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FABRICATION AND EVALUATION OF TRACTOR-DRAWN CORN-SEED PLANTER

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ABSTRACT

This study evaluated a Tractor-drawn corn-seed planter. It specifically assessed Tractor speed (4-4.5, 6-6.5, 8-8.5) and sizes of cell depression (1 seed, 2 seeds, 3 seeds). The response variable considered was machine planting capacity, machine planting efficiency, and machine planting precision. Using a two-factor Analysis of Variance (ANOVA) in a 3x3 factorial experiment in Randomized Complete Block Design (RCBD) where each treatment was replicated three times, the results revealed that the planting capacity was significantly affected by its speed and sizes of cell depression. But, as to its efficiency and precision, it was not significantly affected by its speed but by the sizes of cell depression which is not fit to the number of seeds. On these bases, further development of a machine into a functional one was recommended as it was considered an innovative project for use in agriculture.

Key words: Agricultural engineering, tractor-drawn corn-seed planter, fabrication and evaluation

INTRODUCTION

In industrialized countries, maize is largely used as livestock feed, as a raw material for industrial products. Maize is an important source of carbohydrate, protein, iron, vitamin B, and minerals. Africans consume maize as a starchy base in wide variety of porridges, pastes, grits, and beer. Green maize (fresh on the cob) is eaten parched, baked, roasted or boiled. It plays an important role in filling the hunger gap after the dry season.

In Africa, especially in the sub-Saharan African countries, the use of hoes and cutlasses for crop cultivation is still prevalent due to abject poverty within the region. A seed planter is simply a device or tool used to sow seeds. In small scale landscaping and gardening, manually operated seed planters can be used while in large farm cultivation, the planter can be a massive device usually attached to the back of a tractor. Seed planters depend on both human and machine effort for its operation.

In the Philippines, agricultural mechanization plays a vital role in sustaining and improving agricultural productivity. It enables farming operations more efficient, improves the timeliness of operation, increase cropping intensity and minimizes hard labour in the field. However, the existing corn planters being used in the country are imported. Besides, these machines are expensive. They are mostly big and inappropriate to local farm size (Philmech, 2012).

In view of this, the researcher attempted to construct a corn-planter machine that is suitable to the market with low cost materials to be used. Besides, it was his intent to evaluate the performance of this machine and use the results as bases for his recommendation. He was certain that the demand for this corn planter in farms could significantly increase corn production.

OBJECTIVES OF THE STUDY

The primary purpose of the study was to develop and evaluate the performance of the tractor-drawn corn-seed planter. Specifically, this study sought to achieve the following objectives:

1. To fabricate a tractor-drawn corn-seed planter, and
2. To evaluate the performance of the machine with respect to its capacity, efficiency, and precision.

METHODOLOGY

The study utilized descriptive experimental design. The data obtained from the evaluation were tabulated, consolidated and analysed through two-factor ANOVA in 3x3 Factorial Experiment in RCBD with three replications. The treatment in determining the dropping rate of the tractor-drawn corn seed planter was the use of the different speed (KPH). The treatments were as follows:

<i>Factor A</i>	<i>Speed (KPH)</i>
A1	4 – 4.5
A2	6 – 6.5
A3	8 – 8.5
<i>Factor B</i>	<i>Sizes of Cell Depression</i>
B1	1 seed
B2	2 seeds
B3	3 seeds

In this study, the researcher used locally available materials, and these were the following:

Quantity	Unit	Description
1	Sheet	2mm thick mild steel metal plate
5	Length	2in angle bar 4mm thick
1	Length	3mm thick mild steel flat bar
1	Length	50x50mm mild steel flat bar
1	Length	1 inch mild steel square pipes
1	Length	Solid shaft

The construction material that was needed in the fabrication was gathered and cut according to its specified sizes. During the fabrication, the parts were checked particularly those that undergo welding process to ensure rigid joint connection.

The machine was composed of two wood metering devices that were linked to each other, 20in apart that was connected into the drive shaft to the ground wheel. As well as the five hoppers that was connected to the metering device. The metering device was fit tightly to the hopper to avoid slippage. The adjustable furrow opener and furrow closer was connected to the main frame of the machine. The main frame was provided and made of angle bards to hold the machine and serve as the machine's body.

All parts of the maize planter were fabricated by a mild steel material. The metering mechanism was specifically made of a good quality wood (mahogany); the seed funnel and the seed tube of a mild steel metal sheet material.

The hopper was fabricated using 2mm thick mild steel metal sheet. The metering mechanism was also made of good quality wood material, such as mahogany. The main frame which supports every other component of the planter was constructed using 2in angle bar of 4mm thickness. The adjustable furrow opener and furrow closer was both made using a 50mm x 50mm mild steel flat bar. The planter's ground wheels was produced using a combination of both 1in mild steel square pipes and 3mm thick mild steel flat bars. For the design, the drive shaft directly controls the seed metering mechanism which completely eliminates attachments, such as pulleys, belt, system and gears thereby eliminating complexities which increase cost, and increasing efficiency at a highly reduced cost.

The purpose of the planter is to plant seeds evenly in rows. But to do this, the planter must perform the basic functions. First, in opening a furrow in the soil, the grain must be placed in the moisture for the grain to germinate. Germination is the change from a dormant condition to one of activity and growth. The grain should be an equal depth, regardless of the soil conditions. The furrow opener on the planters and drills allows for both the same condition to be met.

Next, in order to obtain maximum yields, the seeds must be planted at specific rates. This is accomplished by the use of metering devices on planters and drills, which regulate when seeds are put into soil.

Then, placing the seed in the soil is the third thing to do as crop yields depending heavily upon depth and

space between seeds. Yield is affected because placement has a bearing on emerge plant population. The function is accomplished by two previous functions. The furrow opener provides a uniform depth for the seeds while the metering device allows equal spacing between plants.

Moreover, the seeds must be covered for protection against temperature, moisture and rodents. If the seeds were not covered, these factors and others may decrease the possibilities for seeds to germinate and thus decrease yields. This function is usually accomplished by the use of press wheels on planters, and by the chain or drags on drills.

Finally, firming the seedbed provides adequate seed soil contact. This facilitates fast germination and reduces crust formation. The press wheels and drag chains accomplish this function.

RESULTS AND DISCUSSION

The Machine Planting Capacity (kg/hr) of the Tractor-drawn Corn-seed Planter

The planting capacity as shown in Table 1 indicates a grand mean of 2.78 kg/hr. It suggests that the planting capacity of the tractor-drawn cord-seed planter is affected by cell depression which ranges from 2.33 to 3.29 kg/hr and 2.33 to 3.29 kg/hr as observed in the speed factor of the tractor.

The Analysis of Variance reveals that the machine planting capacity is significantly affected by the speed of the tractor. Highest planting capacity is observed at 4 – 4.5 kph (3.20 kg/hr), followed by 6 – 6.5 kph (2.58 kg/hr) and the least capacity at 8 – 8.5 kph (2.55 kg/hr). The reason is that at given tractor speed, the capacity varies due to the number of seeds planted/released per hectare. This means that the slower the tractor speed, the more seeds are released; but, the faster the speed, the lesser the seeds are released.

Moreover, the analysis shows that the machine planting capacity is significantly affected by the sizes of cell depression. The highest capacity is at 3.29 kg/hr (3 seeds) followed by 2.65 kg/hr (1 seed) while the least capacity is at 2.33 kg/ha (2 seeds). This means that the larger the size of cell is the more seeds occupy the cell. But, due to some technicalities, it happens that 1 seed has a higher capacity than 2 seeds due to some imperfection of the metering device that affects the seeding capacity of the different cells.

