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Research Artikel

DEVELOPING CREATIVITY AND ENTREPRENEURIAL VALUES IN HIGH SCHOOL STUDENT THROUGH PROJECT BASED LEARNING MODEL ON BIOTECHNOLOGY CONCEPT

PENGEMBANGAN KREATIVITAS DAN NILAI-NILAI WIRAUSAHA DI SISWA SEKOLAH TINGGI MELALUI MODEL PEMBELAJARAN BERBASIS PROYEK PADA KONSEP BIOTEKNOLOGI

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Abstract

This research focused on determining the influence of project-based learning model oriented to bioentrepreneurship for XII grade student's creativity and entrepreneurial values on conventional biotechnology sub topic. This research used quasi experimental method and the posttest only control group design. The sample was XII science 2 as experimental class and XII science 1 as control class chosen by random sampling. The data collected by using creative thinking ability test, creative product valuation rubric, observation sheet and entrepreneurial values questionnaire. The hypothesis analysed by using t-test which obtained the significance of creative products was 0,000 < 0,05 and the creative thinking ability was 0,001 < 0,05, so it would be concluded that project-based learning model oriented to bioentrepreneurship effected on student creativity. As for the significance of entrepreneurial values from the observation sheet was 0,000 < 0,05 and the questionnaire was 0,019 < 0,05, so it would be concluded that project-based learning model oriented to bioentrepreneurship effected on student's entrepreneurial values. Correlation analysis concluded that there was a correlation between them, with the value of correlation coefficient was 0,195. The result of linear regression test showed that creativity contributed about 3% to student's entrepreneurial values.

Keywords: *Project-based Learning Model; Bioentrepreneurship; Creativity; Entrepreneurial Values; Conventional Biotechnology Sub Topic.*

Abstrak

Penelitian ini berfokus pada menentukan pengaruh model pembelajaran berbasis proyek yang berorientasi pada bioentrepreneurship untuk kreativitas dan nilai-nilai kewirausahaan siswa kelas XII pada sub topik bioteknologi konvensional. Penelitian ini menggunakan metode eksperimen semu dan desain kelompok kontrol posttest. Sampel adalah XII sains 2 sebagai kelas eksperimen dan XII sains 1 sebagai kelas kontrol yang dipilih secara acak. Data dikumpulkan dengan menggunakan tes kemampuan berpikir kreatif, rubrik penilaian produk kreatif, lembar observasi dan kuesioner nilai kewirausahaan. Hipotesis dianalisis dengan menggunakan uji-t yang diperoleh signifikansi produk kreatif adalah 0,000 <0,05 dan kemampuan berpikir kreatif 0,001 <0,05, sehingga dapat disimpulkan bahwa model pembelajaran berbasis proyek yang berorientasi pada bioentrepreneurship berpengaruh pada siswa kreativitas. Adapun signifikansi nilai kewirausahaan dari lembar pengamatan adalah 0,000 <0,05 dan kuesioner adalah 0,019 <0,05, sehingga dapat disimpulkan bahwa model pembelajaran berbasis proyek yang berorientasi pada bioentrepreneurship berpengaruh pada nilai-nilai kewirausahaan siswa. Analisis korelasi menyimpulkan bahwa ada korelasi di antara mereka, dengan nilai koefisien korelasi adalah 0,195. Hasil uji regresi linier menunjukkan bahwa kreativitas berkontribusi sekitar 3% terhadap nilai kewirausahaan siswa.

Kata Kunci : *Model Pembelajaran Berbasis Proyek; Bioentrepreneurship; Kreativitas; Nilai Wirausaha; Sub Topik Bioteknologi Konvensional*

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INTRODUCTION

Data from The Central Bureau of Statistics (BPS) of Banten Province indicated that the unemployment rate at senior high school level was still quite high compared to TPT at Diploma I / II / III level and University (BPS Banten Province, 2016). Generally student who graduated from high school will prepare themselves for entering university. School will provide the drilling program so that the student will meet with standard entry qualifications for university and sometimes they neglected they alumni who find for job. Therefore high school graduates have difficulties finding their place in the national workforce. In order to overcome the problem, there has been generally a growing awareness of the necessity to change and improve the preparation of students to be productive in functioning the continually changing and highly demanding environment. One feasible strategy is to implement Entrepreneurship as integral part of student learning process.

Since 2001, Indonesia government has decentralized management of education to district level by promoting school autonomy intended to enhance the distribution of quality education. Therefore, the learning process in High School should give the students chance to develop skills and their creativity in the learning process by implementing a project-based learning (PjBL) model. PjBL has been implemented in many courses around the world for over decades. This model is an active student-centred form of instruction which is characterised by students' autonomy, constructive investigations, goal-setting, collaboration, communication. Students drive their own learning through inquiry, as well as work collaboratively to research and create projects that reflect their knowledge (Bell 2010). Student learning outcomes are not a priority, but the production processes that would provide skills. Research supports that students using PBL perform better on both standardized assessments and project tests than students in traditional direct instruction programs, and that they learn not only real-world application of skills, but also analytic thinking (Boaler 1999). This was in agreement with Baker et al. (2011) that project-based learning becomes a relevant community force in the 21st century.

