

Strategy to Improve Student's Creativity Through Differentiated Learning Products for High School Students in Surakarta

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Abstract: The study aims to identify the increased creativity of students through product differentiation learning at Surakarta High School. The approach used in this research is quantitative. The data collection technique used is a questionnaire. The study population is all students in Class X Phase E and XI Phase F at Surakarta State High School for the academic year 2023-2024, a total of 779 students with a sample of 78 students. Each level has 39 students. Measurements using SPSS 25 with gamification of the alpha Cronbach learning media variable and student activity, normality tests, heterocadastisity tests, deviations, correlation values, and determination coefficients (R square) The collection showed that H₀ was rejected and H_a received because the regression factor had a significance value < 0.05, so some suggested that there was a significant influence between the use of gamified media and activation. The results showed a regression coefficient with a significant value of 0.000, which means that there is a significant impact between learning differentiation and the product of creativity, and the determination factor (R square) is 0.370. This means that 37% of the variability in student creativity variables can be explained by product differentiation variables. The conclusion of this study is that there is a significant influence between product differentiation learning and students' creativity in Surakarta High School by contributing to the creativity of teachers and students.

Keywords: Improving Student's Creativity, Learning Products, Strategy

A. Introduction

According to Johnson and Posner, "the curriculum should not be seen as an activity but should be directly focused on the various learning outcomes expected (Oemar, 2017). Based on the above opinion, the curriculum should contain objectives or objectives to be achieved in the learning activity. If the COVID-19 pandemic has an impact on the community, especially in the field of education, it must be promptly refined to the intended objectives according to the situation and circumstances. The Ministry of Education and Research and Technology of the Republic of Indonesia issued Decree No. 262/M/2022 on Amendments to Decision No. 56/M/2022 on the Guidelines for the Application of Curriculum in the Framework of Learning Recovery.

The new curriculum, the independent curriculum, is the answer to the school's disastrous circumstances. The curriculum liberates teachers to create quality learning by taking into account the needs of students and the learning environment (Kerebungu et al., 2022).

Differential learning is generally a learning activity that gives students independent access to learning according to their abilities, interests, talents, learning styles, and skills. (Avcu & Yaman, 2022), (Faiz et al., 2022). Differential learning relates to learning concepts that accommodate any differences in student characteristics in the learning process according to the potential present in the school environment. (Mulyawati et al., 2022), (Jayanti et al., 2022). The implementation of differential learning is intended to help students maximize their academic potential, including literacy and numeration, or to help solve the learning difficulties experienced by students, thus meeting the criteria for achieving the learning objectives (Herwina, 2021), (Marlina, 2020) and (Afandi et al., 2020).

The concept of differentiated learning provides an opportunity for teachers to apply an inclusive approach during learning activities. Teachers must develop appropriate strategies for effective learning and accommodate class diversity (Laviyanto et al., 2022; Sahabuddin, 2022; I. M. Sari et al., 2024). For example, teachers can use different learning media for each child or group according to (M. M. R. Sari & Suryanawa, 2022) their interest in the learning media they are interested in. With the appropriate media of interest, it will scan for other aspects, such as the emergence of interest, curiosity, enthusiasm, and others that will affect the achievement of learning goals. In a differential learning activity, a teacher must apply different instructions to students at risk of reading deficiency (Lindner & Schwab, 2020).

In differentiated learning, processes, content, or products can be differentiated according to Marcie Nordlund in the book 'Differentiated Instruction: Meeting the Needs of All Students' (2003). According to Tomlinson (2001), (Netti, 2022), there are three differential learning strategies: differentiation of content, process, and product. The first is process differentiation, that is, the teacher gives the right teaching to each student according to their respective characteristics in the learning process (Jati et al., 2019). Teachers can also conduct continuous assessments at the time of learning to help teachers determine the best ability of the student. A teacher must determine the model of learning according to the needs of students; therefore, teachers must understand the learning style, interests, abilities, and levels of knowledge that each student has.