Table 1: Machine Planting Capacity (kg/ha) at Varying Tractor Speed and Cell Depression	
Treatment	Machine Planting Capacity (kg/hr)
Speed of tractor	
A1 (4 – 4.5 kph)	3.20a
A2 (6 – 6.5 kph)	2.58b
A3 (8 – 8.5 kph)	2.55b
Cell Depression	
B1 (1 seed)	2.68a
B2 (2 seeds)	2.33b
B3 (3 seeds)	3.29a
Mean	2.78
<i>*Means followed by the same letter are not significantly different from each other based on Duncan's Multiple Range Test (DMRT).</i>	

The Machine Planting Efficiency (%) of the Tractor-drawn Corn-seed Planter

Analysis of Variance reveals that the machine planting efficiency is not significantly affected by the tractor speed. It means that in different speed, there are no significant changes in efficiency of the dropping rate due to large number of missed hills. However, analysis revealed that the sizes of cell depression significantly affected the machine's efficiency. Highest planting efficiency is observed at 76.22% (3 seeds), then followed by 57.44% (1 seed) and 53.44% (2 seeds). The efficiency varies depending upon the size and measurement of the cells. Likewise, the maximum hills that can occupy a row in different cell depression with fix measurement really varies, so it affects the planter's efficiency.

Treatment	Machine Planting Efficiency (%)
Speed of Tractor	
A1 (4 – 4.5 kph)	69.44
A2 (6 – 6.5 kph)	62.11
A3 (8 – 8.5 kph)	55.56
Cell depression	
B1 (1 seed)	57.44b
B2 (2 seeds)	53.44b
B3 (3 seeds)	76.22a
Mean	62.37
<i>*Means followed by the same letter are not significantly different from each other based on Duncan's Multiple Range Test (DMRT).</i>	

Machine Planting Precision of the Tractor-drawn Corn-seed Planter

Analysis shows that the precision of the machine is not affected by the tractor speed. Even at different speed, the dropping rate or the exact seed placement per hill of the planter has no significant difference. In both speeds the planter has low precision with regards to the actual number of seeds placed in hill per row. Even though they have different cell depression, the average mean precision of the different speeds does not vary because of some factors affecting the performance of the machine.

However, the precision in terms of the sizes of cell depression has a significant effect. At 1 seed, the average precise seed is 145.11 exact numbers of seed per row at 400 seed capacity per row in hectare. Then, the 3 seeds which has 49.44 exact seeds are precise in 134 hills per row in hectare. The last is 3 seeds which has 40.33 seeds exact in 200 hills per row. This means that the sizes of the cells are not perfectly fit to respective number of seeds.

Treatment	Machine Planting Efficiency (%)
Speed of Tractor	
A1 (4 – 4.5 kph)	80.89
A2 (6 – 6.5 kph)	82.11
A3 (8 – 8.5 kph)	71.89
Cell depression	
B1 (1 seed)	145.11a
B2 (2 seeds)	40.33b
B3 (3 seeds)	49.44b
Mean	78.30
<i>*Means followed by the same letter are not significantly different from each other based on Duncan's Multiple Range Test (DMRT).</i>	

CONCLUSION

Based on the foregoing discussion of results, the researcher concludes that there are various considerations during the fabrication of tractor-corn seed planter which affect the performance of tractor-drawn corn seed planter in terms of capacity, efficiency and precision. Its capacity is affected by its speed and sizes of cell depression while its efficiency and precision are not affected by its speed but by the sizes of cell depression which is not fit to the number of seeds.

RECOMMENDATIONS

Based on the results of the study, the following recommendations are endorsed to further develop a functional tractor-drawn corn seed planter, an innovative project in agriculture:

Improvement of metering device of the machine especially in cell sizes may be considered;

1. To avoid slippage, compact connection of hopper to the metering device may be given importance.
2. To attain higher field efficiency and planting capacity, proper preparation and pulverization of soil may

- be considered as one of the priorities;
3. For the wheel to properly function for proper seed drop, the weight of the machine may be taken into consideration;
 4. To prevent the seed from dropping during turning, a stopping mechanism may be given attention;
 5. The strength of the furrow opener may be considered to attain a desired depth, attain good germination of the seeds and avoid bending of the furrow opener; and
 6. Fixing the seed funnel made of rubber material may be attended to so that the seeds can smoothly drop with breaking them.

SHORT ACKNOWLEDGEMENT

The researcher gratefully acknowledges the untiring support and encouragement of his own wife, Rhodora, and their four children to present and publish his research articles; the technical assistance of his Presidential Assistant, Dr. Charlie A. Dayon; and the opportunity given him by GRACE Inc. to publish his works.

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DRYING EFFICIENCY OF THE MODIFIED FISH DRYER OF AGUSAN DEL SUR STATE COLLEGE OF AGRICULTURE AND TECHNOLOGY

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ABSTRACT

This study was conducted to determine the drying efficiency of the modified ASSCAT fish dryer and the quality of the dried mudfish by its physical appearance and odor. In achieving this primary purpose, descriptive research method was utilized. In this study, the modified fish dryer used was made of the main component, such as drying chamber, air duct, heat exchanger, moist air outlet, fan and a biomass stove set below the heat exchanger. The results revealed that the said fish dryer of ASSCAT could be ignited within 30-50 seconds. Its drying efficiency average was 39.2 percent. However, the drying time of every different load (kg/layer) did not vary significantly because of the variation in size of mudfish samples. Likewise, the moisture reduction varied among the three layers of the dryer. As observed, the color of the output (dried mudfish) "daing" was reddish white; whereas, that of the dried fish output of the dryer before the application of modification was reddish brown. On this basis, it was recommended that further studies could be conducted in order to come up with much improved dryer with maximum drying efficiency. The following recommendations might be considered. First, the duct from heat exchanger to drying chamber could be placed on air distributor plate to provide uniform air distribution to every layer. Second, the layer could be replaced with heat resistant plastic screen that could absorb much heat and minimize unequal conduction of heat. Lastly, the blower could be replaced with heat resistant motor having centrifugal or simple propeller.

Keywords: Agricultural engineering; fish dryer; descriptive research

INTRODUCTION

Modifying the existing fish dryer of Agusan del Sur State College of Agriculture and Technology (ASSCAT) is necessitated for some reasons. First, the province of Agusan del Sur is sufficient of fresh water resources such as mudfish, tilapia, carp and catfish as primary source of income for fishing business. So, to prevent spoilage of food, they depend on solar drying in processing dried fish. However, this traditional sun drying method often yields poor quality of products because of dust, rain and wind or even insects, birds, rodents and domestic animals. As a result, the food product is contaminated with microorganisms such as mycotoxins and infection with disease (Hauser & Ankila, 2000).

Second, the existing dryer of ASSCAT is the output of Garcines' study (1999) on mudfish drying. It is equipped with four components namely, exhaust chamber, drying chamber, duct and burner which is made up of G.I. sheets, flat and round bars. It is found out that its drying efficiency is 46.73% with a minimum operational capacity of 2.0 kilograms of mudfish per hour of operation. As regards the quality of the dried fish in terms of color product, it is reddish brown. Through the modified fish dryer, it is expected that the drying efficiency and the quality of the product are improved. Hence, this study was pursued to evaluate the drying efficiency of modified fish dryer of ASSCAT.

OBJECTIVES OF THE STUDY

The specific objectives of the study were the following:

1. To determine the drying efficiency of modified ASSCAT fish dryer;
2. To determine the quality of dried fish according to color.

METHODOLOGY

Descriptive research method was used to determine drying efficiency of the modified ASSCAT fish dryer as well as the quality of dried mudfish. In this method, the researcher used the said facility equipped with heat exchanger of nine black pipes with a diameter of 254mm and a length of 0.762m; fan; drying chamber; and, moist air outlet. Then, he prepared the 22.5 kg of mudfish by splitting each into butterfly form, removing its internal organs, washing it thoroughly with clean fresh water, soaking it in a brine solution before drying, putting each of them on three-layer tray with loading density of 2.5 kg, and drying them for 12-15 hours.

