The impact of the Personality of Programming Algorithm and Learning Models atStikom Ambon College

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ABSTRACT--- Poor academic performance implies that algorithm program continues to face challenges and that these challenges are yet to receive lasting solutions. Some of the factors accounting for this dilemma include mental personality problems among learners and a poor choice of learning models or instructional approaches. To understand this subject or debate, it is essential for instructors to ensure that the role of mental personality in shaping the outcomes is identified and examined before selecting the most appropriate model to solve the dilemma. This study aimed at implementing a learning model in a laboratory set-up, having identified different types of personalities exhibited by the selected learners.The motivation was to understand the impact of learning models; including a conventional and direct learning model, as well as that which is aided by laboratory sessions. Also, the study strived to determine if certain types of personality (including extroverts and introverts) determine the rate at which learners acquire knowledge and skills. The research context entailed Stikom Ambon College Ambon Maluku. The period of investigation was an even semester that came during the 2016 acadmeic year. With 60 studnets selected as an appropriate sample, a block design (2x2) treatment was the chosen rseearch design. From the results, the use of laboratory sessions as teaching aids were found to yield superior learning outcomes compared to situations where there was direct and conventional instruction in classroom settings. Also, the study established that the type of personality does not pose a statistically significant impact on learning outcomes. However, there was a direct relationship between the type of learner personality and the type of learning modle employed in classroom settings. Additional results dmeonstarted that when stdunets exhibit an extrovert personality, superior learning outcomes are likely to be achieved; especially if laboratory sessions are embraced as tecahing aids – compared to a case involving introvert learners. It was inferred further that when the direct and conventional learning model is applied to the introvert personality group, the learning outcomes tend to be better compared to their counterparts in the extrovert personality group, who exhibit superior performance in the presnece of laboratory sessions as teaching aids.

Keywords--- Algorithm programming, personality, learning model

I. INTRODUCTION

With computer technology advancement, the computer system language has been developed. This language entails the programming language. Indeed, the programming language can be likened to a machine language whose modification is felt in terms of syntax. This modification seeks to enhance human udnerstanding. Also, computer systems indicate high-level programming languages and exhibit simplified commands that interpreters or computers provide to programmers [1].

A notable aspect that is worth considering during software deisgn involves establishing a data structure that is deemed the most appropriate. Through data structures, programmers can establish the method of data storage; especially because the data structures shape the outcomes linked to overall parameters such as program efficiency, clarity, and cohesiveness. An example illustrating this correlation is a case in which structs, arrays and instructions are provided by Language C, which is contained in high-level data structures [2].

Regarding the use of algorithms, two elements are worth noting. The elements include drawing and writing. Particualrly, the algorithm charged with the writing process is linked to specific pseudocodes and data structures (such as English or Indonesian). Similar to actual programming codes such as C and Pascal, pseudocodes are responsible for the description of algorithms expected to communicate or relay messages to programmers. With images presneted along the algorithms (such as the use of flowcharts), the role of the pseudocodes is to ensure that there is informal expression of ideas – during the development of algorithms. A specific example of a process through which algorithms can be generated is a case involving formal language rule stretching, especially that which enables the expression of the algorithm's final version. Indeed, the adoption of this approach applies to situations where the use of the programming language is implemented form the initial phase.

Targeting the context of Ambon, this study focused on high school computer science sessions; with the study program Strata 1 Information Systems on focus. The study excluded parties with certification at the international and national certification levels. In Ambon'sProdi Information System STIKOM, nine lecturers have satisfied the criterion of algorithm programming in legend courses. In each year,

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the institution hosts experts from Yahoo and Goggle to provide knowledge and skills on how STIKOM could collaborate with these companies.

It is also notable that through the study program, studnets or participants gain knowledge about references and related topics. Insights form books and notes that have proved relevant to STIKOM Ambon Information Systems Program's programming algorithm suggest 563 exemplar, as well as 103 titles; with six open access journals also documented. Through subscription, stdunets can access these sources easily. Apart form references, Prodi Information Systems STIKOM Ambon is seen to provide an opportunity for learners to interact with a complete information system lab, which houses several applications programs and computer units (900 and 120 respectively). The main aim of these provisions has been to ensure that IT work competence is facilitated, especially among STIKOM Ambon's graduates; with the programming algorithm course being of particular emphasis.

