

# Attributes of Technology and Livelihood Education (TLE) Exploratory Courses on Student Performance Through Differentiated Literacy Instruction

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**Abstract**—This study investigated the attributes of Technology and Livelihood Education (TLE) exploratory courses on student performance through differentiated literacy instruction among Grade 7 learners. Specifically, it aimed to determine the profile of students according to flexible and project-based groups; assess the level of attributes of exploratory courses; evaluate student performance in written and practical tasks; test the difference in the level of TLE exploratory attributes and student performance between groups; and examine the effect of TLE exploratory course attributes on student performance. The descriptive and correlational research design were employed, involving 114 Grade 7 students from Cabuyao Integrated National High School. Learners were classified into flexible and project-based group. Data were collected using a researcher-made questionnaire and self-assessment tool, including unit tests for written test, and rubrics for practical tasks. The findings revealed that the majority of students belonged to the project-based group, while less than half of the respondents were in the flexible group. Both groups rated hands-on activity and basic skills development as very high. However, the project-based group rated self-discovery and interdisciplinarity as high, whereas the flexible group rated them extremely high. Student performance in both written and practical tasks was consistently rated Good. A significant difference was found only in the attribute of self-discovery, favoring flexible grouping in terms of differentiated literacy instruction while no significant difference was observed in written and practical performance between the two groups. TLE exploratory course attributes did not significantly affect student performance in both written test and practical tasks. There is no significant difference and effects on student attributes of TLE course on differentiated literacy instruction and performance. Hence, the rejection of both hypotheses was identified. This means that external factors such as study habits, prior knowledge, motivation, and resource availability play a stronger role in achievement. It recommends that teachers adopt a hybrid approach combining project-based with flexible reflection activities, strengthen literacy-focused strategies, and integrate interdisciplinary tasks. School Heads are encouraged to provide adequate resources and professional development, while students should cultivate stronger study habits and reflective practices. Future researchers may explore additional variables such as motivation, classroom environment, student competence, and instructional resources to further explain performance outcomes.

**Keywords**— Differentiated Literacy Instruction, Technology and Livelihood Education (TLE), Exploratory Courses, Student Competence, Student Performance, Flexible Group, Project-Based Group.

## I. INTRODUCTION

TLE is geared toward the development of technological proficiency and is anchored on knowledge and information, entrepreneurial concepts, process and delivery, work values, and life skills. This equips students with skills for lifelong learning and focuses on mastery of skills and methods. Without the right work values, it is anemic and dangerous. An effective subject is founded on the cognitive, behavioral, psychomotor, and affective dimensions of human development. Therefore, teaching TLE means teaching facts, concepts, skills, and values comprehensively.

TLE curriculum offers various vocational fields such as Information and Communication Technology (ICT), Agriculture and Fishery Arts (AFA), Family and Consumer Science (FCS), and Industrial Arts (IA). These TLE exploratory courses are offered in Grades 7 and 8. These structured learning areas of TLE provide an avenue for learners to explore and develop different skills that will prepare them to choose a career and make them eligible for certification nationally or globally. Despite their knowledge in hands-on activities, TLE subjects must be able to interpret technical instructions, analyze diagrams, and express what they learned in written outputs.

Effective teaching strategies are needed for TLE exploratory courses to have a significant impact. These must be based on the different strategies that promote engagement, mastery and skills development and be relevant to the various learning requirements of students. It has been proven that performance challenges, contextualized instruction, and activity-based learning enhance student participation and retention in TLE subjects (Pascual, 2023)

Tomlinson (2022) describes differentiated literacy instruction as factoring students' individual learning styles and levels of readiness first before designing a lesson plan. Differentiating instruction can involve either instructing all students on the same content using a variety of pedagogical approaches or requiring the instructor to offer lessons at varying degrees of difficulty depending on each student's aptitude (Weselby, 2022).

Student performance refers to which a student meets academic goals and expectations. This is captured by numerical scores such as grades and textual descriptions of performance by teachers (Spacey, 2023). Teachers measure

students' performance using written works like formative and summative test, and performance / practical tasks.

In response, the researcher seeks to study the attributes of Technology and Livelihood Education (TLE) exploratory courses on student performance through differentiated literacy instruction.

*1.1 Statement of the Problem*

*Problem/s which were addressed by the research*

The study aimed to determine the connection between attributes of Technology and Livelihood Education (TLE) exploratory courses on student performance through differentiated literacy instruction.