Bioentrepreneurship provides students opportunities for entrepreneurship based on entrepreneurial values in the field of biology (Anwar et al., 2012). According to Adams & Sparrow (2008) bioentrepreneurship has developed a science that deals with living organisms through new innovations into something that can be commercialized. Project-based learning model that oriented to bioentrepreneurship expected to give students the ability to generate new and unique ideas. Teacher assist the student as they develop with a competency-orientation to produce a product either goods or services, entrepreneurial attitudes, and independence. Titu (2016) states that project-based learning strongly supports the creation of creative products engaged with student's creative thinking ability. Creative thinking allows students to systematically study the problem, face challenges in an organized way, formulate innovative questions, and design original solutions. Creative thinking according to Johnson (2007) is a mental activity that fosters original ideas and new insights.

Based on interview with biology teacher at SMAN Cahaya Madani Banten Boarding School, the project-based learning model has been carried out in biology subject to produce conventional biotechnology products, but it was not bioentrepreneurship oriented. The project was ended without marketing the goods. Student assessment focused only limited to student product. Assessment related to elated to the cognitive process for project accomplishment nor creativity did not performed. In order to identify the student's creativity and entrepreneurial values, this research was conducted. Two research questions were formulated as follows:

1. How project based learning model with bioentrepreneurshiporiented which implemented in biotechology concept influenced student's creativityand entrepreneurial values?
2. What will be the relation between student creativity and entrepreneurial values ?

METHODS

A quasi-experimental method used to analyze the effect of project based learning model oriented to bioentrepreneurship (X variable) to student's creativity (Y1 variable) and student's entrepreneurial values (Y2 variable), then the next

step was to find the relationship between the two dependent variables, Y1 and Y2 variable using correlational descriptive method. The research subjects were a project-based learning model oriented to bioentrepreneurship as independent variables while the student's creatity and entrepreneurial values as the dependent variables. The research design used the posttest only control group design. This research involves two groups: experimental class and control class. The experimental class used treatment in the form of project-based learning model with bioentrepreneurship oriented, while the control class using project-based learning model without bioentrepreneurship orientation. To measure the results of research used the posttest which can be seen in table 1.

Tabel 1. Desain *the posttest only control group*

Class	Pre test	Treatment	Post test
Experiment	-	X	O_1
control	-		O_1

The population in this research was students of XII IPA at SMAN Cahaya Madani Banten Boarding School academic year 2016/2017. The sample used XII IPA 2 as experimental class and XII IPA 1 as control class. Sampling technique used simple random sampling technique. Technique of collecting data used test and non-test technique. The test used to measure the ability of creative thinking in the form of a test description. The items based on indicators of creative thinking ability including C4 (apply), C5 (evaluate), and C6 (create) cognitive levels. While non-test techniques used an observation sheet to measure student's entrepreneurial values, creative product assessment sheets of conventional biotechnology project results, and questionnaire attitudes of entrepreneurial values filled out by students at the end of the lesson. Before use, the instrument was first analyzed by validity test, reliability test, distinguishing power, and difficulty index.

Data analysis technique to test the influence of project-based learning model with bioentrepreneurship oriented for student's creativity and entrepreneurial values used parametric statistical test T test using SPSS version 21. Before performing T test conducted prerequisite test data analysis that were normality test and homogeneity test. Then to see the correlation between creativity with entrepreneurial values used simple correlation statistics Pearson Product Moment.

RESULT AND DISCUSSION

Data obtained from this research were the data of student's creativity and entrepreneurial values based on the application of project-based learning model with bioentrepreneurship oriented. The treatment given in the experimental class was a learning process using project-based learning model oriented to bioentrepreneurship and control class using a project-based learning model without bioentrepreneurship orientation. The result of creativity on creative product aspect made by students on each indicator can be seen in figure 1. Based on figure 1. can be seen that the percentage of the average value on the novelty indicator equals to 85,02% with good category for the experimental class and 72.25% with good category for the control class. Product novelty must be a product that has never been created by people with the same experience and training. Product novelty was also capable of causing surprises (surprising) to others. Finally, product novelty can also lead to other original product ideas. The average experiment class is higher than the control class, it's because in the experimental class there was components of bioentrepreneurship, such as producing and marketing, so that the product was made has novelty characteristic that includes new process, new technique, new material, or new concept. For example, a combination of cow's milk with agricultural horticulture products in Pandeglang district that makes yoghurt products have added value, besides these products was used as tourism promotion media.