Imperative to highlight i that the performance of the majority of leraners who take the programming algorithm course has remained low. These insights are informed by the assessment by many lecturers – regarding the course' learning outcomes. One of the factors documented to account for these wanting outcomes include the low input quality whereby most of the students pursuing the course are poor or have a poor background in mathematics, as well as poor entry behavior. Anotehr factor involves studnets' negative attitude towards the course [1, 2]. In particular, the course is associated with numerical problems similar to matehmatics, causing a negative attitude among studnets; compounded by poor background and lack of interest in mathematics. Anotehr factor involves the tecahing strategies that many lecturers employ. In situations, where laboratories are offered as tecahing aids, it remains notable that the algorithm course can be learned easily. However, poor instructional management implies that most of the lecturers are likely to opt for direct tecahing-learning processes; failing to exploit the Information Systsems Laboratory as a tecahing aid. An addiitonal reason behind the majority of the students' poor performance in this course involves the majority of the lecturers' lack of understanding of different types of personality; including the case of extrovert and introvert learners. Imperatively, personality plays an important role in shaping learning outcomes. Hence, the need to consider whetehr stdunets are introvert or extrovert (both in classroom and laboratory settings) is essential. From the documentation above, it becoems important to conduct an in-depth analysis or examination of the subject involving the impact of the type of personality and learning models on learning outcomes; with particular emphasis on the programming algorithm course. The target population is a case ofStikom Ambon College's Information System students.

II. LITERATURE REVIEW

A.Learning Outcomes

Accoridng to Gagne and Bringgs [3], desired individual changes, which represnet measurable capacities, characterize learning outcomes. The outcomes are informed by innate variables or characteristics that stdunets possess, proving specific to certain teaching processes and sessions. In anotehr study, the OECD [4] documented that certain competencies, skills, and knowledge gained and demonstrated as the need arises represnet learning outcomes. Form the affirmations by Purwanto [5], learning outcomes are marked by changes in the behaviors of individuals; including parameters such as psychomotor, affective, and cognitive functioning.

B.Logic Concept Algorithm

An algorithm entails a logic process that comes in the form of instructions or command sets. Its role involves calculating computer program mathematical problems [6]. During problem solving, the algorithm targets the expected steps [7], which can be likened to a recipe. As observed by Albert et.al. (in Bernardo, et.al.), logic programming refers to a paradigm whose programming language constitutes formal logic. Imperatively, the latter refers to different systematic steps used in problem solving [8]. From these observations, it is worth inferring that algorithmic logic supports decision making in computer programs because it relies on the given instructions or command sets.

C.Learning Model

In the process of learning, a model refers to a stepwise procedure aimed at fulfilling a certain goal [9]. As such, the role of a leraning model stertches beyond the tecaher's entry in a clasroom to facilitate the process of knowledge skill acquisition. Instead, it involves the acquisition of the intended goal(s); especially improving leraning effectiveness. Also, leraning models are seen to be systematic processes responsible for the organization of the studnets' experiences, ensuring that the intended learning goals are realized. Hence, the models guide the instructors regarding the planning of learning and tecahing activities, classroom management, and the organization of the learning environment [11]. The eventuality is that learning models involves systematic arrangement and advance planning to ensure that changes such as active learning sessions and behavioral modifications among individual learners are realized; involving both studnets and the instructors. Also, a good leraning modle is seen as that which paves the way for feeback provision or interaction among the concerned parties, eventually maximizing the achievement of the intended objectives.

D.Laboratory-Based Learning Model

A laboratory is seen to onstitute a setting for practical activities, serving as a substitute to the traditional classroom. The aim is to promote knowledge and skill acquisition. Indeed, most of the laboratory have been affirmed to emphasize an increase in scientific method udnerstanding, the process of skill development, and gaining knowledge about scientific concepts [12]. Hence, this setting allows leraners to observe physical phenomena before formulating problems and inferences about the topic being invetsigated. In turn, learners gain an opportunity to prove theories that

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they might have learned in classroom [13]. Based on these observations, leraning mdoles based on the laboratory seek to apply certain procedures, demonstrate certain processes or tools, and prove theories or concepts learned in classroom settings.

E. Direct Instruction Model

As observed by Arends[14], the role of leraning modles is to ensure that studnets gain basic knwoledge and skills on a stepwise basis. This approach tarnslates into a direct learning model, referred to as the direct instruction model. Indeed, the model proves active on the part of the instructor but most of the studnets assume a passive role. Hence, instructional provision is one-way. As such, the role of the stduents is expected to involve following the content presneted and explained to them. Thus, the success of the direct instruction model depends on the ability of the instructor, especially regarding the management of the learing process, as well as content dleivery and learner motivation [15].