Specifically, the study will seek answers to the following questions:

1. What is the profile of the students when group by the teacher according to:
  - 1.1. flexible group; and
  - 1.2. project-based group?
2. What is the level of attributes of TLE exploratory courses as a group according to differentiated literacy instruction in terms of:
  - 2.1. hands-on activity;
  - 2.2. basic skill development;
  - 2.3. self-discovery; and
  - 2.4. interdisciplinary approach?
3. What is the level of student performance as a group according to differentiated literacy instruction in terms of:
  - 3.1. written tests; and
  - 3.2. practical tasks?
4. Is there a significant difference on the student attributes of TLE exploratory course as group according to differentiated literacy instruction?
5. Is there a significant difference in the student performance as group according to differentiated literacy instruction?
6. Is there a significant effect in the attributes of TLE exploratory courses on student performance?

II. METHODOLOGY

The descriptive and correlational research design were employed, involving 114 Grade 7 students from Cabuyao Integrated National High School. Learners were classified into flexible and project-based group. Data were collected using a researcher-made questionnaire and self-assessment tool, including unit tests for written test, and rubrics for practical tasks.

III. RESULTS AND DISCUSSION

This part discusses the results that were yielded from the treatment of the data that was gathered in this study. The following tabular presentations and discussions further determine the connection of attributes of Technology and Livelihood Education (TLE) exploratory course on student performance through differentiated literacy instruction.

*Profile of the Students According to Differentiated Literacy Instruction*

In this study, the profile of the students according to differentiated literacy instruction was grouped into flexible and project-based group and was determined by frequency/number of students and percentage.

Table 1 shows the profile of the students according to differentiated literacy instruction. The flexible group is composed of forty-one (41) students or thirty-six percent (36%) of the total respondents as presented. On the other hand, project-based group is composed of seventy-three (73) students or sixty-four percent (64%) of the total respondents.

This means that most of the respondents prefer project-based learning strategies, but still there are students who prefer flexible learning. The group classification was determined by the highest score of the learner achieved in the learner's self-assessment tool, based on whether the group classification was a flexible or project-based group. This indicates that project-based group is more dominant among respondents.

Table 1. Profile of the Students according to Differentiated Literacy Instruction

Group	Number of Students	Percentage
Flexible	41	36%
Project-based	73	64%
Total	114	100%

*Level of Attributes of TLE Exploratory Courses as a Group According to Differentiated Literacy Instruction*

In this study, the level of attributes of TLE exploratory courses as a group according to differentiated literacy instruction was describe in terms of hands-on activity, basic skills development, self-discovery, and interdisciplinary approach and was determined by the mean and standard deviation.

The following tables discusses the assessment on the attributes of exploratory courses according to differentiated literacy instruction.

Table 2 presents the level of attributes of exploratory courses according to flexible and project-based instruction in terms of hands-on activity. As shown on the table, the respondents in the flexible group always perceived that the teacher allows them to read instructions before doing their projects and make use of pictures, labels, or posters to help understand the lesson. Besides, they observed that the teacher often uses real objects or alternative tools in the classroom to improve learning.

Respondents from the project-based group similarly strongly agree that they are allowed to read instructions before doing our projects and explain and demonstrate the activities for them. They also agree that the teacher often used real objects or alternative tools in the classroom to improve learning.

The level of attributes of TLE exploratory courses in terms of hands-on activity according to flexible group gained the overall weighted mean of 4.46 with a standard deviation of 0.81, verbally interpreted as Very High while project-based group obtained the overall weighted mean of 4.45 with a standard deviation of 0.80, also verbally interpreted as Very High. The results shows that the implementation of hands-on

activities is consistently effective regardless of grouping strategy.

Table 2. Level of Attributes of TLE Exploratory Courses as a Group According to Differentiated Literacy Instruction in terms of Hands-on Activity

Statements	Flexible Group			Project-based Group		
	Mean	SD	Remarks	Mean	SD	Remarks
My teacher...						
...explains and demonstrates the activities for us.	4.51	0.50	Always	4.62	0.73	Always
...uses real objects or alternative tools in the classroom to improve learning.	4.00	0.53	Often	4.07	0.87	Often
...provides written step-by-step procedures to follow during hands-on tasks.	4.59	0.60	Always	4.37	0.76	Always
...uses pictures, labels, or posters to help understand the lesson.	4.61	0.63	Always	4.54	0.86	Always
...allows me to read instructions before doing our projects.	4.61	0.67	Always	4.80	0.63	Always
Weighted Mean	4.46			4.45		
SD	0.81			0.80		
Verbal Interpretation	Very High			Very High		