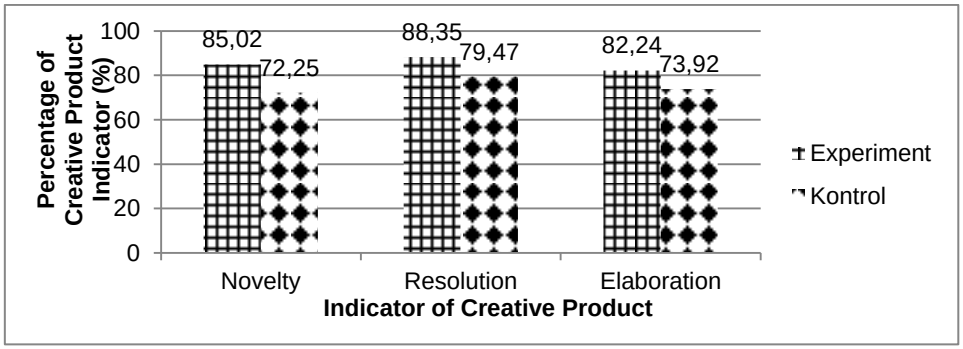

Figure 1. The average percentage of the value of each creative product indicator

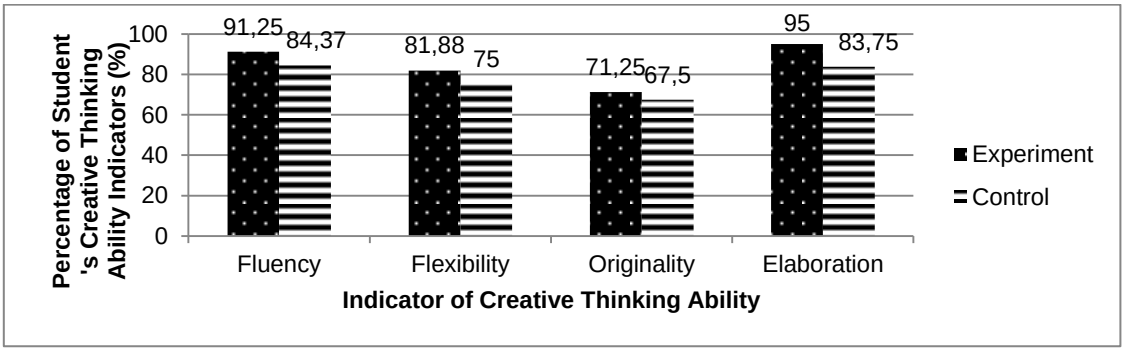

Figure 2. The average percentage of the value in each creative thinking ability indicator

In the resolution indicator, the experimental class has a percentage of 88.35% with excellent category, while the control class has 79.47% with good category. In the experimental class the students required to find solutions in the form of products by applying the conventional biotechnology principles of problems both in agriculture and livestock that exist in Pandeglang district, such as the absence of dairy products and processing of agricultural products In Pandeglang district. The products are then used as an effort to improve the regional economy based on the development of community resources based on bioentrepreneurship. Project teams developed roles based on real-world counterpart. This was in accordance with Munandar's (2012) statement that the creative product must have a useful criterion, because it can be applied practically. Since the product made in the form of food product has become the solution to solve the problem, the product has fulfilled this requirement.

In the last indicator of elaboration, the experimental class showed the percentage of 82.24% with the excellent category, and the control class showed the percentage of 73.92% with the good category. The high rate in the experimental class supported by good planning in determining the product to be made in the form of business plan. So that students know the stages in building a new business product and how successful startups operate in the business community. Preparation of business planning was intended so that students able to form a structured mindset that details in accordance with the creativity to produce a good product.

The assessment of creative products looks at the use of materials, appearance and usefulness of the product, as well as the creator's experience. For example, "Pu Yo!" Products, cow's milk-based yoghurt from the cattle farm in Kampung Domba Juhut with a combination of dragon fruit from Ganda Manis Agro-tourism area of dragon fruit in Koroncong village made by students. When viewed by the criteria of an adult, it may not include creative because it has been previously made by others. But when viewed from the level of child development (school age and dormitory environment), and for him the work was new (students have never made before) then the product was creative.

Based on the assessment in each indicator of creative thinking ability on the problems undertaken by students, the results can be seen in Figure 2.

Based on Figure 2. the first indicator was the ability to think fluency, in the experimental class obtained 91.25% with very good category. While in the control class obtained 84.37%. The high percentage of indicators of fluency thinking was one of them because students in the experimental class and control class have been accustomed to writing or expressing an idea in writing on the tasks assigned by the teachers. Students was able to describe their opinions precisely on the causes of the emergence of biotechnology cases and relate them to the basic principles of modern biotechnology presented in the description. This is in accordance with Munandar's (2012) state that the ability to think fluency can be shown by generating many relevant ideas / answers as well as a fluency of thought.