REVIEW OF LITERATURE

Food Drying

Drying is one of the important yet most energy consuming processes in food processing, chemical printing, and fabric dyeing industries. In farmers level, drying is done at open yards without any good hygienic conditions. Drying under the heat of the sun, however, is not hygienic. It also takes a long time to dry. Besides, when rain pours, the drying process is affected. In effect, food is not fully dried resulting in the growth of bacteria and fungus. Consequently, the investment on it is badly affected.

Successful drying is dependent on adequate heat to draw out moisture without necessarily cooking the food. Dry air absorbs the released moisture. Likewise, adequate air circulates to carry off the moisture. Dehydration of vegetables and other food crops, for instance, by traditional methods of open-air sun drying is not satisfactory. It is due to the fact that the products deteriorate rapidly. Besides, traditional methods do not protect the products from contamination by dirt, debris, insects or germs (Whitefield, 2000).

Food drying is a very simple, ancient skill. It requires a safe place to spread the food where dry air in large quantities can pass over (Kerr, 1998). In fact, it is supported by the study of Buenavista (1996). He discovered that the final weight reduction of tilapia for solar drying after eight hours was about 34.14% at the topmost layer, 39.52% at the middle layer and 44.79% at the bottom layer.

Traditional sun drying methods, according to Hauser and Ankila (2000), yield poor quality since the products are not protected against dust, rain and wind or even against insects, birds, rodents and domestic animals. Contamination with microorganism's formation of mycotoxins and infection with disease causing germs occur.

Use of Dryer

In 1999, Garcines conducted a study on mudfish drying at ASSCAT, Agusan del Sur. Using a dryer equipped with four components: exhaust chamber, drying chamber, duct and the burner made of G.I. sheets, flat and round bars, he discovered that its drying efficiency was 46.73% with a minimum operational capacity of 2.0 kilograms of mudfish per hour of operation.

Guevara (1983) found out that using the cabinet-type dehydrator gave the best performance on rounds cad. It produced superior dried fish in the shortest drying time of seven (7) hours. In this regard, Parker (1996) explained that dehydration usually removes water accompanied with a chemical change. He stressed out that drying is a widespread operation in the chemical process industries. It is used for chemicals of all types, pharmaceuticals, biological materials, foods, detergents, wood, minerals and industrial wastes. The material dried may be in the form of thin solutions, suspensions, slurries, pastes, granular materials, bulk objects, fibers or sheets. Drying may be accompanied by convective heat transfer, by conduction from heated surfaces, by radiation, and or by dielectric heating.

FINDINGS

Drying Efficiency

The drying efficiency (%De) of the modified ASSCAT fish dryer is obtained by the net output over the net input and multiplied by one hundred. The qualifying formula used to obtain the results of drying efficiency is shown below:

$$\%De = \text{output (kg.)} \times 100 / \text{input (kg.)}$$

However, another consideration to determine the drying efficiency is the collection of the following data: the operating temperature for drying production, weight of mudfish before and after drying process, the fuel consumption, relative humidity and color of dried fish.

In Table 1, for instance, the mean weight reduction of mudfish is presented. The mean weight of 2.17 kg appears at a temperature of 50°C at first 3 hours. After 6 hours of drying at a temperature of 80°C, the mean weight reduces to 1.68 kg. Finally, after 15 hours with a temperature of 80°C, the mean weight becomes 0.98 kg.

Using the formula to determine the efficiency of the modified fish dryer in drying process, with output average weight of 2.94 kg and input average weight of 7.5 kg, the drying efficiency of the said dryer is 39.2% with ignition time of 50 seconds. Compared to the original fish dryer with a drying efficiency of 46.73%, the present result implies that the modified fish dryer is more efficient than the original one. Guevarra (1983) supported it by stating that the cabinet-type dehydrator gives the best performance on rounds cad, producing superior dried fish in the shortest drying time of 7 hours.

Table 1
Weight Reduction of Mudfish

Temperature (Centigrade)	Time (Hour)	Weight (kg)			Total (kg)	Mean (kg)
		Layer 1	Layer 2	Layer 3		
30	0	2.5	2.5	2.5	7.5	2.5
50	3	2.15	2.17	2.19	6.51	2.17
80	6	1.77	1.68	1.59	5.04	1.68
80	9	1.53	1.36	1.28	4.17	1.39
80	12	1.20	1.06	1.03	3.29	1.09
80	15	1.07	0.96	0.91	2.94	0.98

Quality of Dried Fish according to Color

In terms of the quality of dried fish according to color, there is a difference between the original fish dryer and modified one. The previous fish dryer produces a dried fish in reddish brown while the modified one produces reddish white. This is an indication that the drying efficiency of the said facility is really working. According to Whitefield (2000), a successful drying depends on adequate heat to draw out moisture without cooking the food. Since the color of mudfish changes from reddish brown to reddish white, it suggests that the said facility performs efficiently in dehydrating and drying out the mudfish.

For verification, please see the photo below:



CONCLUSION

From the results, the conclusions are drawn. First, the drying efficiency of 39.2% of the modified ASSCAT fish dryer indicates that the said facility functionally operates. Second, the reddish white color of the dried fish is an indication that the said facility produces quality product of dried fish.

RECOMMENDATIONS

Based on the conclusions, the following recommendations are pushed:

1. Further study may be conducted to come up with a much improved dryer for maximum drying efficiency and better quality of dried fish.
2. The duct from heat exchanger to drying chamber may be placed on air distributor plate to provide uniform air distribution to every layer.
3. The layer may be replaced with a heat resistant plastic screen that can absorb more heat and minimize unequal conduction of heat.
4. The blower may be replaced with heat resistant motor of either centrifugal or simple propeller fan of higher air flow rate.

SHORT ACKNOWLEDGEMENT

The researcher gratefully acknowledges the untiring support and encouragement of his own wife, Rhodora, and their four children to present and publish his research articles; the technical assistance of his Presidential Assistant, Dr. Charlie A. Dayon; and the opportunity given him by GRACE Inc. to publish his works.

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WORK HABITS, SKILLS AND ATTITUDES OF DAT-BAT STUDENTS TOWARDS MICROPROJECTS

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ABSTRACT

This study was conducted to determine the relationship among DAT-BAT students' work habits, skills, and attitudes towards microprojects of the Provincial Technical Institutes of Agriculture in Mindanao. In this study, descriptive research method was used. There were 147 respondents involved, and they were selected through systematic proportionate stratified random sampling method. The findings showed that the respondents' work habits and attitudes towards the microprojects were high. Their skills such as, practical and entrepreneurial were also high. However, as regards their microproject grades, they were generally average. Such an average grade was inferred to have been affected by their concern on microproject loan payment. Meanwhile, by using a Pearson correlation to determine the relationship between work habits and attitudes towards the said project, it revealed that it was significant. Likewise, between skills and attitudes towards the project, it was found significant too. By using a path model to illustrate the entire relationship, it showed that there was no link between attitudes and performance of the respondents. Rather, it was the attitudes which directly influenced skills and work habits. It was the attitudes which had greater influence on work habits than on skills. In conclusion, the performance of the respondents towards the microproject was greatly influenced by skills and work habits.

Keywords: Agricultural education; work habits, skills and attitudes, microprojects, descriptive research

INTRODUCTION

Unemployment is one of the problems which plagued the country's pursuit towards progress and development. Previous studies revealed that cases of unemployment problems are more rampant in rural communities than in urban areas. From this scenario, it is but obvious that there is a dire need to redirect programs and policies to bridge the gap.

However, providing more jobs to the people cannot solve the problem of unemployment. What is more important is that the people are reoriented at present, and jobs are created for themselves for self-employment. Nowadays, self-employment is the cornerstone for progress and development, and order to realize it the Australia Agricultural Technology Education Project (AGRITECH) Program generally assists the Philippine government in improving and reorienting the agriculture education services in rural communities. Particularly, it aims to produce agriculture graduates who, after graduation, will till the land and put up their own enterprises instead of looking for employment.