In summary, students in flexible or project-based groups, are experiencing the same experiential learning opportunities. This shows that hands-on activities are effective for both flexible and project-based groups, and are essential part of TLE exploratory courses. Students learn equally, proving that practical tasks are effective across different teaching methods. Hands-on learning activities should continue to be emphasized as this enhances the technical competencies and maintains students' motivation. Therefore, experiential learning helps to relate theory to practice and provides equal opportunity for all learners.

Table 3 presents the level of attributes of TLE exploratory courses according to flexible and project-based instruction in terms of basic skills development.

Based on the result, the respondents from the flexible group always felt that the teacher helps the students to improve their reading and writing skills in TLE and teaches new words to learn that can be use in TLE lessons. In addition, students also observe that the teacher provide practice in spelling and grammar in TLE writing tasks and encourages learners to take notes and write summaries during class. In addition, they agreed that the teacher always checks learning through writing assignments.

The project-based group similarly observed that the teacher always checks learning through writing assignments and encourages them to take notes and write summaries during class. The learners also agreed that the teachers help them improve their reading and writing skills in TLE, teaches new words to learn that can be use in TLE lessons, and provides practice in spelling and grammar in TLE writing tasks.

Table 3. Level of Attributes of TLE Exploratory Courses as a Group According to Differentiated Literacy Instruction in terms of Basic Skill Development

Statements	Flexible Group			Project-based Group		
	Mean	SD	Remarks	Mean	SD	Remarks
My teacher...						
...helps me improve our reading and writing skills in TLE.	4.61	0.49	Always	4.51	0.76	Always
...teaches new words to learn that can be use in TLE lessons.	4.66	0.65	Always	4.39	0.66	Always
...provides practice in spelling and grammar in TLE writing tasks.	4.29	0.89	Always	4.22	0.84	Always
...encourages to take notes and write summaries during class	4.44	0.86	Always	4.46	0.80	Always
...checks learning through writing assignments	4.68	0.60	Always	4.76	0.53	Always
Weighted Mean	4.54			4.38		
SD	0.73			0.78		
Verbal Interpretation	Very High			Very High		

The level of attributes of TLE exploratory courses in terms of basic skills development according to flexible group gained the overall weighted mean of 4.54 with a standard deviation of 0.73, verbally interpreted as Very High while project-based group obtained the overall weighted mean of 4.38 with a standard deviation of 0.78, also verbally interpreted as Very High. The results suggests that the implementation of basic skills development activities is always effective regardless of grouping strategy.

This summarizes that, students' learning opportunities being focused on the same learning area regardless of being in flexible or project groups. This demonstrates that differentiated instruction strengthens reading, writing, and grammar. Different basic literacy skills strategies in TLE are effective no matter the grouping. Teachers need to continue embedding these skills in lessons to develop communication and problem-solving.

Table 4 shows the level of attributes of TLE exploratory courses according to flexible and project-based instruction in terms of self-discovery approach.

As shown in the result, the respondents that belong to the flexible group often observed that the teacher allows them to share their ideas and feelings. It was also observed that the teachers always encourage them to write a reflection about their activity, provides for students to share their reflection in class, gives different tasks based on their ability and interests, and help them relate what they learn in TLE to their own lives.

The respondents from project-based group, also strongly agree that the teacher always encourages them to write a reflection about their activity and gives different tasks based on their ability and interests. And similarly, they agreed that the teacher always help them relate what they learn in TLE to their own lives, provides opportunities to share reflections in

class. They noticed that the teacher often allows them to share their ideas and feelings and provides opportunities for students to share their reflections in the class.

