

Determinants of Academic Performance of Industrial Arts Students in Electronic Products Assembly and Services

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Abstract— This study aimed to assess the extent of the determinants of the academic performance of Industrial Arts Students in Electronic Products Assembly and Services. Results showed that the extent of the determinants of the academic performance in terms of facilities was high while in terms of instructional materials and socio-economic status, the respondents perceived that their teachers and the average monthly income of their family were both on the moderate extent. Findings also affirmed that their academic performance in Electronic Products Assembly and Services was on the proficient level. On the other hand, a significant relationship existed between the extent of the determinants and the level of the academic performance of the respondents in terms of the given indicators. Hence, the provision of the needed and complete equipment and facilities is indispensable to continuously improve the academic performance of the students.

Keywords— *Academic Performance, Facilities, Instructional Materials, Socio-economic Status, and Electronic Products Assembly and Services*

I. INTRODUCTION

Specialists throughout history have expressed the social and individual importance of education. The task of educating folks in this society has been entrusted to a school system with a general education curriculum. The purpose of education has been discussed by various educators by highlighting the three

basic purposes (a) to transmit a way of life, (b) to improve and reconstruct that way of life, and (c) to meet the needs of individuals.

Teachers and curriculum developers must realize the importance of developmental tasks to the student. The students in the classroom might actually view the learning effort as a combination between accomplishing personal developmental tasks and satisfactorily completing educational program goals. Thus, it would seem that curriculum should be designed so that the students could accomplish their developmental tasks in the process of achieving more intellectual program goals.

Unfortunately, educational activities in which students take part do not always provide useful experiences for attaining either program goals or developmental tasks. This criticism has often been expressed about Industrial Arts programs in general.

Thus, the acceptability of Industrial Arts has been justified in part by its continuous growth and integration within the educational process. This progress has been made as subject matter field in its own right in becoming a part of general education. Industrial arts is vital to the educational picture, since it teaches the application of the arts and sciences of our fast moving contemporary culture through experiences with tools, materials, and process. As the world of tomorrow increases in mechanization, so will the need of Industrial Arts as a part of general education. Plans for the future prove

stimulating and challenging, yet the problem of providing for the needs of oncoming generations involves great responsibility.

Historically, Industrial Arts began in boiler rooms and basements, often utilizing unused rooms delegated to the school custodian. Teaching in these early classes often involved formal exercises or repair of school equipment. Consequently, Industrial Arts was “in the basement” as far as acceptability in education. Some educators and traditional academicians believed this intrusion an imposition and labeled the area as “manual training”, a work for the hands rather than the mind. Criticisms include lack of intellectual content, employment of the shop setting, use of tools and materials rather than pencil and paper, and emphasis on specific skill and proficiency. Although the old classical curriculum and formal discipline of those times left to be desired, Industrial Arts in its earlier forms had formidable room for improvement (American Council, 1959).

Today, Industrial Arts is a subject area as dealing with the understanding and interpretations of industrial activity. As an important part of general education, Industrial Arts is concerned with materials, processes, and products of industry. Industrial Arts students do not only seek knowledge of the industrial society in which they live, but also learn to use tools, work with materials, and perform basic processes. Students define problems; postulate solutions by design and written descriptions, develop solutions and tests products or manufacturing principles for validity. Sketching and design become the medium for thinking, and communication, while the actual project developed experimentally tests the idea. The application of art and engineering to industry for the purpose of achieving greater beauty and utility at less cost is an objective of Industrial Arts.

Perhaps, in the field of education and to the entire nation, quality and excellence of learning is of utmost importance. It is a must that schools should produce quality graduates, who will develop the social and economic components of nation building in order that the nation can achieve full development and progress. Education in the Philippines is managed and regulated by the Department of Education or DepEd as it is commonly referred to in the country. The department controls the Philippine education system, especially the curriculum used in schools, and usage of funds used for further improvements, which includes the continual building of schools and its facilities, and the recruitment of teachers and other staff, among others.