Speaking of learning styles, there are students who can capture material by listening to instructions from the teacher's voice in person (audio-based); there is a student who has to read over and over again to understand the material (Aliah et al., 2023; Syufi et al., 2023). There are students who are easy to understand with audio-visual (video), and there are those who learn with kinesthetics (Sariyatun et al., 2021). Besides, there

are students who are comfortable working in groups and, on the contrary, prefer to work alone. The second differentiation is content, which is to give material according to the mastery or knowledge that the student has. There are students who do not know at all about the material; some have heard but have not understood; even some may have mastered the material (Sufanti et al., 2021). Content differentiation also requires teachers to map the learning needs, such as learning readiness, learning interests, and learning profiles. Therefore, from the mapping results, teachers can apply it when learning in class (Gir et al., 2022). The third difference is product differentiation, that is, knowing the level of mastery of the student's material. The methods are different; they can be tests, written reports, mind maps, infographics, sketches, performances, audio recordings, videos, and so on.

If there is integrated learning differentiation in terms of product, then students have freedom in terms of assessment methods. The freedom of judgment will give rise to creativity. Creativity according to Reality Team Latest Indonesian Dictionary (Reality, 2008) the capacity to make. Inventiveness is the capacity to make new structures, new mental designs, and new items. Imagination is the capacity that an individual needs to find and make changes and conquer issues and impediments during the time spent changing, answering each issue with positive reasoning, so he generally tracks down splendid thoughts in the pieces of his exercises to create splendid items or ideas (Campbell, 2017).

With the existence of an independent curriculum, teachers at N 6 Surakarta High School have implemented differential learning in the classroom. Some have used content differentiation, that is, each student obtains different material according to the initial knowledge that they have. To facilitate the implementation of the difference in content, the teacher groups the students according to their initial level of knowledge; each group gets different material with different difficulty levels of the subject. There are also teachers who apply process differentiation, such as learning with individual or group tasks, with image media, articles, videos, and podcasts, as well as group formation based on the student's learning style. Besides, teachers have also made product differentiations; the teacher gives students the ability to compile tasks according to their respective interests. They are free to express themselves and pour out their ideas in the tasks gathered. Combined with the incredible enthusiasm for the freedom of the product created, it also stimulates the development of student creativity and is a response to the learning challenge of the 21st century in the era of the 4.0 revolution, where high-level thinking skills are highly needed. Product differentiation learning is one of the learning models that can be used to enhance creativity.

Based on the above explanation, it can be seen that differential learning is learning carried out according to the interests, talents, learning styles, and skills of students. Freedom in learning will make students produce something according to their abilities and potential. The explanation above is the reason for this study, which aims to find

out whether the improvement of students' creativity can be implemented through product differentiation learning at Surakarta State High School 6. Through this research, it is expected to benefit from the strategy of increasing the creativity of students in schools for teachers in particular and to advance education in general.

B. Literature Review

Research conducted by (Davia et al., 2018) this blended techniques concentrate on inspected instructors' impression of imagination utilizing Social Mental Hypothesis factors (e.g., individual, conduct, and ecological). While portraying preventions to inventiveness, educators frequently talked about full scale natural elements, yet while making sense of or characterizing innovativeness, instructors frequently utilized individual and social attributes. Educators didn't appear to have restricted perspectives on who can be imaginative or that imagination generally brings about items; in any case, a few educators' originations were excessively obscure to direct the express working with of imagination (Kamal et al., 2023; Purwowidodo, 2023). Contrasted with in-administration educators, pre-administration educators communicated more idealism in their future natural help and lower self-adequacy for creating imaginative reasoning.

Research conducted by (Nur et al., 2018) that decisive reasoning in 21st century has been perceived as an expertise for residents. Decisive reasoning is characterize. There is many paper examine about involving on the web devices in PBL and decisive reasoning. The reason for this survey is to investigate the way that the web-based apparatuses were handled by past researchers and the most recent patterns on internet based devices in PBL to upgrade decisive reasoning ability (Hidayat et al., 2023). The finding depends on past articles from different analysts previously. Ideally, this study will add to the presentation of another period of understanding the significance of PBL to upgrade decisive reasoning ability by means of online apparatuses.