Indicator of flexible thinking ability has an average score for the experimental class of 81.88% with excellent category and for the control class of 75% with good category. The description of this indicator looks at how the student's perspective on a genetically modified organism-related problem also provides many ways to plan conventional biotechnology product making. According to Munandar (2012) the indicators include generating uniform ideas, able to change the way or approach, and can produce different ways of thought. This was shown by students by writing out their perspective on the problems about the pros and cons of the existence of organisms. The results are reinforced by Supardi's (2013) stating that flexibility is the ability to produce a product, perception, or idea that varies with the problem. Fauziah (2011) adds that flexibility is the ability to bring out diverse or non-monotonous ideas or ideas by looking at problems from different points of view.

The third indicator was the ability to think originality. In the experimental class the average score was 71.25% with good category, while in control class 67,5% with good category. Problem description with the original thinking ability indicator in this study would like to see new relationships or combinations among elements that have never been expressed by others in conventional biotechnology as well as generating / making abbreviations and expressions unique to the term in fermentation. The results of the analysis of the problem with the original thinking ability indicator that students tend to have difficulty in combining new elements of a conventional biotechnology basic products. Students can only combine a product from one or two different elements of the base material. This can be seen from the answers of some students who responded according to the student's experience when creating conventional biotechnology products, for example modification of materials used and color variations and display forms. This low percentage of original thinking ability was due to the students of the experimental class and the control class not being accustomed to creating new things. This was seen in the product assessment results that have been made by students only able to change the product in terms of appearance only. Saefuddin (2012) states that the ability of original thinking was needed to master and create technology in the future. The competencies was developed in students, so students have the ability to acquire, manage, and utilize information to survive in an ever-changing, uncertain, and competitive state. Based on the opinion of these experts, it can be concluded that the ability to think creatively should be given to students so that students can get used to practice their thinking skills.

The ability to think elaborate has an average score of experimental class 95% with very good category, while in control class 83,75% with good category. Problem description based on elaboration thinking indicators expects students to be able to develop an idea with detailed steps in making conventional biotechnology products that are contextual. Based on the data obtained, the experimental class was able to answer precisely on the idea of making conventional biotechnology products based on the utilization of local potential resources of Pandeglang district with detailed steps. This was one application of the bioentrepreneurship component of the project-based learning model, ie planning and communicating/marketing.

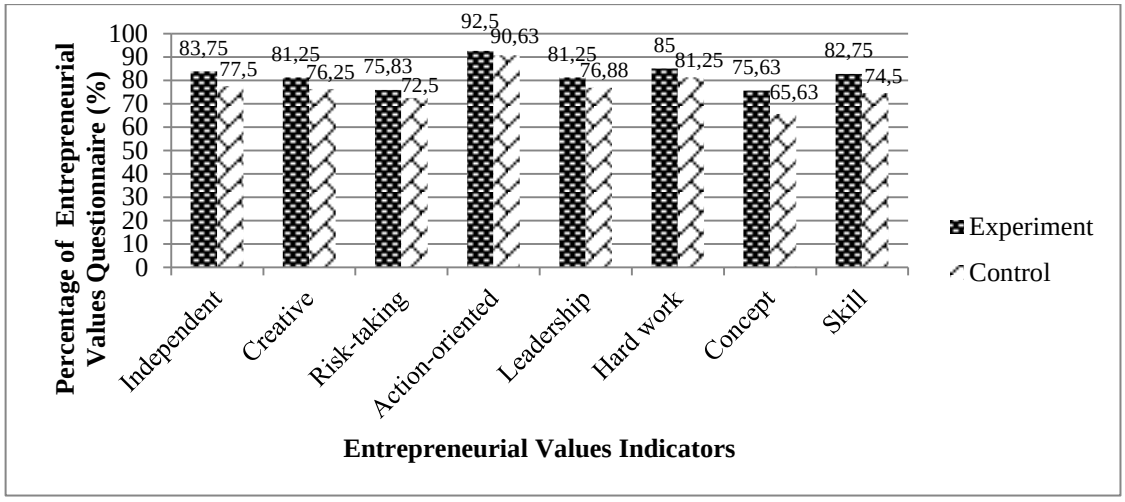

Figure 3. The Average percentage of each indicator of entrepreneurial values in questionnaire