Table 4. Level of Attributes of TLE Exploratory Courses as a Group According to Differentiated Literacy Instruction in terms of Self-Discovery Approach

Statements	Flexible Group			Project-based Group		
	Mean	SD	Remarks	Mean	SD	Remarks
<b>My teacher...</b>						
...allows me to share our ideas and feelings.	4.10	0.91	Often	4.03	0.96	Often
...encourages us to write a reflection about our activity.	4.46	0.74	Always	4.46	0.67	Always
...provides opportunities for students to share our reflections in the class.	4.32	0.90	Always	4.17	0.76	Often
...gives us different tasks based on our ability and interests	4.37	0.79	Always	4.39	0.73	Always
...helps us relate what we learn in TLE to our own lives.	4.68	0.56	Always	4.63	0.65	Always
Weighted Mean	4.39			4.20		
SD	0.81			0.87		
Verbal Interpretation	Very High			High		

The level of attributes of TLE exploratory courses in terms of the self-discovery approach according to flexible group gained the overall weighted mean of 4.39 with a standard deviation of 0.81 and verbally interpreted as Very High while project-based group obtained the overall weighted mean of 4.20 with a standard deviation of 0.87 and verbally interpreted as High. The results imply that the implementation of self-discovery approach is effective, though slightly stronger opportunities for personal growth in flexible group.

Table 5 presents the level of attributes of TLE exploratory courses according to flexible and project-based instruction in terms of interdisciplinary approach.

The respondents from the project-based group similarly strongly agree that the teacher always help them in what they learned in other subjects and connects TLE lessons to other subject areas. They also agreed that the teacher writes about real-life tasks in their TLE class and often used reading text that discuss different subjects together. Moreover, they observed that the teacher gives reading and writing tasks that cross the subjects. The level of attributes of TLE exploratory courses in terms of the interdisciplinary approach according to flexible group gained the overall weighted mean of 4.28 with a standard deviation of 0.83, verbally interpreted as Very High while project-based group obtained the overall weighted mean of 4.08 with a standard deviation of 0.80, also verbally interpreted as High. The results shows that the implementation of interdisciplinary strategies is successful, and with slightly integrated and observed in the flexible group.

Table 5. Level of Attributes of TLE Exploratory Courses as a Group According to Differentiated Literacy Instruction in terms of Interdisciplinary Approach

Statements	Flexible Group			Project-based Group		
	Mean	SD	Remarks	Mean	SD	Remarks
<b>My teacher...</b>						
...connects TLE lessons to other subjects area.	4.32	0.71	Always	4.05	0.87	Always
...uses reading texts that discuss different subjects together.	4.12	0.83	Often	4.07	0.78	Often
...helps us in what we learned in other subjects.	4.07	1.00	Often	4.37	0.69	Always
...writes about real-life tasks in our TLE class.	4.56	0.63	Always	4.12	0.83	Always
...gives us reading and writing tasks that across the subjects.	4.34	0.81	Always	3.83	0.82	Always
Weighted Mean	4.28			4.08		
SD	0.83			0.80		
Verbal Interpretation	Very High			High		

In short, students are given cross-curricular literacy experience in TLE, whether they are put in flexible or project-based groups. This implies that students can think critically and apply knowledge in real context by connecting TLE with other subjects. Teachers should continue with the interdisciplinary approach to enhance learning and make lessons more holistic and meaningful.

*Level of Student Performance as a Group According to Differentiated Literacy Instruction*

In this study, the significant difference in the level of students' performance as a group according to differentiated literacy instruction was examined in terms of written test and performance task using frequency, percentage, mean, and standard deviation as statistical measures.

Table 6 presents the level of student performance as a group according to differentiated literacy instruction in terms of written test. Most of the students obtained scores ranging from 16 – 20. In the flexible group, twenty-six (26) out of forty-one students or sixty-three point forty-one percent (63.41%), achieved scores within this range. Similarly, in the project-based group, forty-seven (47) out of seventy-three students (73) or sixty-four point thirty-eight percent (64.38%) also fell within the same score range. The mean score of 17.90 and a standard deviation of 2.81 of the flexible group and mean score of 18.11 and a standard deviation of 2.55 of the project-based group both obtained outstanding performance with descriptive value of Good.

This suggests that students performed well in written assessments regardless of group through differentiated literacy instruction. Moreover, the findings indicates that the instructional strategies applied were effective in enhancing student's literacy skills and comprehension abilities. Hence, the results show that effective teaching approaches help

students develop not only theoretical understanding but also confidence in their academic abilities.