In this program, the ladderized Diploma in Agriculture Technology-Bachelor in Agriculture Technology (DAT-BAT) is offered to develop students' skills, attitudes, knowledge and techno-how in agricultural industry that will allow them to increase agriculture productivity for rural incomes to gain productive employment in local agribusiness enterprises.

Under this course, the fourth year BAT students ought to undergo individual microproject as their practicum so that they experience the real world of managing business, gain some insights, knowledge, skills, and desirable attitudes. This microproject, likewise, is designed to make students with an excellent opportunity to acquire practical development in managerial and entrepreneurial skills, thus it is encouraging to them for they can put up their own agribusiness enterprise after graduation. Besides, through this microproject, they can acquire access to financial loan assistance.

In the first year of microproject implementation, assessment of student's level of performance is needed in order to provide them the project management information important for modification and redirection. Hence, this study was pursued to determine the work habits, skills, and attitudes of students in DAT-BAT

program towards the microproject.

OBJECTIVES OF THE STUDY

This study sought to attain the following specific objectives:

1. To assess the level of work habits of DAT-BAT students.
2. To identify the level of their attitudes towards microproject.
3. To determine the relationship between their work habits and attitudes.
4. To identify their skills acquired from microproject.
5. To assess the level of their performance in their microproject.
6. To determine the relationship between their skills and attitudes.

METHODOLOGY

The study used descriptive research method to determine the work habits, skills, and attitudes of students in DAT-BAT program towards the microproject. In this study, the researcher formulated set of questionnaires for the purpose of collecting data. Said questionnaires were subjected to reliability test and content validation by the experts before using them for data collection. In the analysis of data, descriptive and inferential statistics were used. Meanwhile, involved in this study were the 147 students of DAT-BAT program. They were randomly selected from the four (4) colleges and universities in Mindanao namely, Agusan del Sur State College of Agriculture and Technology, Bunawan, Agusan del Sur; Sultan Kudarat Polytechnic State College, Lutayan Campus, Sultan Kudarat; Surallah National Agricultural School, Surallah, South Cotabato; and, Surigao del Norte College of Agriculture and Technology, Magpayang, Surigao del Norte.

REVIEW OF LITERATURE

The AGRITECH Project

The Philippine-Australia Agricultural Technology Education Project (PA-AGRITECH) emphasizes a student-centered learning. Using the principles of experiential learning (EL), it is believed that the competencies of students in basic agriculture in Diploma in Agricultural Technology-Bachelor in Agricultural Technology (DAT-BAT) are developed.

The Student Microproject

The student microproject is a practicum activity which is offered in the 4th year level of BAT course. In this activity, the students are provided with concrete experiences, real-life situations or problems requiring solutions. So, through this, they can develop their skills.

This project can be undertaken by students either inside or outside the campus. In the campus, they can utilize school facilities, equipment, and other resources they need to accomplish the said project. Outside the campus, they can work on it at their parent's farm or any farmer cooperative, or farm viable within their community. As regards financial assistance for the completion of the project, the students can avail of Student Microproject Loan Fund (SMLF) which the Government of Australia (GOA) and the Government of the Philippines (GOP) provide. But, the loanable amount is dependent on the kind of project students may undertake, and they ought to pay it with 1% interest upon maturity of the project. Moreover, they can undertake more than one microproject based on the minimum requirements, but they ought to make sure that they use pertinent skills required for each of the four main agricultural technology areas.

Scheme for Loan Assistance

The PA-AGRITECH provides loan assistance to students who undergo microprojects. In PTIAs, such as the Agusan del Sur State College of Agriculture and Technology (ASSCAT), the Surallah National Agricultural School (SUNAS), the Surigao del Norte College of Agriculture and Technology (SNCAT), and the Sultan Kudarat Polytechnic State College, the loan assistance program is managed by the administration through the loan officer. Students are required to pay their loan to the loan officer. Failure to repay the loan entails consequences, such as non-graduation and non-release of school credentials of a student.

Attitude towards Work

Attitudes undergo a process of development in a person for his own satisfaction (Krech as cited by Catolico, 1992). It means that a person creates a favorable attitude which helps him attain his goal in life. Citing

Bremer in 1988, Catolico theorized that success in any form is attributed to attitudes, not aptitudes. This statement corroborates with that of Fajardo (1995) as cited by Castillo (2001) who stated that the biggest asset to sustaining entrepreneurial abilities is a positive attitude towards a person's career. Additionally, Castillo stated that positive mental attitude is attributed to the success of accomplishments.

Instructional Delivery

A positive significant relationship exists between methods of teaching and skills development based on the study of Ylagan (1998). According to him, appropriate methods of teaching which the teachers employ enhance the agricultural and entrepreneurial skills of students. This is confirmed by the study of Schumann (2000) that methods of teaching could spell success or failure in the learning process. Likewise, Schumann asserted that a variety of instructional methods and techniques could enhance learning too.

Faculty Factors

Ylagan (1998) revealed that a significant relationship exists between faculty and students' skills development. It explains that the development of agricultural and entrepreneurial skills is attributed to the competence of teachers. Polson as cited by Prado (2001) likewise pointed out that vocational agriculture teachers play a big role through effective use of classroom/laboratory instructions and supervised occupational experience. They themselves affect students' skills development. Meanwhile, Prado pointed out that the measure of study habits and attitudes of college students greatly influence college academic achievement; hence, teachers, parents, and education personnel should exert extra effort in improving students' study habits so that, in turn, they develop favorable attitude towards studies.

Facilities and Equipment

The effectiveness of the program depends on the sufficiency and quality of facilities and equipment for instruction and instruction. The physical resources provide absorptive capacity for both faculty and students to interact with one another. With these, the academic atmosphere becomes conducive for the mental, moral, and social growth of students. This is confirmed by the study of Hebron (1991) as cited by Romero (2002). He found out that physical environment of the school in terms of buildings, classrooms, and facilities are significant to the academic achievement of students. Ylagan (1998) likewise pointed out that the variables contributory to the development of entrepreneurial skills of students are methods of teaching and physical facilities.

The importance of facilities for instruction cannot be over-emphasized. It is essential in the learning process. Citing Cervantes (1990), Ylagan stated that schools should have adequate set of books, bulletins, leaflets and other inputs, such as equipment in the field of farming so that the learning and instruction of students will be enhanced. Adequate instructional facilities and good teaching-learning process may eventually lead to better learning performance.

FINDINGS

Level of Work Habits of Students

The general work habits of DAT-BAT students as shown in Table 1 are very high with obtained total average weighted mean of 3.814. This suggests that majority of the students in this program have impressive work habits. But, among the indicators of work habits, it is "showing respect for the opinions of others" which gets the highest mean of 4.29. It implies that majority of the students are accustomed to giving consideration to other people's opinions especially those which are related to work. It is followed by their other favorable habits, such as putting things in proper order before and after they work, showing good personal relation with other people around them, being industrious and hardworking, making a plan on what to do before they start working, working without the supervision of their teacher, working even beyond the prescribed hour, being conscious and punctual, accomplishing the assigned task on time, and showing enthusiasm for work. Although the indicator of showing enthusiasm for work is in the last rank, still its level is considered high. The idea behind this remarkable indicator is explained in the study of Romero (2002). According to Romero, enthusiasm or interest in work or study is not only dependent on the internal motivation but also the external motivation in which case a teacher has a big role to play. If a teacher, for instance, is cheerful and enthusiastic of his work, it is possible that he can influence his students to be happy and interested in their work too. All in all, the entire findings corroborate with the results of the study conducted by Prado in 2003.

