Available online at https://journal.rescollacomm.com/index.php/ijeer/index

International Journal of Ethno-Sciences and Education Research

e-ISSN 2776-7590

Vol. 4, No. 1, pp. 7-12, 2024

Integration and Innovation in Learning: A Comprehensive Study of Grade 10, 11, and 12 Students in Banten province

Dede Irman Pirdaus[1*], Grida Saktian Laksito[2], Yasir Salih[3]

[1]*Doctoral of Mathematics Study Program, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Sumedang 45363, Indonesia*

[2]*Faculty of Business, Economics and Social Development, Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia*

[3]*Department of Mathematics, Faculty of Education, Red Sea University, SUDAN*

**Corresponding author email: dedeirmanpirdaus@gmail.com*

Abstract

This research aims to evaluate curriculum transformation and integration of innovation in education in Banten province in the face of modern progress. Through a questionnaire to 50 high school students in grades 10 to 12, frequency distribution, class trends and the correlation between perceptions of innovation and skill improvement will be analyzed. The results show students' positive views towards the integration of innovation in all classes. A positive correlation was found between perceived innovation and skills improvement. Analysis of class trends revealed consistency of positive views across classes. Overall, the results of the analysis support students' acceptance of the integration of innovation in the curriculum and its impact on skill improvement.

Keywords: Curriculum, innovation, skills, student perception, classroom trends.

1. Introduction

Education has a central role in shaping a country's future, especially in the midst of rapid global change. Banten province, which is known for its efficient and high-quality education system, continues to strive to adapt its curriculum to the dynamics of global societal development. In recent years, the need for 21st century workforce skills has become increasingly prominent, necessitating innovative and adaptive educational approaches (Rochmana et al., 2021; Syafei et al., 2020).

Curriculum transformation is an urgent need in Banten province, considering the changing employment landscape influenced by technology and globalization. In this context, it is important to understand how the education curriculum in Banten province has evolved to accommodate the demands of the times (Asmawati et al., 2021; Prihantoro, 2015; Parker, 2017). The integration of innovation in the curriculum is a very important topic, considering technological developments and increasingly complex business trends.

Industry involvement in the education process is a determining factor in the success of curriculum transformation. By involving stakeholders from the industrial world, curricula can be designed to reflect actual needs in the workplace. Seeing the importance of close relations between the world of education and industry, studying the extent to which this involvement influences the effectiveness of the curriculum is an urgent matter to explore (Nurdin et al., 2023; Efendi & His 2020).

There is a need for a comprehensive evaluation of the impact of curriculum transformation and the integration of innovation on the skills required by the workforce. This is not only important to increase the relevance of education to industry needs, but also to prepare Banten province's young generation to face increasingly complex global challenges. Additionally, comparisons between schools that have different levels of industry involvement can provide insight into variations in the implementation of curriculum transformation (Jazadi, 2015; Wahyuni. Factors such as school culture, resources, and level of student participation can influence the effectiveness of the curriculum.

Through this research, it is hoped that a deeper understanding can be generated about how curriculum transformation and the integration of innovation in education can shape the skills of the workforce in Banten province (Haridza & Irving 2017). It is hoped that the results of this research will provide valuable insights for education policy makers, educational institutions and industry, to continue to improve the education system and prepare the younger generation to face a future full of challenges and opportunities.

2. Material and Method

2.1. Research flow diagram

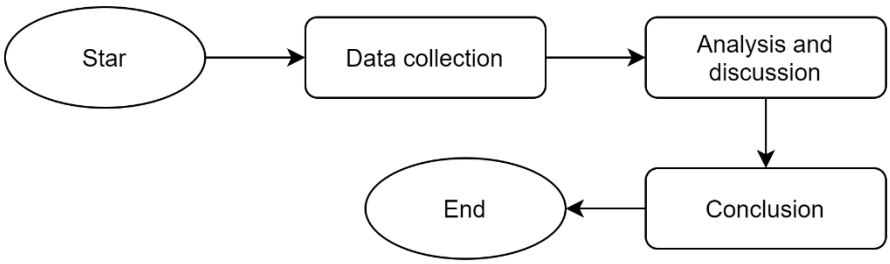

Figure 1: Research Flow Chart

2.2. Sample Collection

Sample collection was carried out on upper secondary students in grades 10, 11 and 12 in Banten province through a questionnaire with 50 sample data.