Research conducted by (Siagian et al., 2019) this study plans to dissect the viability of learning materials arranged on issue based learning models. The outcomes showed that learning materials situated on issue based learning met the compelling measures and further developed numerical critical thinking and metacognition capacity. Level understudies' metacognition while critical thinking met degree of key use, mindful use, and implicit use.

Research conducted by (Correlation et al., 2019) technique: the number of inhabitants in this exploration was understudies decisive reasoning, imaginative reasoning, of Science Schooling Review Program in the Training mental learning results, and request procedure and Educator Preparing Staff of Jambi College, Indonesia in the semester of 2017/2018 scholarly year. The instrument utilized was an article test to gauge understudies' basic and innovative reasoning abilities, and their mental learning results. The information were broke down utilizing various relapse examination with the help of SPSS rendition 16 for Windows program at 5% level.

Discoveries: that's what the outcomes showed: (1) there was a huge relationship between's decisive reasoning abilities and imaginative reasoning abilities on mental mastering results, (2) the commitment of decisive reasoning abilities and innovative reasoning abilities all the while to mental learning results was 72.80%, (3) the successful commitment of inventive and decisive reasoning abilities to mental mastering results was 64.91% and 7.89% individually. Suggestions for Exploration and Practice: Teachers can think about request procedures as an elective learning, particularly for new understudies in colleges to enable decisive reasoning abilities and imaginative reasoning abilities, in light of examination results, that might have a major commitment to mental learning results.

Research conducted by (Ismajli, 2018) Because of the significance of applying separated guidance to meet the understudy needs, this study was directed to make an unmistakable examination of the impact of intuitive procedures on understanding the information in light of the capacities and the requirements of every student. One more point was to portray the degree of execution of separated guidance by the educators in light of the substance, cycle and item for each student. The members in the examination were 200 understudies, 30 educators, and 30 guardians from public and non-government funded schools. The exploration apparatuses used in the information assortment process were surveys for educators and for students, and the meeting with guardians. Guardians are likewise able to team up with the school for this better approach for guidance. Albeit proficient advancement drives through preparation stages in Kosovo have started, a lot is passed on to be finished to empower educators to comprehend, embrace, and effectively execute separated guidance in their study halls.

Research conducted by (Rights, 2018) The predominance of hypothesis based ways to deal with system educating has not dislodged the requirement for center courses in essential administration to develop more extensive administration abilities. However, restricted consideration has been given to elucidating, first, why we want to show these abilities, second, which abilities we really want to educate, and third the way that they can to be created in the study hall. We then embrace a methodical way to deal with distinguishing the why, what, and how parts of key administration capability. We show why scientific devices should be supplemented by judgment, knowledge, instinct, inventiveness, and social and informative abilities. We frame what these abilities are and where they come from. At last, we infer suggestions for how we ought to plan and convey of the center vital administration course.

C. Methods

Research methods used quantitative exploration is the investigation of numbers and examination utilizing measurements (Sugiyono, 2020) Evaluated research will be research that is done by gathering data and utilizing a rundown of organized questions that are coordinated based on the estimation of the variable being

concentrated on, which then, at that point, produces quantitative data. (Amiruddin, 2020). Menurut Hardani (2020) penelitian kuantitatif merupakan penelitian ilmiah yang terstruktur terhadap fenomena serta hubungannya (Sahir, 2021).

In this strategy, a review technique is utilized. Singaribun says that the overview method is a study in which a questionnaire is used to collect data from a sample of a population (Saifulloh & Muchtatom, 2023). Students at the Surakarta State High School's creative abilities will be examined in light of the findings of this questionnaire. This examination utilizes both free and bound factors. The free factor is learning item separation, while the bound variable is inventiveness.