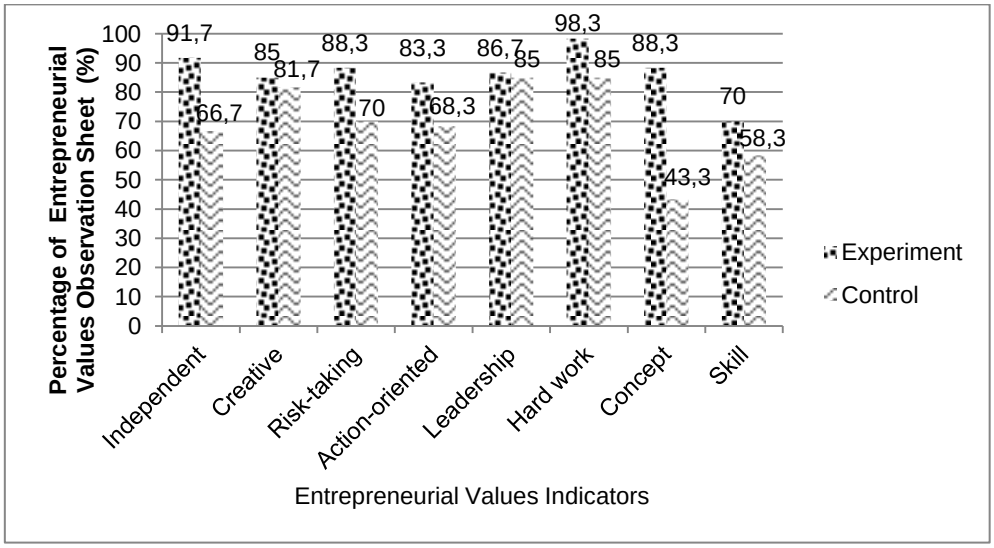

Figure 4. The Average percentage of each indicator of entrepreneurial values in observation sheet

Entrepreneurial values can appear in the experimental class because students use a project-based learning model that is bioenerepreneurized. The components of bioentrepreneurship include exploring, planning, producing, communicating / marketing, and reflecting. This bioentrepreneurship component according to the Research and Development Center of the Curriculum Center (2010) was the development of values of the characteristics of an entrepreneur. According to entrepreneurial experts, there are many entrepreneurial values that should be owned by students. However, in the development of project-based learning model with bioentrepreneurship oriented was selected some of the values of entrepreneurship considered the most fundamental and in accordance with the level of student development as much as 8 (eight) values, namely independent, creative, risk-taking, action-oriented, leadership, hard work, concepts, and skills.

Based on the assessment in each indicator of entrepreneurial values, the following shows the results of observations on student questionnaires that can be seen in Figure 3.

The results of observation in each indicator of entrepreneurial values on the observation sheet can be seen in Figure 4. Independent indicator in the questionnaire assessment for experimental class got the average value of 83.75% with good category, while the control class got 77.5% with good category. The results of this questionnaire are similar to the observations that show the experimental class was much higher than the control class, which was 91.7% with very good category and 66.7% with enough category. Independent depicted in the student during the

discussion in working the student worksheet containing business plan. This discussion activity discusses the issues to be raised or biotechnology business ideas that will be developed. Student independence was reflected in direct student participation in the planning and manufacturing stage of conventional biotechnology products in accordance with their respective duties. For example, in the first stage students first divide work tasks or develop managerial systems in groups such as directors, production, marketing, and finance. In addition, student independence was also evident from the use of venture modals. The capital used comes from membership fees. The result of this observation in accordance with Suryana's statement (2013) that to become an independent entrepreneur must have three main types of modal that are required: 1) internal resources of the entrepreneur candidate, such as skill, skill, and analytical skills; 2) external resources, for example enough money to pay for working modal, social network and demand and supply lines; 3) factor x, such as chance and luck.

The second indicator was creative. In the questionnaire, the experimental class showed creative percentage of 81.25% with good category, while the control class showed the percentage of 76.25% with good category. The observation sheet result also shows that the experimental class has higher creative value, that was 85% with good category and control class class was81,7% with good category. The creative indicators in this study was described when students design and formulate product plans such as creating product titles and product logos. The experimental class is required to determine the creative product title in solving existing environmental problems related to Pandeglang Regency natural resource local potential with new products. In addition, the products made are expected to have value for the community. Student creative ideas in the experimental class arise when students see something old (in this case the potential of Pandeglang regency natural resources) and think something new and different from that which was contained in the title and background of the student's product. Therefore, the creative value students was able to create something that did not exist before. This was supported also by the observer observations during the exhibition, among other students able to put forward his ideas well and describe the concept of the product with his own words. This was in line with the opinion of Zimmerer (1996) which reveals that creativity contains the following insights: 1) creation of something that did not originally exist; 2) the work of today's cooperation to improve the past in a new way; 3) replace something with something simpler and better.

The third indicator was to take risks. Questionnaires of students showed that the experimental class obtained a percentage of 75.83% with good category, while the control class obtained a percentage of 72.5% with sufficient category. Based on the observation result, the experimental class got 88.3% with very good category, while the control class got 70% with enough category. Indicators risks-taking when students make project plans, such as determining project ideas, implementation methods, opportunities, and risks from their products. In the experimental class, the value of risks-taking appears superior because of the demands to make products to attract the attention of consumers and to profit from the sale of the product. The greater the risk it faces, the greater the chance and the opportunity to achieve greater profits. Conversely, the less daring to take risks, the likelihood of success was also less.