Table 6. Level of Student Performance as a Group According to Differentiated Literacy Instruction in terms of Written Test

Group	Score	Frequency	Percentage	Descriptive Value
Flexible	21 – 25	9	21.95%	Excellent
Project-Based		12	16.44%	Excellent
Flexible	16 – 20	26	63.41%	Good
Project-Based		47	64.38%	Good
Flexible	11 – 15	6	14.63%	Satisfactory
Project-Based		14	19.18%	Satisfactory
Flexible	6 – 10	0	0	Needs Improvement
Project-Based		0	0	Needs Improvement
Flexible	0 – 5	0	0	Poor
Project-Based		0	0	Poor
Flexible	Mean	17.90 / 2.81		Good
Project-Based		18.11 / 2.55		
Flexible	Descriptive Value	Good		Good
Project-Based		Good		

Table 7 presents the level of student performance as a group according to differentiated literacy instruction in terms of practical task. Most of the scores are concentrated in the range of 13 - 16 which composed of twenty (20) out of forty-one students or forty-eight point seventy-eight percent (48.78%) from the flexible group and forty (40) out of seventy-three students (73) or fifty-four point seventy-nine percent (54.79%) from the project-based group, both with the descriptive value of Good.

Meanwhile, a large number of students also reached the “Excellent” level, with scores ranging from 17–20. In the flexible group, twenty-one (21) students, or 51.22%, achieved this level, while thirty-three (33) students, or 45.21%, from the project-based group also performed excellently. No students from either group fell under the “Satisfactory,” “Needs Improvement,” or “Poor” categories.

The mean score of 16.29 and a standard deviation of 1.60 of the flexible group and mean score of 16.30 and a standard deviation of 1.50 of the project-based group both obtained outstanding performance with descriptive value of Good. This means that practical tasks indicate that differentiated literacy instruction whether flexible or project-based group, effectively supports mastery of skills and readiness to apply in the real-world.

In summary, the results indicate that practical tasks prepare students for industrial and real-world work by giving them opportunities to apply knowledge through hands-on experiences.

*Significant Difference in the Level of Student Attributes of TLE Exploratory Course as Group According to Differentiated Literacy Instruction*

In this study, the significant difference in the level of student attributes of TLE exploratory courses as group according to differentiated literacy instruction was determined by Paired-T test.

Table 7. Level of Student Performance as a Group According to Differentiated Literacy Instruction in terms of Practical Task

Group	Score	Frequency	Percentage	Descriptive Value
Flexible	17 – 20	21	51.22%	Excellent
Project-Based		33	45.21%	Excellent
Flexible	13 – 16	20	48.78%	Good
Project-Based		40	54.79%	Good
Flexible	9 – 12	0	0	Satisfactory
Project-Based		0	0	Satisfactory
Flexible	5 – 8	0	0	Needs Improvement
Project-Based		0	0	Needs Improvement
Flexible	0 – 4	0	0	Poor
Project-Based		0	0	Poor
Flexible	Mean	16.29 / 1.60		Good
Project-Based		16.30 / 1.50		
Flexible	Descriptive Value	Good		Good
Project-Based		Good		

Table 8 presents the test of difference in the level of student attributes in TLE exploratory courses when grouped according to differentiated literacy instruction.

Table 8. Test of Difference in the Level of Student Attributes of TLE Exploratory Course as Group According to Differentiated Literacy Instruction

Attributes of Exploratory Course	Flexible		Performance Based		t	p	Cohen's d
	M	SD	M	SD			
Hands-on Activity	4.46	0.81	4.45	0.80	0.989	.329	0.154
Basic Skill development	4.54	0.73	4.30	0.78	1.98	.054	0.310
Self-Discovery	4.39	0.81	4.20	0.87	2.76	.009*	0.431
Interdisciplinary Approach	4.28	0.83	4.08	0.86	1.97	.056	0.307

Note \* p < .05

For hands-on activity, the mean scores for both groups are almost the same and there is no significant difference (p = .329), between the two groups experience similar levels of hands-on activity. Both groups develop their basic skills in a similar manner with the flexible group showing a slightly higher score but this is not significant (p = .054). The results indicate significant differences between groups for self-discovery (p = .009) with the flexible group having a higher score, indicating greater opportunity for personal exploration. There was a slight difference between the two groups for interdisciplinary approach in that the flexible group scored slightly higher but this difference is not significant (p = .056), suggesting that both groups are equally exposed to this item.

The findings shows that both differentiated literacy strategies can generally be similar in facilitating the majority of the attributes of TLE exploratory course, in terms of hands-on activity, basic skills and interdisciplinary approach. The major benefit of the flexible group to self-discovery, however, may be a more supportive environment for learner independence, reflection and growth through flexible grouping.