Based on the above variables, in the statements that the researchers compiled in the lift, there are 30 statements for the learning variable differentiation of the product and 14 for the student's creativity variable. Angket is organized in the form of Google Forms to be distributed to the research sample. Data collection was done with a lift or questionnaire using the Google Forms. The use of Google Forms has many advantages, among them that it does not require a cost for printing, such as when using paper, researchers can send links to Google Forms without having to go around to the classrooms to share the pickup and get the data, and the last is saving time because the performance can be done online and the results can also be immediately seen by researchers in a relatively short time, that is, after the respondents have finished filling out the form.

The next to be population is the entire students of Class X Phase E and XI Phase F State High School Surakarta Teaching Year 2023-2024. The background of this population collection is that the independent curriculum at Surakarta State High School 6 has been running for two years, and this school year is the second year, so it is only two generations that use the independent curriculum. Furthermore, differential learning is learning that must be done in the independent curriculum, that is, learning that is adapted to the needs of students. The number of students who have used the independent curriculum is 779, with details for X Phase E of 391 and XI Phase F of 388 students. The population is the entire object of research (Arikunto, 2011). The sample is part of the number and characteristics that the population possesses (Candel, 2022).

The sampling techniques used are proportionate stratified random sampling, so that each class with different phases can be represented. Proportionate stratified random sampling is the sample-taking of a member of a population randomly and stratifiably proportionately (Lestari, 2023) By calculating the number of samples using the Yount Table (1999), that is, if the population is above 101, then the sample can be taken from 10% of the population, which is a total of 78 students as a sample with the details of Class X Phase E and Class XI Phase F, respectively. The sample counting for each phase is based on the student number. For Class X Phase E, the student's number is divided by the population number of students (391), and the sample number is 78. Each rounded result is the same: 39 samples for each phase.

Data analysis techniques use inferential statistics with linear regression analysis. Before the regression test, a lot of pre-conditional tests have to be done (Jatmika et al., 2020). Before the lift is used, the instrument will be tested on at least 30 people in the population (LLS, 2005). The data obtained was then tested for validity and feasibility. Invalid instruments will not be used for research data collection (dibuang). The capacity to make. Imagination is the capacity that an individual needs to find and make changes and conquer issues and impediments during the time spent changing, answering each issue with positive reasoning, so he generally tracks down splendid thoughts in the pieces of his exercises to create splendid items or ideas.

D. Results and Discussion

The venue of the research was at the Surakarta State High School from September 17 to October 28, 2023. The research was carried out to find out the impact of product differentiation learning on creativity through questionnaires and questions. Questionnaires of product and creativity differentiating learning were given to 78 respondents, which were divided respectively by 39 students for Class X Phase E and XI Phase F High School in Surakarta State. Before the lift is used, the instrument is tested.

The first test is a lift first validated by his expert. Then, after obtaining the results with either qualification with little revision or improvement (Putz et al., 2020), After that, they proceeded with an elevation test on respondents (field validation) in the school with a total of 30 samples. The tested lifts were 14 product differential learning lifts and 30 creativity lifts. The test racket was tested on 30 samples, namely students of State High School Surakarta Classes X Phase E and XI Phase F. To determine the validity of each racket item, the SPSS correlation formula was used. Of the 14 variable learning differentiation instruments tested, a total of 14 statements or instruments were declared valid (have a significance value $<0,05$), so the entire instrument was used for research or gathering data on product differential learning variables (Öztürk & Korkmaz, 2019).

Next, a validity test will be carried out on the bound variable of creativity (Boudadi & Gutiérrez-colón, 2020). There are 30 statements or instruments tested on 30 samples, all of which are students of State High School Surakarta, Classes X Phase E and XI Phase F. As for the results of the instrument test of 30 variables of creativity, the validity test showed 9 statements (significance value > 0.05), so the instruments used for research and gathering data on student creativity variables amounted to 21 instruments (Davia et al., 2018). After a validity test is carried out, a reliability test should be performed to determine the consistency of the respondent's answers. Here are the results of the realism test of the learning variables of product differentiation and creativity:

Table 1. Differentiated Product Learning Variable Reliability Test

Cronbach's Alpha	N of Items
0,740	15

According to Wiratna Sujarweni (2014), the questionnaire is said to be reliable if Cronbach's alpha is >0.6 . The above data indicates that Cronbah's Alfa learning variable product differentiation is 0.740, and it is concluded that the learning variables product differentiation are reliable because they are more than 0.6.