Table 1: Level of Work Habits of DAT-BAT Students

INDICATORS	MEAN	INTERPRETATION
Showing respect for the opinions of others	4.29	High
Placing things in proper order before and after working	4.10	High
Showing good personal relation	3.85	High
Being industrious and hardworking	3.83	High
Planning before starting to work	3.82	High
Working without supervision	3.75	High
Working beyond prescribed hour	3.72	High
Being time conscious and punctual	3.63	High
Accomplishing assigned task on time	3.61	High
Showing enthusiasm for work	3.55	High
Total average weighted mean	3.814	High

Legend: 4.51 – 5.00 (Very High); 3.51 – 4.50 (High); 2.51 – 3.50 (Average); 1.51 – 2.50 (Low); 1.0 – 1.50 (Very Low)

Attitudes towards Microproject

In table 2, the general attitudes of students towards their microproject are high as indicated by the total average weighted mean of 4.117. This suggests that majority of them have positive or favorable attitudes towards their microproject. As they immerse themselves in this undertaking, they develop a conviction that the said microproject is very important for agribusiness entrepreneur. Because of such belief, they love to perform activities for this project. Besides, as they enjoy with their immersion in this interesting project, their skills are enhanced. With this, they are encouraged to strongly recommend it to other students too.

Table 2: Level of Attitudes of DAT-BAT Students

INDICATORS	MEAN	INTERPRETATION
Acknowledging the importance of microproject for agribusiness entrepreneur.	4.33	High
Developing love for doing the microproject activities	4.31	High
Recognizing microproject as the most important feature of DAT-BAT Program	4.30	High
Acknowledging the fact that said project enhances skills and knowledge in agriculture	4.29	High
Admitting that said project provide ample opportunity for skills development	4.18	High
Strongly recommending to other students the immersion in the activities of the project	4.03	High
Recognizing all activities undergone in this project interesting	3.95	High
Admitting the fact that this project keeps the mind always active	3.90	High
Enjoying the activities of the project	3.86	High
Total Average Weighted Mean	4.117	High

Legend: 4.51 – 5.00 (Very High); 3.51 – 4.50 (High); 2.51 – 3.50 (Average); 1.51 – 2.50 (Low); 1.0 – 1.50 (Very Low)

Work Habits and Attitudes of DAT-BAT Students towards Microproject

Table 3 shows the relationship between work habits and attitudes of students of DAT-BAT Program towards microproject. Using alpha level of 0.05, both work habits with a mean of 3.814 and standard deviation of 0.530 and attitudes of students with a mean of 4.117 and standard deviation of 0.524 towards microproject show significant relationship at 1% level with a correlation of 0.587. This suggests that students who have favorable positive attitudes towards microproject have very good work habits. This is congruent with the findings of Prado (2003).

Table 3: Relationship between Work Habits and Attitudes of DAT-BAT Students towards Microproject

INDICATORS	CORRELATION COEFFICIENT
<i>Work habits (mean = 3.814, SD = 0.530)</i>	0.587**
<i>Attitudes (mean = 4.117, SD = 0.524)</i>	

Legend: ** Correlation significant at 1% level (2 tailed)

Skills Acquired by Students from Microproject

Table 4 presents the skills which students of DAT-BAT program have acquired from the activities of microproject. These skills are identified as practical skills and entrepreneurial skills. Students' practical skills are classified into crop production technology, animal production technology, and post-harvest technology. As to the practical skills, crop production technology is generally rated high with a total average weighted mean of 3.70. In this type of technology include skills, such as sowing seeds, cultivation, seed propagation, transplanting, identifying seeds, seedbed preparation, using and maintaining farm implements, calculating seed requirement, and insect pest identification.

Animal production technology is likewise high with a total average weighted mean of 3.55. Even though this type of technology is generally high, some of its clustered skills are rated average. These are formulating and mixing technique with obtained mean of 3.50; castration, 3.45; developing new breeds, 3.33; and heat detection technique, 3.30. Meanwhile, those which are rated high include feeding, selecting stocks to raise, pregnancy detection, vaccination, artificial insemination, and dehorning/disbudding.

Among the practical skills, it is only the post-harvest technology which obtains the average total weighted mean of 3.44. Although in general it is average, still there are two skills which are rated high. These are dressing, weighing and packaging poultry correctly with obtained mean of 3.55 and demonstrating modified atmosphere packaging with obtained mean of 3.52 respectively. On the other hand, other skills which are rated average include curing meat, salting eggs, handling and preserving animal products, juice extracting and processing, freezing fruits and vegetables, inducing ripening through chemical and biological means, baking, and flour making. Meanwhile, entrepreneurial skills or business culture is rated high with a total average weighted mean of 3.66. But, among the skills which are clustered under this type, there is the only one which is rated average, and it is thriftiness with obtained mean of 3.44. This suggests that even though the students of DAT-BAT have skills in marketing of agricultural products, record keeping, financial management, dealing with customers, management of small business, saving consciousness, formulation of financial statement, ability to repay loans, and investment analysis, which they are rated high, still some of them need to improve their ability on how they use or spend their fund.

Table 4: Skills Acquired by Students from Microproject

<i>INDICATORS</i>	<i>MEAN</i>	<i>INTERPRETATION</i>
Practical Skills		
<i>Crop production technology</i>	3.70	High
<i>Animal production technology</i>	3.44	Average
Entrepreneurial Skills/Business Culture	3.66	High

Legend: 4.51 – 5.00 (Very High); 3.51 – 4.50 (High); 2.51 – 3.50 (Average); 1.51 – 2.50 (Low); 1.0 – 1.50 (Very Low)

Level of Performance in Microproject

In table 5, the level of performance of DAT-BAT students in microproject is generally average as indicated by the mean of 3.12 equivalent of 1.862 in the average weighted score. This suggests that majority of the students in this program are seemingly no grade conscious. They seem more interested in acquiring and developing their skills which they find most important for their self-employment than getting high grades in the said project. This result is congruent with the findings of Ylagan (1998)

Table 5: Level of Performance in Microproject

<i>INDICATORS</i>	<i>NUMBER</i>	<i>PERCENT</i>
1.0 – 1.25 (Very High)	3	2
1.26 – 1.75 (High)	28	19
1.76 – 2.25 (Average)	95	64.7
2.26 – 2.75 (Low)	17	11.6
2.76 – 3.00 (Very Low)	4	2.7
Total	147	100.00
Mean Grade = 3.12		AWS = 1.862

Skills and Attitudes of DAT-BAT Students towards Microproject

Table 6 presents the relationship between skills and attitudes of students in DAT-BAT program. The data in this table reveal that both skills and attitudes of the said students are significantly associated as indicated by the obtained mean of 3.565 and standard deviation of 0.580 for the skills and the obtained mean of 4.117 and standard deviation of 0.524 for the attitudes respectively. This result suggests that the more positive attitudes of students towards microproject are, the more skills they shall have developed. This is congruent with the study of Romero (2002).

Table 6: Skills and Attitudes of DAT-BAT Students towards Microproject

INDICATORS	CORRELATION COEFFICIENT
Skills (Practical and Entrepreneurial) (mean = 3.565, SD = 0.580)	0.237**
Attitudes (mean = 4.117, SD = 0.524)	

Legend: ** Correlation significant at 1% level (2 tailed)

CONCLUSIONS

From the findings, the following conclusions are drawn. First, as regards the level of work habits of the respondents, majority of the students are seemingly accustomed to considering other people’s opinions especially to those which are related to work. Second, as to the level of students’ attitudes towards their microproject, majority of them are exuding positive or favorable attitudes towards their microproject because of their conviction that the said microproject is very important for their agribusiness entrepreneurship in the future. Third, on the relationship between work habits and attitudes of the respondents towards microproject, it is statistically significant, and it means that the respondents have favorable positive attitudes towards microproject resulting in their having impressive work habits. Fourth, with regards to the skills which the respondents acquired, they have developed during their immersion in DAT-BAT program practical and entrepreneurial skills. Fifth, as to the level of the respondents’ performance in microproject, majority of them are more interested in acquiring and developing their skills than getting high grades in the said project. Finally, on the relationship between skills and attitudes, there is a significant association between the said variables which means they are more inclined to develop their skills because of their positive attitudes towards the project.