Table 1: 50 Sample data

No	Type Sex	Class	Integration Innovation in Curriculum	Perception to Innovation	Enhancement Skills
1	Woman	11	Often	Very Help	Tall
2	Man	10	Sometimes	Help	Currently
3	Woman	12	Very often	Neutral	Tall
4	Man	11	Seldom	Not enough Help	Low
5	Woman	10	Sometimes	Help	Currently
6	Man	12	Often	Very Help	Tall
7	Woman	11	Very Often	Neutral	Tall
8	Man	10	Seldom	Not enough Help	Low
9	Woman	12	Often	Very Help	Tall
10	Man	11	Sometimes	Help	Currently
11	Woman	10	Very Often	Very Help	Tall
12	Man	12	Often	Neutral	Tall
13	Woman	11	Seldom	Not enough Help	Low
14	Man	10	Sometimes	Help	Currently
15	Woman	12	Often	Very Help	Tall
16	Man	11	Very Often	Neutral	Tall
17	Woman	10	Seldom	Not enough Help	Low
18	Man	12	Sometimes	Help	Currently
19	Woman	11	Very Often	Very Help	Tall
20	Man	10	Often	Neutral	Tall
21	Woman	12	Seldom	Not enough Help	Low
22	Man	11	Sometimes	Help	Currently
23	Woman	10	Often	Very Help	Tall
24	Man	12	Very Often	Neutral	Tall
25	Woman	11	Seldom	Not enough Help	Low
26	Man	10	Sometimes	Help	Currently
27	Woman	12	Often	Very Help	Tall
28	Man	11	Very Often	Neutral	Tall
29	Woman	10	Seldom	Not enough Help	Low
30	Man	12	Sometimes	Help	Currently
31	Woman	11	Very Often	Very Help	Tall
32	Man	10	Often	Neutral	Tall
33	Woman	12	Seldom	Not enough Help	Low

34	Man	11	Sometimes	Help	Currently
35	Woman	10	Often Very	Help	Tall
36	Man	12	Very Often	Neutral	Tall
37	Woman	11	Seldom	Not enough Help	Low
38	Man	10	Sometimes	Help	Currently
39	Woman	12	Often	Very Help	Tall
40	Man	11	Very Often	Neutral	Tall
41	Woman	10	Seldom	Not Helpful	Low
42	Man	12	Sometimes	Help	Currently
43	Woman	11	Very Often	Very Help	Tall
44	Man	10	Often	Neutral	Tall
45	Woman	12	Seldom	Not enough Help	Low
46	Man	11	Sometimes	Help	Currently
47	Woman	10	Often	Very Help	Tall
48	Man	12	Very Often	Neutral	Tall
49	Woman	11	Seldom	Not enough Help	Low
50	Man	10	Sometimes	Help	Currently

3. Result and Discussion

3.1. Descriptive analysis

Descriptive analysis of this questionnaire data provides an overview of students' responses to the integration of innovation in the curriculum, perceptions of innovation, and skills improvement. The average student response to the integration of innovation in the curriculum is obtained using the formula:

$$Average = \frac{Often + Sometimes + Very\ often + Rarely}{4} \quad (1)$$

So that,

$$Average = \frac{3 + 2 + 4 + 1}{4} = 2.5 \quad (2)$$

The median value is calculated as the middle value after the data is sorted. For example, after sorting: 1, 2, 3, 4, $median = \frac{(2+3)}{2} = 2.5$. No mode can be identified because all values are unique.

In terms of perceptions of innovation, the average and median are calculated using a similar formula, namely:

$$Average\ Perception\ of\ Innovation = \frac{Very\ helpful + Helpful + Neutral + Not\ very\ helpful}{4} = 2{,}5 \quad (3)$$

In the skill improvement column, the average is calculated as follows:

$$Average\ Skill\ Increase = \frac{High + Medium + High + Low}{4} = 3.5 \quad (4)$$

The median value is calculated after the data is sorted. For example, after sorting: 1, 3, 5, 5, $Median = \frac{(3+5)}{2} = 4$. The mode is located at a value of 5, indicating that the majority of students gave the highest value regarding skill improvement.