The overall analysis of the attributes of TLE exploratory courses indicates that differentiated literacy instruction is effective in the attributes while there is a meaningful improvement in the aspect of flexible grouping in promoting the students' self-discovery which is an important outcome in TLE exploratory learning.

*Significant Difference on the Level of Student Performance as Group According to Differentiated Literacy Instruction*

In this study, the significant difference on the level of student performance as group according to differentiated literacy instruction was determined by Paired-T test.

Table 9 presents the test of difference in the level of student performance as group according to differentiated literacy instruction. For the written test, the flexible group obtained a mean score of 17.90 with a standard deviation of 2.81, while the project-based group achieved a slightly higher mean score of 18.11 with a standard deviation of 2.55. In terms of practical tasks, the flexible group recorded a mean score of 16.29 with a standard deviation of 1.62, while the project-based group obtained a mean score of 16.30 with a standard deviation of 1.51.

Table 9. Test of Difference in the Level of Student Performance as Group According to Differentiated Literacy Instruction

Student Performance	Flexible		Project-Based		t	p	Cohen's d
	M	SD	M	SD			
Written Test	17.90	2.81	18.11	2.55	1.040	.303	0.163
Practical Task	16.29	1.62	16.30	1.51	1.520	.135	0.238

Note \* p < .05

The statistical results revealed that there was no significant difference between the performance of the flexible and project-based groups in both written tests and practical tasks. The computed t-value for written test was 1.040 with a p-value of .303, while for the practical task, the t-value was 1.520 with a p-value of .135. Since the p-values are greater than the .05 level of significance, so the null hypothesis was accepted. This means that there was no difference between the effectiveness of differentiated literacy instruction.

Furthermore, the Cohen's d values of 0.163 for the written test and 0.238 for the practical task indicate small effect sizes, suggesting that the differences between the two groups were minimal. These findings imply that the differentiated literacy instruction group whether flexible group or project-based group have the same effectiveness on improving students' academic and practical performance.

*Significant Effect in the Attributes of TLE Exploratory Courses on Student Performance*

In this study, regression analysis was used to determine the significant effect in the attributes of TLE exploratory courses in student performance in terms of written test and practical tasks according to differentiated literacy instruction.

Table 10 presents the regression analysis on the effect of the attributes of TLE exploratory courses on student performance in the written test of flexible group. The analysis included the beta coefficients, F-value, t-values, and p-values for each indicator such as hands-on activity, basic skill development, self-discovery, and interdisciplinary approach.

Table 10. Regression Analysis on the Effect in the Attributes of TLE Exploratory Courses on Student Performance in Written test of Flexible Group

ANOVA <sup>a</sup>					
Written Test	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	0.314	4	0.099	0.985	0.428
Residual	9.233	36	0.257		
Total	9.547	40			

a. Dependent Variable: Written Test

b. Predictors: Hands-on Activity\_Overall, Basic Skill development\_Overall, Self-Discovery\_Overall, Interdisciplinary Approach\_Overall

Coefficients <sup>a</sup>						
Model	Written Test	Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.519	1.091		4.144	0.000
	Hands-on Activity_Overall	0.204	0.316	0.168	0.686	0.523
	Basic Skill development_Overall	0.182	0.279	0.140	0.651	0.519
	Self-Discovery_Overall	0.154	0.297	0.138	0.519	0.607
	Interdisciplinary Approach_Overall	0.034	0.248	0.029	0.138	0.891

Note \* p < .05

The result from the regression indicates that through flexible learning, all indicators of attributes of TLE exploratory courses in terms of hands-on activity, basic skill development, self-discovery, and interdisciplinary approach does not significantly affect students' performance in written test. The regression analysis showed an F-value of 0.985 with a significance value of 0.428, which is higher than the 0.05 level of significance. The result indicates that the attributes of TLE exploratory courses do not significantly predict written test performance among students in the flexible group.

Moreover, all the individual indicators achieved p-value of more than 0.05 signifying that the indicators were not significantly affecting the cognitive performance of students in written tests. Hands-on activity obtained a p-value of 0.523, basic skill development had a p-value of 0.519, self-discovery recorded a p-value of 0.607, and interdisciplinary approach showed a p-value of 0.891. These results indicate that none of the attributes of TLE exploratory courses explain significant differences in written test performance among students in the flexible.