The fourth indicator was action-oriented. In the student questionnaire, the experimental class obtained a higher percentage, which was 92.5%, while the control class was 90.63%. Both are in very good category and are the highest among other indicators of entrepreneurial values. As for the observation sheets, the experimental class showed 83.3% with good category, while the control class showed 70% with enough category. The numbers on the observation sheet are lower due to product assessment, there was some groups that change the product concept so that it was no longer in accordance with the initial planning. In addition, at the time of exhibition, the control class did not conduct promotional activities and product marketing, so the ability to communicate and persuasive can not be seen. Assessment of the observation sheet done in the test results stage in the project-based learning model, while the

bioentrepreneurship component associated with the appearance of the student's actions was the producing and communicating/marketing component. Because the experimental class experiences the stages included with the two components, the experimental class has an orientation value on the action higher than the control class in both the questionnaire and the observation sheet.

The fifth indicator was leadership. Based on the results of observations in the questionnaire, the experimental class obtained a percentage of 81.25% with good category, while the control class of 76.88% with good category. As for the observation observation sheets, in the experimental class showed that 86.7% with very good category, and control class 85% with good category. These results indicate that the observation sheet scoring was higher than the questionnaire assessment. The value of leadership in the questionnaire was known by giving statements regarding the division of tasks in project planning such as the willingness to become leaders and members. In the project planning stage, the experimental class was designed using the organizational and management aspects as in the company such as directors, quality, marketing, and finance, while in the control class students was freed in choosing their duties and roles. This waas done in order to build the nature of leadership in students in running a micro business according to the design that has been determined. This was supported by Suryana (2013) that a successful entrepreneur always has the nature of leadership, pioneering, and exemplary. Based on these statements, the students have been displaying new and different products to become pioneers in the production and marketing process.

The sixth indicator was hard work. In the questionnaire assessment, the experimental class obtained a percentage of 85% with good category, while the control class was 81.25% with good category. As for the result of observation sheet, experiment class got percentage of 98,3% with very good category and control class of 85% with good category. The hard work attitude comes at the test stage of results in the syntax of the project-based learning model. As for the experimental class, the bioentrepreneurship component, that was producing, triggers the appearance of hard work value higher than the control class. Producing activities require students to apply new facts, concepts and skills. Producing activities also guide students to shape student's attitudes according to the 2013 curriculum, ie scientific attitudes. Scientific attitude required among others, meticulous, hard work, responsible, and prioritize safety work.

The seventh indicator was concept. Based on the results of questionnaire, it can be seen that the experimental class obtained a percentage of 75.63% with sufficient category and control class of 65.63% with sufficient category. Although they are in the same category, but the percentage of the experimental class shows a higher number than the control class. According to Saputra (2015) entrepreneurship-based education can print students of character and competence, but it can improve the quality of education by managing education independently. Therefore, knowledge of the basic concept of entrepreneurship was very important to be invested in teaching and learning activities. The project-based learning model oriented to bioenrepreneurship was one of the efforts to instill the basic values of entrepreneurship in students. Based on observation sheet, it can be seen that the experimental class get the percentage of the concept of 88.3% with very good category, while the control class get very low percentage value that is 43.3% with less category once. The high rate in this experimental class was because students in the experimental class have been able to carry out the exhibition project by applying the basic principles of entrepreneurship. For example, product sales results can generate profit for students. In addition, students understand the advantages and disadvantages. Students also conduct bookkeeping on fund management used during the exhibition process.

The last indicator was skill. Results of data questionnaire, showed that the experimental class get higher than control class, that is 82,75% with good category, while control class that is equal to 74,5% with enough category. Although the experimental class has a higher percentage than the control class, which was 70% with sufficient category, while the control class was 58.3% with the less category, but this indicator was the lowest indicator compared to other indicators of

entrepreneurial values . This was because in practice both the experimental and control classes have difficulties in identifying the business opportunity and the risks it faces. This difficulty was caused by the bioentrepreneurship activity was a new activity for those who have never been integrated into the previous biology subject, so that students feel the need to be trained or accustomed in formulating and designing a good business and true business. Unlike the observation sheets, the skill questionnaire gets a good grade.

The development of biology learning in conventional biotechnology sub-concept oriented to bioentrepreneurship with project-based learning model aims to: 1) train students entrepreneurship skills through conventional biotechnology learning; 2) fostering student's abilities to link with conventional biotechnology principles, entrepreneurship opportunities and linking science, technology and society, 3) stimulating students to be interested and happy learning biotechnology, and 4) applying them to solve problems in everyday ife.

The results obtained from the questionnaire and this observation sheet indicate that the application of project-oriented learning model oriented to bioentrepreneurship in sub topic of conventional biotechnology was needed. The need to implement a project-based learning model oriented to bioentrepreneurship can enhance student's entrepreneurial values and creativity because so far in biology learning, especially conventional biotechnology has not been able to influence the creativity and entrepreneurship values of students. Expectations on improving student's creativity, skills, and entrepreneurial values illustrate that students actually need a production-based educational model, meaning an educational model oriented to a particular occupation (Yuniartiek, 2011).