RECOMMENDATIONS

Based on the foregoing findings and conclusions, the researcher intends to recommend the sustainability of DAT-BAT Program, but with new microprojects funded by TESDA, CHED, NEDA, or DOST. Such projects in mind may immerse further future students in activities which expectedly develop skills such as, formulating and mixing techniques, castration, developing new breeds, heat detection technique under the category of animal production technology. Likewise, the activities on curing meat, salting eggs, handling and preserving animal products, juice extraction and processing, freezing fruits and vegetables, inducing ripening through chemical and biological means, baking and flour making may further be encouraged among students in the future to engage. Also, the skill on thriftiness may likewise be enhanced among them in the course of undertaking the program. Importantly, using the findings of this study as bases to integrate strategies for the development of students’ skills in agriculture program may be considered.

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PREDICTORS OF ENGLISH LANGUAGE PERFORMANCE OF STUDENTS
IN SELECTED MANGYAN COMMUNITY SCHOOLS IN THE
PROVINCE OF ORIENTAL MINDORO

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ABSTRACT

The main objective of this paper is to investigate the factors affecting the language performance of two hundred (200) Mangyan students in selected public high school in the province of Oriental Mindoro. The study utilized modality (learning channel preference) questionnaires by O' Brien (1985) in order to identify the most suitable learning style they are using in processing information and learning. Descriptive statistics like mean, standard deviation, percentage and frequency counts were used to describe the respondents' demographic profile, learning style and language performance as indicated by their grade in English subject from the previous quarter. More so, Pearson (r) was used to establish the relationship of the respondents' demographic profile and learning style with their language performances. The findings revealed the existence of significant relationship between economic status, number of siblings, and language performance of the respondents. On the basis of the findings, the researcher recommended that seminars on Family Planning, Livelihood Programs should be conducted regularly exclusively to our Mangyan brothers and sisters for them to uplift their socio-economic status.

Keywords: Predictors, Learning Styles, Mangyans, Performance, Oriental Mindoro

INTRODUCTION

One determination regarding the purpose of education is to provide certain aspects of life to individuals in order to promote a civilized society. Helping students become lifelong learners should be the ultimate goal of education, and understanding learners' various learning styles can help educators achieve that goal. The learning styles acquired by an individual throughout his life are predictable and eventually change following a unique pattern. Learning style is similar to individual preference that may change over a period of time and can only be affected by high levels of personal motivation.

Life is a richer experience when it is approached with an understanding of one's learning style. Learning style refers to the "natural, habitual and preferred ways of absorbing, processing, retaining new information and skills". On the other hand, some researchers considered learning styles as tendencies and preferences. Students can fully utilize their potential to advanced knowledge and to excel in class if they are aware of their preferred learning styles. Learning styles are also defined as "descriptions of the attitudes and behaviors which determine an individual's preferred way of learning. The above-mentioned definitions deal on personal preferences and how these preferences affect the students study and learn.

Almost everyone in the educational system agrees that different students learn best in different ways, and that their learning style preferences show how well they learn the lesson in different situations. In visual learning style preference, students can learn well from seeing the texts from the books. They can also remember and understand the instructions and information better if they read them. Visual learners don't need oral explanation much as an auditory learner. In auditory learning style preference, one can learn from hearing spoken words and from verbal explanations. It may be easily for them to remember information by sounding off the words of moving their lips as they read. The students can also benefit from hearing audio tapes, lectures and discussions and by conversing with their teachers. On the other hand, one can learn best by involving themselves physically in classroom discussion or actively participate in activities like role playing and field trips. However, some students can learn best when they have the opportunity to do "hand-on" experiences with materials. Students can also learn more through group interaction and class work with other students while others can think better when they study alone.

People differ in how they go about learning, thinking and solving problem. Some people prefer to study alone while some like to study in groups. Others like to study in a room with a bright light, while some opt to study in a table with a lampshade. Some people comprehend more than they see graphs, tables and figures while some understand better when reading their lessons or hearing lectures from the speaker. Some people want to study with a soft mellow touch music background while some want to study in a quiet room. These are the varied learning styles of the students.

It is important for the educators to know the influence of learning styles on student's academic performance and from the generated information, it is necessary to design programs and intervention activities for promoting effective teaching and learning process.

Learning modalities or a combination of perception and memory is one of the most widely known and used theories in learning styles. In this theory the learners have a preference for receiving and storing information through one or more of the sensory modalities: visual, auditory, and kinesthetic (some theorists also include a tactile modality). Visual learners learn best from either pictures or written text, auditory learners prefer the spoken word, and kinesthetic learners think in terms of actions and bodily movement. While there has been considerable research to support the existence of these modalities, particularly relating to students with learning difficulties, the implications for pedagogy and content design are far from clear.

According to Coffield (2004) there are 13 major models of learning styles that can be found in the literature. Two of the most predominant and widely used are Kolb's Learning Style Inventory (LSI) and the Myers-Briggs Type Indicator (MBTI). In 1981, the Learning Style Inventory was developed from an experiential theory and model of learning developed by Kolb. In this theory the learners are classified into four prevalent learning categories: Diverging, Assimilating, Converging, and Accommodating. Divergers according to Kolb (1981) prefer brainstorming sessions as a way to generate ideas and are best at viewing concrete situations from many different points of view. On the other hand, assimilators are more interested in ideas and abstract concepts and can logically process and organize a wide range of information. However, convergers enjoy solving problems and are best at finding practical uses for ideas and theories. Lastly, accommodators take actions based on instinct rather than logical analysis and are often rely heavily on information from others. Kolb's model, explains that individuals may exhibit a preference for one of the four styles depending on their approach to learning.

The theory on individual differences, Kazdin (2010), discussed that even if two individuals were raised in the same family, their behaviour would certainly differ. This theory substantiates that people learn in different ways. Individuals perceive and approach learning differently according to their pattern of culture.

OBJECTIVES OF THE STUDY

This study was conceptualized to understand the learning styles of the indigenous learners in order to improve their academic performance. The findings would likewise have a great bearing on instructional processes and other intervention activities.

Specifically, the study aims to:

1. describe the demographic profile of indigenous learners.
2. describe the learning styles of indigenous learners.
3. describe the English language performance of the indigenous learners in selected Mangyan Community Schools in Oriental Mindoro.
4. ascertain relationship between the profile, learning styles and language performance of indigenous learners in selected Mangyan Community Schools in Oriental Mindoro.

METHODOLOGY

The descriptive correlational type of research was used in this study. Its main concern is to describe the respondents' profile including their age, sex, religion, number of siblings, indigenous group and economic status and learning styles and their relationship on their English language performance.

The respondents of this study were two hundred Mangyan students from selected public secondary schools

in the province of Oriental Mindoro.

This study utilized modality (learning channel preference) questionnaires by O' Brien (1985) in order to identify the most suitable learning style they are using in processing information and learning.

Descriptive statistics like mean, standard deviation, percentage and frequency counts were used to describe the respondents' demographic profile, learning style and language performance as indicated by their English grade from the previous quarter. More so, Pearson (r) was used to establish the relationship of the respondents' demographic profile and learning style with their language performances. All data were processed and analyzed using SPSS Statistics version 25.

REVIEW OF RELATED LITERATURE

Individual learners have different backgrounds, experiences, strengths, weaknesses, needs, levels of interest, motivations and behavior to studying. They prefer to use approaches to learning which they are most comfortable with and leave behind the ones with which they feel less comfortable. They also differ in how effective they respond to and benefit from instruction activities. The more teachers take differences into consideration, the more chance they have of improving the performance of their students particularly along the areas of academics. Giving consideration of differences in learning style and strategies preferences is one of the factors that determine success or failure in teaching and learning processes.