F. Personality

An individual's personality refers to how they interact and react to the opinions of otehrs [16, 17]. Also, personality refers to behavioral patterns that an individual exhibits, as well as various ways of thinking, which are unique to each person. Indeed, personality shapes how the individuals tend to adjust to the environment in which they live or operate. Also, Jung observed that personality categorizes individuals into two forms: introverts and extroverts. Indeed, inroverts have their consciousness directed towards one's self. On the otehr hand, extroverts are seen to have consciousness and attitude that lead to the outside of one's self; implying that they consider otehr indioviduals, as well as events in the natural surrounding (Officers, 2004). Also, Eysenck (in Alwisol) stated that personality entails the entire pattern of the potential or actual behavior of an individual, which is shaped eitehr by the environment in which they live or the factor of heredity. Specific attributes that are seen to determine whether an individual emerges as an introvert or an extrovert include the somatic sector, the effective sector, the Katif sector (character), the cognitive sector (intelligence) [18]. From the observations above, it is notable that various characteristics and behaviors of an individual define their personality. To predict the personality, it becomes important to observe how the individual reacts to certain stimuli. Hence, behavior is arises form issues such as how individuals talk and how they appear. Imperative to highlight is that the aspect of character is unlikely to appear directly, proving more inherent.

III. RESEARCH METHOD

The rserarch context constituted STIKOM Ambon Maluku Province's S1 Program Information System. The period of investigated was between 2014 and 2015, conducted in six months and within an even semester. The target population constituted all studnets who were pursuing the program [19]. Particularly, the sampling frame entailed STIKOM Ambon studnets who were in session during the second semester. Indeed, a sample refers to a group selcted to represent the opinions of the rest of the target population [20]. In this study, a simple random smapling technique was implemented. The choice of this approach was informed by the need to avoid rseearcher bias, which could have compromised the validity and eliability of the outcomes. Regarding the rseearch approach or deisgn, the study adopted a quasi-experimental technique, whose factorial design was set at 2 x2. The independnet variables involved personality (introvert or extrovert)and the nature of the learning model (the direct learning model or the laboratory-based learning approach). On the otehr hand, the dpenendet variable constitute the learning outcomes accruing form the implementation of a programming algorithm in the selected research context [19].

IV. RESULT AND DISCUSSION

The outcomes were obtained form the control group and the experimental group. From the outcomes, 25 individuals were extroverts while five individuals were introverts; outcomes obtained in relation to the experimental class. Relative to the control group, the study gained data from 17 individuals belonging o the extrovert personality type while introverts were 13. The insights gained were made meaningful via hypothesis testing and relevant statistical analyses.

A.Analysis Test Results

Before conducting the data analysis process, it is important to determine the requiremnents or raw data obtained form a given study. The aim is to discern information that is homogeneous and distributed normally; eventually making informed conslusions and inferences. To conduct the data analysis in this study, Kolmogorov-Smirnov test, which is used to discern normality, was employed. Also, the Bartlet Levene Test Test aided in testing for homogeneity.

1. Data Normality Testing

Table 3.2 (below) illustrates the normality test outcomes

Table-3.2. Data Normality Test

Model	Kolmogorov-Smirnov		
	Statistic	Df	Sig.
1.000	.1270	300	.2000*
2.000	.1490	300	.0880

From the outcomes presneted in the table above, it is evident that the target population and participants were distributed normally. This observation is informed by a situation in which the laboratory-based model or model 1 group had its Kolmogorov-Smirnov test reveal outcomes of 0.2000. for the direct learning model or model 2 group, the value stood at 0.0880. Indeed, both values exceeded 0.050, suggesting that the normality test's statistical hypotheses H_0 was accepted.

2.Sample Homogeneity Test T

When the Bartlett Levene Test was applied, the resultant outcomes were obtained as shown below:

Table-3.3. Test of Homogeneity of Variances

Levene Statistic	df1	df2	Sig.
,7930	60	200	,5860

From the test results above, which sought to determine variance homogeneity, the p-value or significance value was 0.5860. Indeed, the value was more than 0.050, implying that H_0 was accepted.

B.Hypothesis Testing

Relative to the aspect of testing the hypothesis, the chief motivation or intention was to determine the impact of learning modles on learning outcomes. Also, the testing of the hypothesis sought to establish the relationship between personality and learning ouctomes. Similarly, the testing aimed at predicting how future interactions between the type of the learning model and the learning outcome might shape the instructors‘ choice of different teaching methodologies or approaches. Hence, a x 2 factorial test was implemented, eventually establishing the average difference between the selcted groups. The formulation of the hypotheses was set as follows:

a. H_0: $\mu_{A1}=\mu_{A1}$
   H_1:$\mu_{A1}>\mu_{A1}$
b. H_0: $\mu_{B1}=\mu_{B1}$
   H_0:$\mu_{B1}>\mu_{B1}$
c. Interaction Effects
   Ho : Interaction (A X B) = 0
   Ho : Interaction (A X B) ≠ 0

Indeed, the criteria were set in such a way that F0 ≤ Ftabel, the null hypotheses would be rejected. The testing of the hypothesis was conducted using ANAVA 2 X 2 in the form of manual calculations; which are shown in table 4.1 below.