Biology learning can provide solutions to problems and expectations to be achieved, because biological learning can be linked directly with various objects or phenomena around human life. Banten Province as an area that has abundant natural resource potential and has become a tourist destination area of Banten province also has problems that must be solved by raising creative ideas of students in processing these resources into a product that can raise the existence of Banten province, especially Pandeglang district in Tourism. Learning that can provide hands-on experience by building student knowledge, pouring creative ideas on conventional biotechnology projects in the form of a work product exhibition so that the knowledge obtained by students was more meaningful. The results of this study were consistent with the results of previous research by Rohayati et. Al. (2015) who concluded that project-based learning contributes to the entrepreneurship spirit of students.

Based on the results of Pearson Product Moment correlation test on IBM SPSS version 21 shows the correlation coefficient of 0.195. According Sugiyono (2015) the figure shows a very low relationship with the interval of 0.00 - 0.199. It shows that both variables almost lead to the value 0 or near the absence of relationship between creativity variables and entrepreneurial values, meaning that the two variables can be called as independent variables that can stand alone. In the calculation of regression test results obtained equation $\hat{Y} = 49.76 + 0.407\ X$.

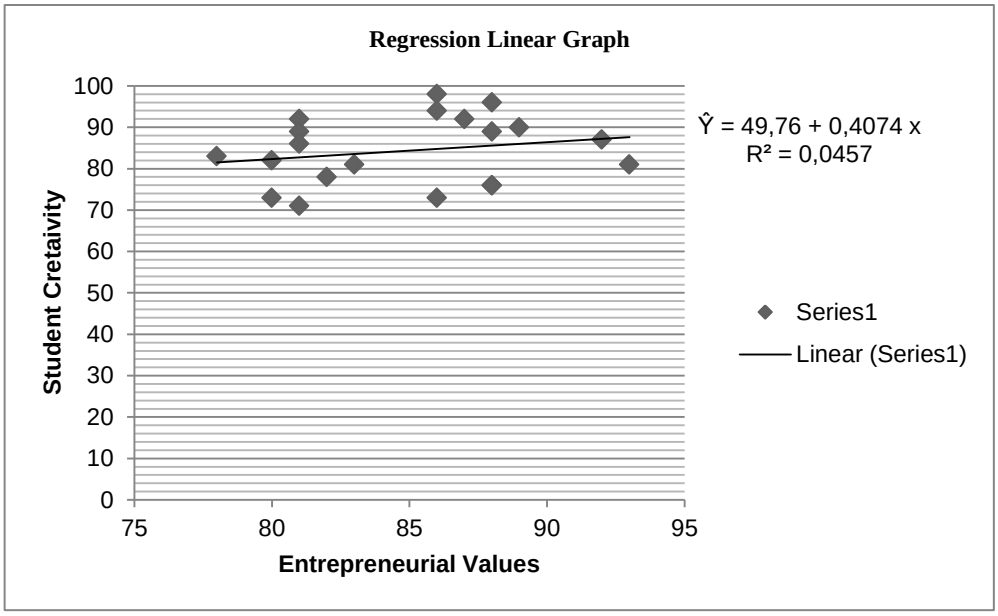

Figure 5. Graphs scattered plots of data distribution (dots) and linear lines

Based on decision making result of linear regression test by using Scattered Plots chart resulted by distribution of data (point) of creativity variable and entrepreneurship values and linear line of equation $\hat{Y} = 49.76 + 0.407$ X which can be seen in Figure 5.

Figure 5. shows the trendline line moving towards the right to the top indicate that the direction of the relationship was positive, meaning the increase in the y-axis value (creativity) was in line with the increase in the x-axis value (entrepreneurial values), although the line was close to the horizontal straight line that the close relationship between variables x and y is very low. The distribution of data pair dots (plots) form a widened straight line indicates that the relationship formed was tenuous. The results of this study quite different from what the other researchers produced. The results of research conducted by Oswari (2005) states that the relationship between student creativity with entrepreneurial value was very close and sometimes overlap although not the same between the two. Oswari (2005) also established a relationship of creativity and entrepreneurship into 4 (four) professional categories as shown in Figure 6.