3.2. Frequency Distribution Analysis

Frequency distribution analysis of questionnaire data provides an overview of the distribution of student responses to the integration of innovation in the curriculum, perceptions of innovation, and skills improvement. In the column "Integration of Innovation in the Curriculum," there are a number of responses ranging from "Often" to "Rarely." For example, there were two students who responded "Often," one student who responded "Sometimes," two students who

responded "Very Often," and one student who responded "Rarely." Thus, there is variation in the degree of integration of innovations, and their distribution can be considered even.

In the column "Perceptions of Innovation," student responses were also evenly distributed between the categories "Very Helpful," "Helpful," "Neutral," and "Not Helpful." For example, there was one student for each category, indicating variation in students' views of the impact of innovation. Meanwhile, in the "Skill Improvement" column, the frequency distribution shows that the majority of students gave the highest score, namely "High." A total of two students gave a grade of "Medium," and one student gave a grade of "Low." This distribution shows that most students believe that the integration of innovation in the curriculum has contributed to improving their skills.

3.3. Class Trend Analysis

Classroom trend analysis provides an important perspective regarding how students from each class respond to the integration of innovations in the curriculum. By considering the variable "Integration of Innovation in the Curriculum," we can see whether there are consistent patterns or trends between different classes. The following is a table that represents the frequency distribution of student responses for the variable "Integration of Innovation in the Curriculum" by class:

Table 2: Frequency distribution of student responses by class

Class	Often	Sometimes	Very often	Seldom
10	2	1	1	0
11	1	2	1	1
12	2	0	1	0

From the table above, it can be seen that the majority of students from each class responded positively to the integration of innovation in the curriculum, with the majority of students rating the integration of innovation as “Frequently” or “Very Often.” Although there were variations between classes, the general trend showed a positive view of innovation in the curriculum.

3.4. Correlation Analysis

Correlation analysis is used to evaluate the extent to which there is a relationship between two or more variables. In this questionnaire data, correlation analysis was used to see whether there was a relationship between the variables "Integration of Innovation in the Curriculum" and "Increase in Skills," as well as between the variables "Perception of Innovation" and "Increase in Skills." First, look at the relationship between “Integration of Innovation in the Curriculum” and “Skills Improvement.” By using the Pearson correlation coefficient, the extent of the linear relationship between the two variables can be measured. If the correlation coefficient is close to 1, it indicates a positive relationship; if it is close to -1, it indicates a negative relationship.

After calculating the correlation coefficient, you can then see whether the results are statistically significant. For example, if the correlation coefficient is 0.7, this indicates a strong positive relationship between the integration of innovation in the curriculum and skills improvement. Next, conduct a correlation analysis between "Perception of Innovation" and "Skills Improvement." The results of this analysis will provide insight into whether students who have positive perceptions of innovation also tend to report higher skill gains.

3.5. Individual Frequency Analysis

Individual frequency analysis was carried out to understand the variations and patterns of student responses specifically to each item in the questionnaire. By exploring the frequency of each response category, it is possible to identify prominent trends or tendencies in student perceptions. For example, when looking at responses to the item “Integration of Innovation in the Curriculum,” we can observe the frequency distribution for each response category (Often, Sometimes, Very Often, Rarely). Is there a majority of students who give a certain response? Are there significant variations between the categories? Reviewing individual frequencies can help identify patterns among students and provide deeper insight into how innovation integration is perceived.

Something similar could be done for the items “Perception of Innovation” and “Skills Improvement.” Analysis of individual frequencies will allow us to see the extent to which students agree or disagree with statements regarding innovation and improving skills. By exploring these variations, we can identify dominant viewpoints among respondents.

3.6. Perception Analysis and Skills Improvement

Analysis of students' perceptions of innovation and its relationship to skill improvement can provide valuable insights in the context of integrating innovation in the curriculum. In looking at the relationship between the variables

"Perception of Innovation" and "Skill Gain," we can investigate whether students who have positive perceptions of innovation also report more significant skill gains.