A significant number of theorists and researchers have argued that learning styles are developed through experience and not determined by inherited characteristics (Kolb, Honey and Mumford, for instance). Therefore learning styles are not necessarily fixed, but can change from one situation to the next over a period of time. A similar claim was made by Bloomer and Hodkinson (2000). According to them the effects of contextual, cultural and relational issues are much greater factor in determining how learners react to learning opportunities rather than learning styles. Therefore, if learning styles are not fixed personality traits, the emphasis shifts from accommodating learning styles to encouraging a balanced approach to learning and an explicit awareness of the range of approaches available to the learner are perhaps more importantly. Even among authors who question the validity of learning styles as a concept, most agree that there is a benefit in enabling learners to reflect on how they learn. The most important advantage that can be claimed for applying learning styles theory to learning and teaching is perhaps encouraging individuals of being aware of one's own thought and learning processes (metacognition).

Abucay (2009) asserted that the pupil's difficulty in learning may be due to different factors such as: intellectual, learning, physical, emotional, and social factors. The social interaction of relationships among pupils, the relationships among members of the school staff, the physical characteristic of a classroom, social readiness, cooperation, environmental factors and teacher's personality have the power to lead and to inspire pupils through the influence of his personality.

Among the many factors associated with academic performance of the students are learning styles. The studies conducted by Cox, et al 2013, found out that learning styles have positive effect on the academic performance of the students. These studies proved the importance of learning styles and their relation to the academic performance of the students which are crucial for curriculum planners and implementers.

The findings of Yilmaz et al (2010) have suggested that being aware of the learning styles of the students when designing a classroom setting has implications for quality of instruction and achievements of the students. Cartnall (1999) asserted that knowledge of student learning styles can aid faculty in class preparation, designing class delivery methods, choosing appropriate teaching strategies, and developing sensitivity to different student learning preferences.

The students may become bored and attentive in class, do poorly in tests, get discouraged about the courses, the curriculum, and themselves, and in some cases change to other courses or drop out of school when mismatches exist between leaning styles of the students and the teaching style of the professor. Teachers should be much alarmed when they confronted by failing grades, unresponsive or hostile classes, poor attendance and high dropout rates of the students. There is something wrong. It has been proposed therefore, that teachers should assess the learning styles of their students and adapt their classroom methods to best suit each student's learning styles.

RESULTS AND DISCUSSION

The respondents' profile was analyzed in Table 1. Their leaning style was also identified by answering learning channel preferences by O' Brien (1985) as presented in Table 7, 8, 9. Results showed that the most preferred learning style of the Mangyan respondents was kinesthetic modality, followed by visual modality and lastly, auditory modality. In Table 11, the language performances of the respondents were described by measuring the central tendency of the scores. Moreover, an illustrated normal distribution curve was presented to show how the scores of the respondents spread away from the average score, which was 80.

A correlational analysis was utilized to identify the degree of association among variables. Table 4 showed that only economic status and number of siblings have relative effect on the language performance of the respondents.

1. Demographic profile of the students in terms of:

Table 1. Description of the respondents in terms of age

Age	Frequency	Percentage
15 years old	42	21.0
16 years old	25	12.5
17 years old	40	20.0
18 years old	30	15.0
19 years old	29	14.5
More than 20 years old	34	17.0
T O T A L	200	100%

Evidently, as shown in Table 1, the most number of respondents are aged 15 years old (21.0%), followed by 17 years old group (20.0%), and 20 years old and above group (17.0%). The rest of the respondents made up the other 42% of the total population. This simply implies that Mangyan students have also the right to access to quality education. As human being, they ought to learn basic and complicated knowledge through the process of education and learning the same with the education enjoy by the Tagalog students in order to achieve and be part of the whole process of development.

Table 2

Sex	Frequency	Percentage
Male	80	40.0
female	120	60.0
T O T A L	200	100%

Table 2 shows that females outnumbered males by 20% in 3:2 ratio. This implies that females are more interested in education rather than males.

Table 3

Religion	Frequency	Percentage
Roman Catholic	156	78.0
Iglesia ni Cristo	2	1.0
Protestant	27	13.5
Born again	7	3.5
Others	8	4.0
T O T A L	200	100%

Table 3 presents that Roman Catholic topped the respondent's religion, with 78.0%, followed by Protestants (13.5%) and a trace of Iglesia ni Cristo and Born Again. Mangyans believe that becoming a Christian connotes becoming acculturated and modernized civilians. In the process of adapting modern Filipino culture among Mangyans, Christian religious institutions both Catholic and Protestant have become the agents of social change. It is, therefore, Christianization that has been integrated into the development of social changes that makes Mangyans acculturated in the province of Oriental Mindoro.

Table 4

No. of Siblings	Frequency	Percentage
One	7	3.5
Two	11	5.5
Three	23	11.5
Four	24	12.0
Five	22	11.0
Six and above	113	56.5
T O T A L	200	100%

As gleaned from Table 3, more than half of the 200 respondents belonged to a family with more than six siblings (56.5%) and a very few, about 3.5%, had one brother or sister. This implies that Mangyan are still practicing their culture which encourages them to increase their labor force through bigger family size. Mangyan women are required to marry at a very young age. On the average, Mangyan women are married and expected to have an offspring at the age of 14. Arrange marriage is still being practice in some Mangyan tribes because they believe that this tradition will ensure the survival of their clan. For Mangyan, a woman with no offspring is considered to an idle. This condition can be a ground for her husband to marry another younger woman.

Table 5

Indigenous Group	Frequency	Percentage
Iraya	10	5.0
Hanunuo	86	43.0
Alangan	102	51.0
Others	2	1.0
T O T A L	200	100%

Table 5 shows that the two most common ethnic group the respondents belong were Alangan (51%) and Hanunuo (43.0%). Other groups, like Iraya, constituted the remaining 12%. This implies that access on education for Alangan and Hanunuo Mangyans is easy for they are living within the municipalities of Naujan, Baco, San Teodoro, and Victoria in Oriental Mindoro, where Mangyan Community schools are located. The Alangan and Hanunuo Mangyans are called "patag Mangyan", living and interacting with lowlanders.

Table 6

Monthly Income	Frequency	Percentage
Php 3,000- 6, 999	175	87.5
Php 7, 000- 11, 999	18	9.0
Php 12, 000 – 16, 999	3	1.5
Php 17, 000- 21, 999	4	2.0
T O T A L	200	100%

Table 6 shows the economic status of the respondents. Of 200 respondents, 175 or (87.5) received about Php 3000- Php 6999 monthly income, whereas only 9% received Php. 7000- 11, 999. Very few, about 2%, were able enough to be in a family which receives Php 17000- Php 21, 999 monthly income. Findings reveals that majority of the Mangyans depend on hunting, swidden-farming and gathering forest products as their source of livelihood. Some of them are engaging in small-scale and self-supporting agriculture and exchange of products while very few of them employ for "dirty work" such as cleaning the rice fields of the Tagalogs from unwanted plants or even converting forests into plantations.

2. Learning Styles

Table 7. Description of the respondents in terms of visual modality

A. VISUAL MODALITY	Mean	Description
1. I remember information better if I write it down.	3.62	Often
2. I have trouble following lectures.	3.61	Often
3. I need to write down direction, not just take them verbally.	3.37	Often
4. When I take a rest, I can see the textbook page in my head.	3.22	Often
5. I need a quiet place to get my work done.	3.97	Often

A. VISUAL MODALITY	Mean	Description
6. Looking at the person helps keep me focused.	3.22	Often
7. I don't always get the meaning of a joke.	3.07	Often
8. Music or background noise distracts my attention from the task at hand.	3.41	
9. I doodle and draw pictures on the margins of my notebook pages.	3.01	Often
10. I react very strongly to colors.	3.19	Often
Total Mean	3.37	Often

The results from the table show that the respondents can best learn get their work done in a quiet place. However, doodling and drawing pictures aimlessly on the pages of their notebooks also helps them remembering their lessons.