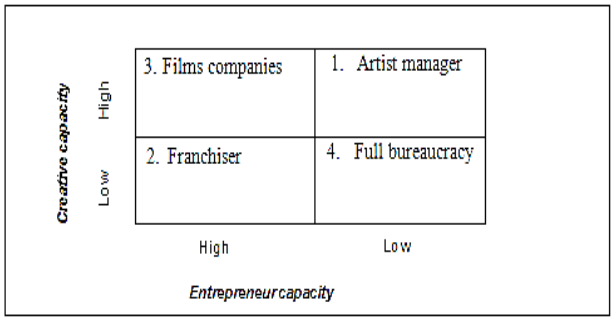

Figure 6. The correlation of creativity with entrepreneurship

Based on Figure 6. it can be seen that creativity has a relationship with entrepreneurship at various levels of capacity required in a field of work. In this case, the relationship of creativity and entrepreneurial values applied in a project-based learning model with bioentrepreneurship oriented leads to category 4, which was low creative capacity and low entrepreneurship. This can be caused by the paradigm of bioentrepreneurship education on the model of project-based learning applied by teachers still follow the traditional pattern, biology subjects with bioentrepreneurship are still equated with the characteristics of biology subjects without bioentrepreneurship, both in terms of material delivery and evaluation of student ratings. In addition, students also still perceive the learning model was only part of the curriculum that must be taken, not part of self-development that will lead themselves to a career as an entrepreneur.

Other factors can also be caused by the lack of tangible coaching in guiding students to start a new business, after following the subject of biology by using a project-based learning model with bioentrepreneurship oriented. This was not yet applied in SMAN Cahaya Madani Banten Boarding School. This means they still consider that the biology subject they have taken does not affect them enough to involve their creativity in entrepreneurship. Even if students already have entrepreneurial values, it was more due to other factors, not because it already has a high creativity.

Equation $\hat{Y} = 49{,}76 + 0{,}407\ X$ indicate that entrepreneurship value can be predicted equal to 0,407 times creativity plus constant value equal to 49,76. Constant of 49,76 means the value of entrepreneurship, without creativity influenced can change by 49,76. These results indicate a direct relationship between creativity and entrepreneurial values of students through a project-based learning model with bioentrepreneurship oriented on the sub topic of conventional biotechnology class XII SMA in SMAN Cahaya Madani Banten Boarding School, so that the increase or decrease in student creativity value only slightly affect the increase or decrease student's entrepreneurial values.

According Sugiyono (2015), on the regression test there was a number called coefficient of determination (R^2) which can explain the strength of the influence of independent variables to the dependent variable. The result of coefficient of determination (R^2) shows that creativity contributes 3% to increase or decrease the amount of variable of entrepreneurial values of students in class XII IPA SMAN Cahaya Madani Banten Boarding School. The remaining 97% of student's entrepreneurial values was influenced by other factors. According to Hamalik (2010) these factors can be different levels of education, differences in treatment between boys and girls, attempts at eliminating fantasy, curiosity, anxiety-inducing conditions, inappropriate use of verbal skills, and lack of resources for use of ideas.

The contribution of creativity to student's'entrepreneurial values of 3% can be seen from the student's ability in making excellent business plan by choosing new and interesting conventional biotechnology product theme in accordance with Pandeglang regency natural resources local potential so that it can be beneficial for the community, economy of the local community and participate in introducing the local potential of the community in the field of tourism. In the exhibition activity, the students seen the spirit in promoting the product to the consumer by relating to the conventional biotechnology principles it uses, it was an indication that students can master the concept of conventional biotechnology as well as have the concept of entrepreneurship was communicating/marketing.

When viewed from the direction of a positive correlation, students who have high creativity value then the results of entrepreneurial values will also tend to be high and vice versa. However, between variables one was not entirely dependent on the second variable. This was because the relationship between creativity and entrepreneurial values was still a new thing for students because it was rarely trained by the teacher through a project-based learning model. The project-based learning model with bioentrepreneurship oriented emphasizes students to link their psychomotor skills and attitudes with the experience or knowledge that students have about conventional biotechnology sub topics.

The quality of graduates was required to have a strong ability of independence in order to face challenges, threats, obstacles, and changes in the future. Furthermore, the challenges that will occur in the global era were the diminishing quality of Indonesian human independence. The crisis that plagued Indonesia multidimension effected on the culture of the nation faded, namely the occurrence of spiritual moral degradation, the spirit of effort and work that increasingly weakened, the creativity of the more stunted and lead to a negative direction. Through individual development in entrepreneurial values was expected to overall society will experience "self empowering" to be more creative and innovative.

CONCLUSION

Based on the result of the research, it can be concluded that the implementation of project-based learning model with bioentrepreneurship oriented effected on student's creativity either on the aspect

of creative thinking ability or creative product aspect and also effected on student's entrepreneurial values. The correlation between creativity with entrepreneurial values got the value of correlation coefficient of 0,195 with very low criteria. There was a positive correlation between creativity through project-based learning oriented to bioentrepreneurship with entrepreneurial values of XII high school students in conventional biotechnology sub topic at SMAN Cahaya Madani Banten Boarding School. Based on the research that has been done it was suggested that there should be guidance in guiding students in starting a new business, such as understanding the basic concept of entrepreneurship education before applying the project-based learning model with bioentrepreneurship oriented.

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