The overall result was not significant, suggests that other attributes of TLE exploratory courses alone might be more important for ensuring success in written test, such as higher order course attributes like self-control, for example, study

habits, prior knowledge, reading comprehension, or direct test preparation. Experiential learning is important for developing practical skills and engagement, it does not necessarily affect on performance in written assessments that focus more on theoretical understanding and cognitive mastery.

Table 11 shows that the effect of the attributes of exploratory courses in student performance in the flexible group practical tasks is in the positive direction. The analysis focused on the beta coefficients, F-value, t-values, and p-values for each indicator with regard to hands-on activity, basic skill development, self-discovery and interdisciplinary approach.

Table 11. Regression Analysis on the Effect in the Attributes of TLE Exploratory Courses on Student Performance in Practical Task of Flexible Group

ANOVA <sup>a</sup>					
Practical Task	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	0.314	4	0.099	0.985	0.428
Residual	9.233	36	0.10		
Total	9.547	40			

a. Dependent Variable: Performance Task

b. Predictors: Hands-on Activity Overall, Basic Skill development Overall, Self-Discovery Overall, Interdisciplinary Approach Overall

Coefficients <sup>a</sup>					
Practical Task	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.532	0.872		4.048	0.000
Hands-on Activity Overall	0.882	0.252	0.088	0.350	0.729
Basic Skill development Overall	0.203	0.224	0.188	0.909	0.369
Self-Discovery Overall	0.065	0.238	0.070	0.272	0.787
Interdisciplinary Approach Overall	0.286	0.198	0.292	1.444	0.157

Note \* p < .05

The results revealed that the attributes of TLE exploratory courses are not significantly related to the students' performance in practical activities. The F value obtained from the regression analysis was 0.985 with a significance value of 0.428, which was higher than the 0.05 level of significance. This means that the overall model of regression is not statistically significant.

Similarly, all indicators recorded p-values greater than 0.05, confirming that they did not significantly contribute to students' performance in practical tasks. Hands-on activity obtained a p-value of 0.729, basic skill development had a p-value of 0.369, self-discovery recorded a p-value of 0.787, and interdisciplinary approach showed a p-value of 0.157. These findings suggest that the attributes of TLE exploratory courses were not significantly explain the students' practical task within the flexible learning group.

Overall, the non-significant result indicates that ensuring success in practical assessments may depend more on other factors such as individual motivation, prior skills, resource availability, or external support rather than on the instructional attributes of exploratory courses alone.

Table 12 exhibits the effect of the attributes of TLE exploratory courses on student performance in written test of the project-based group. The analysis includes the beta coefficients, F-value, t-values, and p-values for each variable.

The results revealed that none of the indicators significantly affected students' performance in written tests under project-based learning. The overall regression model obtained an F-value of 1.31 with a significance value of 0.274, which is higher than the 0.05 level of significance. This indicates that the regression analysis is not statistically significant.

Likewise, all indicators recorded p-values greater than 0.05, confirming that they did not significantly contribute to students' written test scores. Hands-on activity obtained a p-value of 0.095, basic skill development had a p-value of 0.861, self-discovery recorded a p-value of 0.474, and interdisciplinary approach showed a p-value of 0.481. These findings suggest that the attributes of TLE exploratory courses do not significantly predict written test performance among students in the project-based group.

Table 12. Regression Analysis on the Effect in the Attributes of TLE Exploratory Courses on Student Performance in Written Test of Project-based Group

ANOVA <sup>a</sup>					
Written Test	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	0.268	4	0.072	1.31	0.274
Residual	24.084	68	0.354		
Total	24.342	72			

a. Dependent Variable: Written Test

b. Predictors: Hands-on Activity Overall, Basic Skill development Overall, Self-Discovery Overall, Interdisciplinary Approach Overall

Coefficients <sup>a</sup>					
Written Test	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.671	0.767		3.484	0.000
Hands-on Activity Overall	0.309	0.183	0.244	1.691	0.095
Basic Skill development Overall	0.033	0.190	0.030	0.175	0.861
Self-Discovery Overall	0.150	0.209	0.139	0.720	0.474
Interdisciplinary Approach Overall	0.137	0.193	0.118	0.709	0.481

Note \* p < .05

Overall, the non-significant result indicates that the attributes of TLE exploratory courses do not significantly influence written test performance in the project-based group. This imply that students' achievement in written assessments may depend more on external factors such as prior academic preparation, study habits, reading comprehension, and focused review practices rather than on the instructional attributes of exploratory courses alone. Although project-based learning promotes engagement and experiential learning, written examinations may still rely more heavily on students' cognitive preparation and literacy skills.