Unfortunately, despite on what is stipulated in Republic Act No. 10533 which is also known as “Enhanced Basic Education Act of 2013” as regards to the two additional years in basic education of both public and private institutions, Philippines is not yet ready for this subtle changes in the curriculum due to the unavailability of learning materials. With its implementation, most of schools need facilities, chairs, books and equipment for the specialization especially public schools because these institutions merely depend on the support of the funds coming from the government. In the same manner, most schools are not yet ready especially the public schools which have Technical, Vocational Livelihood (TVL) tracks that need

facilities and equipment for learners’ studies and hands-on activities. That’s why government must prioritize the tools and equipment that every public school needs through giving more attention among public schools that have higher number of learners’ population, so as buildings for the facilities necessary in the conduct of learners’ hands-on manipulation-related activities.

Alarmed by the same light of situation experienced in Nabuslot National High School, the researcher urged to conduct this quantitative research to therefore measure the extent of determinants of the academic performance and the level of academic performance in Electronic Product Assembly Services in terms of the indicators used herein.

II. METHODS

This study aimed to find the extent of determinants of the academic performance and the level of academic performance in Electronic Products Assembly and Services of Industrial Arts students in Nabuslot National High School, A.Y.2018-2019. The 47 respondents of this study were taken randomly from 90 total population of Industrial Arts Students in Nabuslot National High School. A letter of request duly note by the research adviser for the dissemination of the questionnaires was sent to the school’s principal to seek permission in conducting the study. Upon the approval, the research personally distributed the questionnaires with the assistance of the teacher after ten minutes the retrieval of the questionnaire was done.

III. RESULTS AND DISCUSSION

Extent of Factors Affecting Academic Performance in Electronic Products Assembly and Services in terms of:

1.1 Facilities

Table 1.1 shows the mean perception of the respondents on the extent of determinants of academic performance in EPAS in terms of facilities. As shown on the table, the respondents were on the very high extent in terms of the efficiency and convenience of the tools and equipment used by the students-respondents’ in their practical activities as discussed in item number 1. This was attested by the computed mean score of 3.28 which ranked the highest. Results revealed that the respondents were actually utilizing the resources available given/provided by the department in general such as tools and other equipment in the successful conduct of their hands-on activities

On the other hand, item number 5 which stated that there is no enough conducive laboratory room to be used in doing their manipulative activities which may occupy their class seemed to be the lowest as evidenced by the obtained mean score of 3.02. Results revealed that there is an immediate need

of a functional laboratory room for their activities where they could move freely, perform with ease without any hindrances. At the same time, it should be a well-ventilated EPAS laboratory room with complete utilities necessary for the students' needs, a laboratory where the presence of a personnel assigned to take charge of technical problems is there (in time the need arises), and the size of the room should be fitted to the number or population of the students in class.

Generally, the students-respondents obtained an overall mean score of 3.12 described as high extent. This shows that students in the status quo were really into a conducive facility where they could conduct the application of they had learned in EPAS through hands-on be it individual or group tasks.

The above-mentioned findings go the same way with that of Glen (2009) as he showed in his book that the factor that most affects students' academic performance in skill-based classrooms is the lack in facilities. Thu, it was then firmly recommended that students are found to perform better if facilities are all given free and made available.

Table 1.1 Mean Results on the Extent of Factors Affecting Academic Performance in EPAS in Terms of Facilities

Items	Mean	Rank	Description
1. the tools and equipment are efficient and convenient in the conduct of my practical activities.	3.28	1	Very High Extent
2. there is a well-ventilated EPAS laboratory room with complete utilities necessary for my needs.	3.04	4	High Extent
3. there is a personnel assigned to take charge of technical problems (in time the need arises).	3.21	2	High Extent
4. the size of the room is fitted to the number or population of our class.	3.06	3	High Extent
5. the laboratory room used in doing manipulative activities is conducive in a way that it is enough to accommodate our class.	3.02	5	High Extent
OVERALL MEAN	3.12		High Extent

1.2 Instructional Materials

Table 1.2 shows the mean perception of the respondents on the extent of determinants of academic performance in EPAS in terms of instructional materials. As shown on the table, the respondents were on very high extent in terms of organizing the components of the instructional materials used in every class discussion (readability of visual aids, pacing of content, ease of use) as discussed in item number 3. This was attested by the computed mean score of 3.34 which ranked the highest. Results revealed that the teachers were responsible in organizing their instructional materials in every class discussion in EPAS.