Source of Variance	Db	JK	RJK	F count	Ftable	
					0,05	0,01
Model Pembelajaran	1.0	663,113.0	663,113.0	11,841.0*	4,02	7,31
Personality	1.0	536,543.0	536,543.0	9,581.0*	4,02	7,31
Interaction (A X B)	1.0	763,193.0	763,193.0	13,628.0*	4,02	7,31
Mistake	56.0	0,22.0	0,00393.0			
Total	59.0	1963,069.0				

Table-4.1. Summary of ANOVA 2 X 2

Where:
Df : TheDegree of Freedom
JK : The sum of squares
RJK : The Average Number of Squares

Dependent Variable: Learning outcomes Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	347.3770[a]	3.0	115.7920	28.4890	.0000
Intercept	23309.1960	1.0	23309.1960	5734.963	.0000
Model	18.7450	1.0	18.7450	4.6120	.0360
Personality	14.3800	1.0	14.3800	3.5380	.0650
Personality * Model	184.0260	1.0	184.0260	45.2770	.000
Dependent Variable: Learning outcomes Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Error	227.6070	56.0	4.0640		
Total	35665.0000	60.0			
Corrected Total	574.9830	59.0			

a. R Squared = .604 (Adjusted R Squared = .5830)

Table-4.2. Two Way ANOVA Test Results Hypothesis First, Second and Third

Based on table 4.1 can be seen that the results of manual calculations ANOVA 2 X 2 can be interpreted as follows:

1. There is a difference between the learning model of learning outcomes Algorithm Programming, which is obtained the Fcount value of 11.841 while Ftabel at 0.05% significance level and degrees of freedom (df) 1/56 of 4.02, then Fcount> Ftable (11,841> 4, 02).
2. There is a difference between personality to learning result of Programming Algorithm, that is got the value of Fcount equal to 9,581 whereas Ftabel at the level of significance 0,05% and degree of freedom (df) 1/56 equal to 4,02, then Fcount> Ftable (9,581> 4, 02).
3. There is an interaction or AXB ≠ 0, which is obtained Fcount value of 13.628 while Ftable at 0.05% significance level and degrees of freedom (df) 1/56 of 4.02, then Fcount> Ftable (13.628> 4.02) so Ho is

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rejected, so it can be stated there is a significant influence between the model of learning and personality in the learning outcomes Algorithm Programming.

The following results of the overall hypothesis testing based on the results of further tests with the help of SPSS program 20. Where to answer the first, second and third hypothesis can refer to the following table 4.

V. CONCLUSION

From the problem statement and the discussion (and presentation) of the tested hypotheses that this study examined, various conclusions and inferences were evidnet. They were summarized as follows:

1. Based on studnets who udnerwent direct learning and those who were exposed to a laboratory-based learning model, there was a statistically significant difference. Particularly, the laboratory-based learning model yielded superior results in relation to the studnets‘ performance (compared to the group that participated in the direct learning model).
2. However, when aspects of extrovert versus introvert prsonality were compared, the results did not reveal a statistically significant difference in the learning outcomes of individuals who participated in the stdunet programming algorithm.
3. Regarding the nature or type of learning model and the type of personality that the students exhibited, there was a significant difference in the learning outcomes.
4. Aos, a comparison of introverts and extrovrts who participated in studnet programming algorithms revealed a significant difference – when the studnets udnerwent the laboratory-based learning model. Specifically, stdunets with extrovert personality had inferior outcomes compared to their outcomes from the introvert personality group.
5. It is also worth noting that when the direct learning model was applied, there was a significant difference between the performance of introverts and that of extroverts. Specifically, superior learning outcomes were reported in the introvert personality group, with these studnets performing better than those with extrovert personality.
6. Additional insights suggest a significant difference between the performance of the introvert group exposed to the direct learning model – compared to that introvert group exposed to the laboratory-based learning model. Specifically, the introvert group exposed to the laboratory-based learning model is seen to pose superior results relative to the performance in the stduent programming algorithm (compared to the introvert group undergoing direct learning.
7. Lastly, a significant difference was noted regarding extroverts who underwent laboratory-based learning compared to those who were exposed to the direct learning model. Specifically, extrovert learners who underwent laboratory-based learning exhibited superior performance compared to those who underwent direct learning.

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