Table 2. Creativity Variable Reliability Test

Cronbach's Alpha	N of Items
0,724	31

The sampling techniques used are proportionate stratified random sampling, so that each class with different phases can be represented. Proportionate stratified random sampling is the sample-taking of a member of a population randomly and stratifiably proportionately (Correlation et al., 2019) By calculating the number of samples using the Yount Table (1999), that is, if the population is above 101, then the sample can be taken from 10% of the population, which is a total of 78 students as a sample with the details of Class X Phase E and Class XI Phase F, respectively. The sample count for each phase is based on the student number. For Class X Phase E, the student's number is divided by the population number of students (391), and the sample number is 78. Each rounded result is the same: 39 samples for each phase (Caena & Redecker, 2018). Data analysis techniques use inferential statistics with linear regression analysis. Before the regression test, a lot of pre-conditional tests have to be done. Before the lift is used, the instrument will be tested on at least 30 people in the population (Rights, 2018).

The data obtained was then tested for validity and feasibility. Invalid instruments will not be used for research data collection (dibuang) (Siagian et al., 2019). The capacity to make. Imagination is the capacity that an individual needs to find and make changes and conquer issues and impediments during the time spent changing, answering each issue with positive reasoning, so he generally tracks down splendid thoughts in the pieces of his exercises to create splendid ite ms or ideas.

Table 3. Normality Test

		Unstandardized Residual
N		78
Normal Parameters	Mean	0,000000
	Std. Deviation	8,11980191
Most Extreme Differences	Absolute	0,060
	Positive	0,043
	Negative	0,060
Test Statistic		0,060
Asymp. Sig. (2-tailed)		0,200 ^{c,d}

The results of the Kolmogorov-Smirnov normality test showed a significance value of $0.200 > 0.05$, and the results were normally distributed. The normality test was continued with the heteroscedasticity test. If the significance is greater than 5% or 0.05, then there is no heteroscedasticity, and vice versa. The results of the heteroscedasticity test are as follows:

Table 4. Heteroscedasticity test

Model	B	Std Error	Beta	t	Sig
Constant	1,387	2,840		0,488	0,627
Gamification Media	0,124	0,069	0,202	1,801	0,076

From the results of the heteroscedastic test of glaciers, the significant value for product differentiation (X) is 0,076. So it can be concluded that product differentiation (X) does not occur heterosexually. Next is a linearity test. It is said that there is a signally linear relationship when the Deviation from Linearity Sig value is greater than the Alpha value ($\alpha = 0.05$ or 5%) and vice versa. The result of the linearity test between product differentiation (X) and creativity (Y) is as follows:

Table 5. Linearity test

			Sum of Squares	df	Mean Square	F	Sig
Gamification Media Activeness	Between Groups	Combined	7921,464	75	105,620	1,532	0,476
		Linearity	2982,645	1	2982.645	43,264	0,022
		Deviation	4938,818	74	66,741	0,968	0,639
Within Groups			137,883	2	68,941		
Total			8059,346	77			

Based on the results of the known linearity test Deviation from Linearity $0.639 > 0.05$, it is concluded that there is a linear relationship between product differentiation and creativity. After all the prerequisites are met, proceed to partial hypothesis testing (t test), with a significant rate determined $\alpha = 5\%$ (0,05). The validity of the hypothesis is as follows:

H0 is rejected and Ha is accepted if the value of significance < 0.05

H0 is accepted and Ha is rejected if the significance value is $> 0,05$,

As to the hypothesis of the formula problem above is, H0 : No influence between learning product differentiation and creativity, Ha : There is a positive influence among learning product diferenciation and kreativitiy.