On the other hand, item number 1 which stated that aligning the content with curriculum and standards, valid and reliable, with real world examples was in the high extent as evidenced by the obtained mean score of 3.21. Thus, using materials that were appropriate for the subject matter, levels of learning, and in one's capacity, proving different forms of interaction within one's class and incorporating a variety of teaching strategies such as inquiry-oriented activities, cooperative learning, and use of technology during class discussion should also be prioritized by the teachers themselves.

Generally, the students-respondents obtained an overall mean score of 3.27 described as very high extent. This shows that though the teachers concerned in this subject were already giving emphasis in this matter, they still needed to work harder in exposing the students in different motivating instructional materials to enhance their academic performances, especially in EPAS.

These findings were found similar to the notion of Ford (2016) that instructional materials are important for it can significantly increase student achievement by supporting student learning. Also through this, content may be tailored in accordance to the abilities and interests of the students during the teaching-learning process.

Table 1.2 Mean Results on the Extent of Factors Affecting Academic Performance in EPAS in Terms of Instructional Materials

Items	Mean	Rank	Description
My teacher . . .			
1. aligns the content with curriculum and standards, and is current, valid and reliable, with real world examples.	3.21	5	High Extent
2. uses materials that are appropriate for the subject matter, levels of learning, and in my capacity.	3.30	2	Very High Extent
3. organizes the components of the	3.34	1	Very High

instructional materials used in every class discussion (readability of visual aids, pacing of content, ease of use)			Extent
4. provides different forms of interaction within my class.	3.23	4	High Extent
5. incorporates a variety of teaching strategies such as inquiry-oriented activities, cooperative learning, and use of technology during class discussion.	3.26	3	Very High Extent
OVERALL MEAN	3.27		Very High Extent

1.3 Socio-economic status

Table 1.3 shows the mean perception of the respondents on the extent of determinants of academic performance in EPAS in terms of socio-economic status. As shown on the table, 23 students-respondents were on moderate level in terms of their socio-economic status. This was attested by the computed average score of 48.94 which ranked the highest. Results revealed that most of the students-respondents came from an average family incoming an amount of money that ranges from 8,000 – 14,000 monthly. This clearly shows that most of the students-respondents' family was still struggling to earn an average amount of money to suffice equally all the needs of every family member in their corresponding home.

On the other hand, 1 student-respondent was on low level in the same indicator. This was attested by the computed average score of 2.13% which seemed to be the lowest in rank. Result revealed that this single student-respondent came from a well-established family incoming an amount of money that ranges from 22,000 – 28,000 monthly. This showed that in Nabuslot National High School, only some came from a family who could suffice their needs everyday which in return may have a positive impact in the motivation of the students to come to school everyday knowing that he/she was financially-gifted.

Generally, the students-respondents obtained an overall mean score of 2.23 described as moderate. This shows that most of the students-respondents came from an average family who were sometimes experiencing problems and difficulties in terms of financial matters. This indicator had been seen to have an immense impact towards students-respondents' academic performance.

The findings herein were found similar to that of Pettigrew's (2009) stating that students with low socio-economic conditions have a tremendous negative impact on their academic success. An unfortunate truth that even as society

continued to make great strides to lessen the negative impact of socio-economic status on a child's existence, academic achievement continued to be greatly affected by financial factors that is beyond the students' control.