From the results of the individual frequency distribution analysis, it may have been observed that the majority of students gave high marks to the items "Perception of Innovation" and "Improvement of Skills." Therefore, we can assume that there is a positive correlation between positive perceptions of innovation and increased skills.

Through correlation analysis, we can measure the extent of the linear relationship between the two variables. If the correlation coefficient is close to 1, it indicates a strong positive relationship between perceptions of innovation and skills improvement. In other words, students who see positive innovations tend to report higher skill gains.

However, it is important to remember that correlation does not imply causality. Although one can see a relationship, it does not mean that perceptions of innovation directly lead to increased skills. There are other factors that may come into play, and further analysis or qualitative research may be needed to better understand these dynamics.

4. Conclusion

From the results of questionnaire data analysis regarding the integration of innovation in the curriculum, perceptions of innovation, and improving students' skills in various classes, several conclusions can be drawn. First, the frequency distribution of student responses shows a positive view of the integration of innovation in the curriculum in all classes. Most students rated "Frequently" or "Very Often," indicating good acceptance of the concept of innovation in learning.

Correlation analysis shows a positive relationship between students' perceptions of innovation and skills improvement. Students who have positive perceptions of innovation tend to report higher skill gains. Although these relationships are identified, it is important to remember that correlation does not imply causality. Furthermore, analysis of class trends revealed consistency in positive views toward innovation integration across all classes. Although there is variation among grades, the general trend shows that students across grade levels rate innovation in the curriculum as positive.

Overall, the results of this analysis paint a positive picture of students' acceptance of the integration of innovation in the curriculum and its potential impact on skill improvement. Further recommendations could involve further research to explore factors that may influence students' perceptions as well as implementation of innovations in daily learning practices. This conclusion can provide guidance for educational policy makers to increase the effectiveness of integrating innovation in the curriculum at various grade levels.

References

Asmawati, L., Hidayat, S., & Atikah, C. (2021). Application of the Self Organizing Learning Environment (Sole) Learning Model to the Literacy Skills of Pre-school Teachers. *Kwangsan, 9*(1), 347041.

Efendi, M. Y., & Hsi, N. L. (2020). The comparison of elementary curriculum education between Indonesia and Singapore. *Journal of teaching and learning in elementary education (JTLEE), 3*(1), 22-36.

Haridza, R., & Irving, K. E. (2017). The evolution of Indonesian and American science education curriculum: A comparison study. *Educare, 9*(2).

Jazadi, I. (2015). Character-based curriculum and textbook development in Indonesia: A critical review. *SOSIOHUMANIKA, 8*(2).

Nurdin, A., Samad, S. A. A., Samad, M., & Fakrurrazi, F. (2023). Government Policy Regarding Education in Indonesia: Analysis of Competence-Based Curriculum, Educational Unit Level Curriculum, and Curriculum 2013. *Journal of Governance and Social Policy, 4*(1), 139-155.

Parker, L. (2017). Religious environmental education? The new school curriculum in Indonesia. *Environmental Education Research, 23*(9), 1249-1272.

Prihantoro, C. R. (2015). The perspective of curriculum in Indonesia on environmental education. *International Journal of research studies in Education, 4*(1), 77-83.

Rochmah, N., Cahyana, U., & Purwanto, A. (2021). Development of mobile learning: Basis of ethnopedagogy of Baduy Community, Banten Province. *In IOP Conference Series: Materials Science and Engineering (Vol. 1098, No. 2, p. 022092).* IOP Publishing.

Syafei, I., Wasehudin, W., Kesuma, G. C., Septuri, S., & Frimayanti, A. I. (2020). Public Higher Education Studies: Developing a Multicultural-Based Islamic Religious Education Learning Model. *Jurnal Keguruan dan Ilmu Tarbiyah, 5*(2), 327-333.

Wahyuni, S. (2016). Curriculum development in Indonesian context the historical perspectives and the implementation. *Universum: Jurnal KeIslaman dan Kebudayaan, 10*(01), 73-82.