Table 6. Theory Testing

Model	B	Std Error	Beta	t	Sig
Constant	31,851	4,771		6,676	0,000
Product Differentiation	0,775	0,116	0,608	6,682	0,000

Based on the above table, we know the significance value of $0,000 < 0,05$, and in column t we obtain the value of $t \text{ count} = 6,682 > 1,99167 = t \text{ table}$. It can be concluded that H_0 rejected and H_a accepted means there is a significant influence between learning product differentiation (X) on creativity (Y). In addition to the hypothesis test above, you can also use a regression test, such as the following table:

Table 7. Simple Regression Test

Model	Sum of Squares	df	Mean Square	F	Sig
Regression	2982,645	1	2982,645	44,651	0,000 ^b
Residual	5076,701	76	66,799		
Total	8059,346	77			

a. Dependent Variable: Student Creativity

b. Predictors: (Constant) Product Differentials

Based on the known output value F count = 44,651, the significance value is $0,000 < 0,05$, meaning that there is an influence of the product variable (X) on student creativity (Y).

Table 8. Connection test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0,608	0,370	0,362	8,173

a. Predictors: (Constant) Product Differentials

b. Dependent Variable: Student Creativity

Based on the table of correlation or relationship values (R), it is 0.608. The obtained determination coefficient (R square) of 0.370 means that the influence of product (X) on creativity (Y) is 37%. Based on the results of the simple regression test, which obtained a significance value of $0,000 < 0,05$, there is a significant influence between learning product differentiation and creativity. Where the correlation value (R) is 0.608. From the output, a determination coefficient (R square) of 0.370 means that the influence of the product (X) on the creativity (Y) of 37% means the variability in the student's creativity variable can be explained by the product difference variable, while the remaining 63% may be influenced by other factors that are not included in this model. The number of correlations or relationships (R) has a positive value of 0.608, so the direction of the variable relationship is positive. The meaning of a positive value is that if there is an increase in one variable, it will also increase the other variable (Bilro et al., 2021).

The consequences of the exploration are pertinent to another examination, i.e., the results created from the whole series of imaginative cycles (Fathan Syuhada Kurniawan et al., 2022). Understudies can be articles, melodies, sonnets, infographics, banners, video exhibitions, energized recordings, or different structures as per the idea of the material; they acquire both individual abilities and interests in mastering in gatherings. (Maulidia & Prafitasari, 2023). Creation is pointed toward empowering understudies to have a more extensive comprehension of what they have realized, either separately or in gatherings. There are two key areas of differentiation in the

product market: the challenge and creativity brought about by students' desire for learning to be expressed (Salim et al., 2023). With many assets and, furthermore, a wide assortment of learning introductions as well as understudies' opportunity to deliver items as per understudies' inclinations, it will have an effect on understudies' inventiveness. (Aminuriyah et al., 2022). From a variety of research results, both quantitative and qualitative, it is proven that product differentiation can enhance student creativity, or, in other words, that increased students' creativity can be achieved by differentiating products (Amalia et al., 2021).

E. Conclusion

Based on the results of regression analysis to assess the influence of product (X) reference on creativity (Y), it was concluded that H₀ was rejected and H_a accepted because the regression coefficient had a significance value < 0.05, partially showing there was a significant influence between learning product differentiation and creativity. In other words, learning strategies using product differentiation can be used by teachers as one way to enhance the creativity of students at Surakarta State High School 6. These results can be used by teachers in other schools as an alternative. If you want to enhance the creativity of students, then we have to give them freedom in determining the product. The results showed a regression coefficient with a significant value of 0.000, which means that there is a significant impact between learning differentiation and the product of creativity, and the determination factor (R square) is 0.370. This means that 37% of the variability in student creativity variables can be explained by product differentiation variables. The conclusion of this study is that there is a significant influence between product differentiation learning and students' creativity in Surakarta High School by contributing to the creativity of teachers and students.

F. Acknowledgement

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