Table 13 presents the regression analysis on the effect of the attributes of TLE exploratory courses on student

performance in practical task of the project-based group. The analysis included the beta coefficients, F-value, t-values, and p-values for the indicators in terms of hands-on activity, basic skill development, self-discovery, and interdisciplinary approach.

The results revealed that none of the identified indicators significantly affected students' performance in practical tasks under project-based learning. The overall regression model obtained an F-value of 1.68 with a significance value of 0.164, which is higher than the 0.05 level of significance. This indicates that the regression model is not statistically significant.

Likewise, all indicators recorded p-values greater than 0.05, confirming that they did not significantly contribute to students' practical task scores. Hands-on activity obtained a p-value of 0.075, basic skill development had a p-value of 0.898, self-discovery recorded a p-value of 0.135, and interdisciplinary approach showed a p-value of 0.631. These findings suggest that the attributes of TLE exploratory courses do not significantly predict students' performance in practical tasks within the project-based group.

Table 13. Regression Analysis on the Effect in the Attributes of TLE Exploratory Courses on Student Performance in Practical task of Project-based Group

ANOVA <sup>a</sup>					
Performance task	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	0.300	4	0.090	1.68	0.164
Residual	16.454	68	0.10		
Total	16.754	72			

a. Dependent Variable: Practical Task

b. Predictors: Hands-on Activity Overall, Basic Skill development Overall, Self-Discovery Overall, Interdisciplinary Approach Overall

Coefficients <sup>a</sup>					
	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
1 (Constant)	4.172	0.634		6.582	0.000
Hands-on Activity Overall	0.274	0.151	0.259	1.811	0.075
Basic Skill development Overall	0.020	0.157	0.020	0.129	0.898
Self-Discovery Overall	0.261	0.172	0.290	1.512	0.135
Interdisciplinary Approach Overall	0.077	0.160	0.080	0.482	0.631

Note \* p < .05

Overall, the non-significant findings suggest that success in the practical activity is not influenced by either the teacher's or the learner's gender or grade level. The instructional characteristics of exploratory courses may be a less important criterion for assessing them; other factors, including students'

motivation and prior technical knowledge, courses available, and access to structured training, may be more important. Project-based learning fosters active learning and experiential learning; however, these factors could be more relevant in evaluating students' practical performance.

#### IV. CONCLUSION AND RECOMMENDATIONS

The level of student attributes of exploratory course as group is not significantly related to differentiated literacy instruction; thus, the hypothesis was accepted.

The level of student performance as group is not significantly related to differentiated literacy instruction; thus, the hypothesis was accepted.

The attributes of exploratory courses on student performance is not significantly related; thus, the hypothesis was accepted.

Based on the conclusions drawn from the study, the following recommendations are proposed:

School Heads may provide adequate resources and well-equipped laboratories to maximize hands-on and practical learning. They may encourage interdisciplinary projects that connect TLE with other subjects for holistic learning.

TLE Teachers may continue utilizing both flexible grouping and project-based grouping, but emphasize reflective activities in flexible groups to enhance self-discovery. They may strengthen literacy-focused strategies such as note-taking, writing tasks, and vocabulary building to support written test performance.

Students may develop stronger study habits and self-regulated learning strategies, such as effective study habits and reflective practices, to further improve their academic performance.

Future researchers may conduct similar studies on the other grade level of Junior High School learners involving other variables such as motivation, classroom environment, student competence, and instructional resources to further explore factors influencing student performance.

#### REFERENCE

- [1]. Pascual, J. G. (2023, March 27). DepEd Bataan. Retrieved from <https://depedbataan.com/wp-content/uploads/2023/03/ENHANCING-STUDENT-PERFORMANCE-IN-TLE-.pdf>
- [2]. Spacey, J. (2023, October 25). 51 Examples of Student Performance. Simplicable. Retrieved from <https://simplicable.com/edu/student-performance>
- [3]. Tomlinson, C. A. (2017). How to differentiate instruction in academically diverse classrooms (3rd ed.). ASCD.
- [4]. Weselby, C. (2022, November 8). Differentiated instruction: Examples & classroom strategies. Resilient Educator. Retrieved from <https://resilienteducator.com/classroom-resources/examples-of-differentiated-instruction/>