Table 1.3 Distribution of the Level of Socio Economic Status of the Respondents

Monthly Salary	Frequency	Percentage	Verbal Descriptions
22,000-28,000	1	2.13	Very High
15,000 – 21,000	6	12.76	High
8,000 – 14,000	23	48.94	Moderate
1,000 – 7,000	17	36.17	Low
TOTAL	47	100	

Overall Mean = 2.23

Verbal Description: Moderate

2. Level of the Academic Performance of the Respondents in Electronic Products Assembly and Services (EPAS)

Table 2 shows the mean result of respondents' level of academic performance in Electronic Product Assembly and Services. As shown in the table, thirty (30) students-respondents or 64% as its equivalent were found to be developing in EPAS as evidenced by the general weighted average which ranged from 75%-83%. This clearly emphasized that most of them were still on the process of enhancing their skills in the said subject. Meanwhile, 17 student-respondents or 36% as its equivalent were found to be skillfully inclined in the competencies provided by the curriculum utilized in the status quo. This seemed to be clear manifestation that they were proficient learners for they were able to obtain a general weighted average which ranged from 84% to 92%. Generally, this led the Industrial Arts students in EPAS to obtain an overall mean score rating of 2.36 which was described "developing". This therefore calls for an immediate action to do scaffolding to resolve the dilemma student are having towards the subject concerned. Thus, these findings are in conjunction with the notions of Adalikwu (2013) which state that instructional materials and facilities serve as a channel between the teacher and the students in delivering instructions. These may also serve as the motivation on the teaching-learning process. This has been used since then to get the attention of the students, eliminate boredom and uplift their academic performance.

Table 2. Numerical Scale, and Verbal Description on the Level of Academic Performance of the Respondents

Academic Performance	Frequency	Percentage	Verbal Description
93-100	0	0	Advance
84-92	17	36	Proficient
75-83	30	64	Developing

74 and below	0	0	Beginning
Total	47	100	

Mean: 2.36

Verbal Description: Developing

3. Relationship between the Extent of Factors Affecting Academic Performance and the Level of Academic Performance of the Respondents

Table 3 shows the correlational analysis on the significant relationship between the extent of factors affecting academic performance and level of academic performance in Electronic Product Assembly and Services of the respondents.

As indicated on the table, there was a significant relationship between the extent of factors affecting academic performance and level of academic performance in Electronic Product Assembly and Services as attested by the obtained critical r-values of 0.3798 (Facilities), 0.3955 (Instructional Material) and 0.2912 (Socio-economic status) which all exceeded the given critical r-value of 0.288 using the 45 degrees freedom at 5% level of significance. Hence the null hypothesis was rejected. These show that students' academic performance is directly influenced by the indicators used in the independent variable. It only implies that these aspects contribute meaningfully in the attainment of students-respondents academic success. EPAS as a subject is activity-oriented and the suggested method for teaching which guided/discovering method is resource-based. This suggests that mastery of EPAS concepts cannot be fully achieved without the use of instructional materials and conducive learning facility. The teaching of EPAS without the presence of instructional material and facilities would certainly result to poor performance in the course (NTI, 2011).

Table 3. Correlational Analysis on the Significant Relationship between the Extent of Factors Affecting Academic Performance and the Level of Academic Performance in Electronic Product Assembly Services

Extent of Factors Affecting Academic Performance in EPAS	Level of Academic Performance in EPAS		
	Computed r value	r ²	Result
Facilities	0.3798	0.1442	Significant Relationship
Instructional Materials	0.3955	0.1564	Significant Relationship
Socio-economic	0.2912	0.0848	Significant

Status			Relationship
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IV. CONCLUSION AND RECOMMENDATIONS

Facility, especially in skill-based subject (EPAS) significantly affects students' academic performance. Thus without its presence, students' performance may fluctuate. Among the three indicators used, instructional materials greatly affect the class standing performances of the students-respondents because these really urged them to study and learn with willingness and motivation. Most of the students-respondents in this study came from an average family whose income ranges from 8,000 to 14,000 necessary to suffice their everyday family needs.

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