other characters such as hard work, love to read, communicative and others also develop. There is another character development because each student is given the responsibility to do his/her job independently. To be able to do well on individual projects requires hard work and must be fond of reading. Therefore, the character likes to read, and hard work also develops.

## 5. Conclusion

Based on the findings and results of the discussion, the authors draw several conclusions, namely the development of learning in this study has been adapted to the syllabus used, so that students can easily understand the theory presented along with its application. Furthermore, the computer practicum guide module provides convenience for students in improving their skills for data processing in statistics courses. The response given by students to the use of computers in statistical learning is very good. This is indicated by the large percentage that requires the use of computer programs in processing statistical data, making it possible that courses related to statistics will be given practicum supporting courses. The use of computer programs in data processing in statistics courses in order to build student character during the learning process in class is carried out in three stages, namely initial, core and final activities. Initial activities consist of conveying goals, motivating students, and determining discussion topics. The core activities consist of observing the use of computer programs in processing and analyzing statistical data, giving independent assignments by conducting case analysis on different data for each individual, learning assignments, and carrying out the final task of analyzing, concluding and interpreting the data that has been obtained. . While the final activity consists of discussing the task and concluding the results of the task. The most developed characters during the learning process are intelligent, creative, analytical, critical and problem solving characters. During the learning process using computer programs in statistics courses, several findings were obtained showing that not only thinking characters can be formed, but other characters can also develop during the learning process, namely characters such as hard work, love of reading, communicative and others are also developing.

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