Table 8. Description of the respondents in terms of auditory modality

B. AUDITORY MODALITY	Mean	Description
1. Writing has always been difficult for me	2.91	Sometimes
2. I do not follow written directions well.	2.69	Sometimes
3. I often misread words from the test.	2.95	Sometimes
4. When I read, I need to use my index finger to track my place on the line.	2.82	Sometimes
5. Pages with small print or poor quality are difficult for me to read	2.96	Sometimes
6. I would rather listen and learn than read and learn.	3.51	Often
7. If I hear something I will remember it.	3.44	Often
8. I'm not very good at interpreting an individual's body language.	3.58	Often
9. My eyes tire quickly, even though my vision check-up is always fine	2.97	Sometimes
10. My papers and notebooks always seem messy.	2.97	Sometimes
Total Mean	3.08	Often

Table shows that the respondents are not good at interpreting individual's body language. They prefer listening from the lesson discusses by the teacher rather than reading the lesson from the printed pages for their eyes tire quickly and sometimes they were not able to follow the written directions well.

Table 9. Description of the respondents in terms of kinesthetic modality

C. KINESTHETIC MODALITY	Mean	Description
1. I like to read my textbook while pacing at home	3.63	Often
2. I take frequent study breaks	3.32	Often
3. I use the trial and error approach to problem-solving	3.26	Often
4. I have a difficult time giving step-by-step instructions	3.19	Often
5. I have to rewrite or type my class notes to reinforce the material	3.19	Often
6. I prefer first to see something done and then to do it myself	3.48	Often
7. I start project before reading the directions.	3.17	Often
8. I use my hands to describe things.	3.40	Often
9. I hate to sit at a desk for a long period of time.	3.05	Often
10. I enjoy sports and do well at several different types of sports	3.80	Often
Total Mean	3.35	Often

Table shows that the respondents learn more when they directly involve themselves in playing or any sport activities. In the contrary, they hate to sit at a desk for a long period of time listening the lesson being discussed by their teacher. They are better at remembering what they have done and they do not give importance to images they have seen and sounds they have heard.

Analyzing the learning channel preference questionnaire was provided by the researcher. It was shown that the three learning preferences were relatively used by the respondents, (visual, 3.35; auditory, 3.08 and kinesthetic, 3.37; all of which described as often used). However, it was shown that a kinesthetic and visual learning were the most preferred way of processing information by the respondents, with 45 % and 40.5% respectively. Auditory learning was the least preferred by the respondents at 14.5%.

Table 10. Summary of the modality of learning channel difference as perceived by Mangyan students

Learning Style	Frequency (N=200)	Percent (%)	Mean	Verbal Description
Visual	81	40.5	3.35	Often
Auditory	29	14.5	3.08	Often
Kinesthetic	90	45.0	3.37	Often

Scale: 0.00 – 0.99 never
 1.00 - 1.99 seldom
 2.000 - 2.99 sometimes
 3.00 – 3.99 often
 4.00 - 4.99 always

3. English Language Performance

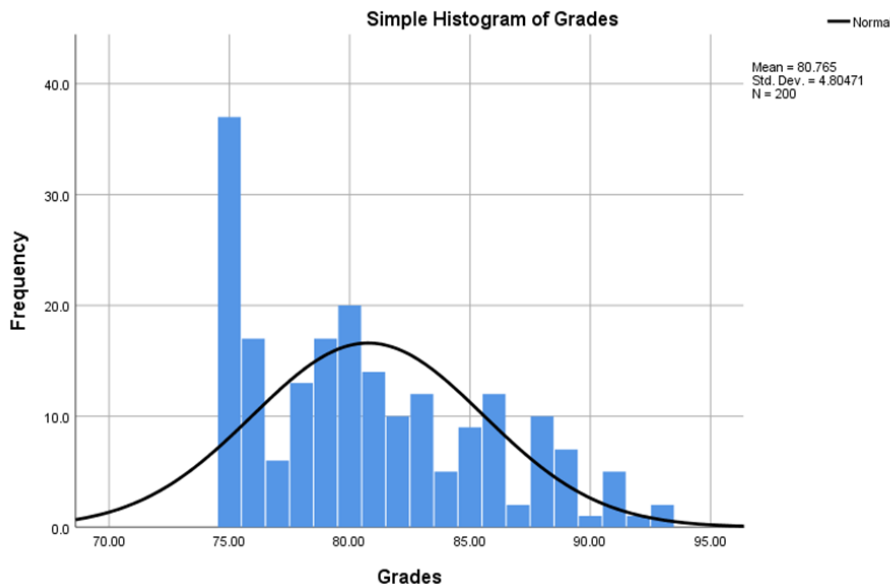
Table 11. Descriptive statistics summary of English Language performances of Mangyan respondents

Descriptive Statistics								
	N	Range	Mini- mum	Maxi- mum	Central Distribution			Std. Devia- tion
	Statis- tic	Statistic	Statistic	Statistic	Mean	Median	Mode	Statistic
Language Performance	200	18.0000	75.0000	93.0000	80.7650	80.0000	75.0000	4.80471

Illustration 1. Normal distribution curve of language performance of Mangyan respondents

Table 11 presented the descriptive statistics of the English language performances of the respondents as reflected by their grades on subject English from the previous quarter. Seventy five (75) and ninety three (93) were the lowest and highest grade, respectively. The computed arithmetic mean was 80.765, with 4.8 standard deviation. The middle score was 80.00 and the most frequent score was 75. It is because the Department of Education values indigenous languages in the implementation of a Mother Tongue-based Multilingual Education among indigenous learners in order to regenerate and enrich the community’s Indigenous Knowledge Systems and Practices and Indigenous Learning Systems. The curriculum is designed to enable indigenous learners to be future culture-bearers, capable of exercising their right to self-determination as they interact with other cultures. Since the respondents are allowed to speak in their mother tongue even in their English subject their English language performance is definitely affected.

The normal distribution curve or spread of performance grades was illustrated in Illustration 1 below. Since the mean was 80.000, with SD 4.80, 68% of all scores fall from 75-85 and 16% 86-93.



4. Relationship between respondents' demographic profile and learning style and English language performance.

Table 12 below presented a summarized correlation analysis of the variables. Economic status and number of siblings showed significant relationship with the language performance, while the rest of the variables showed no association. A negative relationship (-0.150) was established between number of siblings and language performance. This meant that the respondents with less family members were most likely to get a better grade than those who have more than six siblings. Monthly income, on the other hand, established positive relationship (0.123). It could be predicted from this that respondents from families with higher monthly income were most likely to get higher language performance rating.

Table 12. Correlational analysis of demographic profile, learning style and language performance

	Profile						Learning Style
	Age	Gender	Religion	Number of siblings	Ethnicity	Economic Status	
	r	r	r	r	r	r	r
Language Performance	-0.046	.255	.247	-.150*	0.081	0.123*	0.084

**significant at 0.05 level (one tail)*

CONCLUSION

Based on the findings, the study concluded the following:

1. The respondents who have more than six (6) family members were most likely to get a lower grade than those with less number of siblings.
2. Respondents from families with higher monthly income were most likely to get higher language performance rating.
3. Kinesthetic and visual learning were the most preferred way of processing information by the respondents.
4. There is significant relationship between economic status, number of siblings, and language performance of the respondents.

RECOMMENDATIONS

In the light of the findings and conclusions of the study the following are endorsed:

This study recommends in-depth studies on Mangyans in the province of Oriental Mindoro. The previous literature and current data clearly showed that Mangyans in the research area have a very limited knowledge on birth control, modern technology development and information sharing. Hence, conducting Family Planning and Livelihood seminars/trainings should be conducted regularly among our Mangyan brothers and sisters for them to uplift their socio-economic status. Culturally relevant Mangyan teachers were another concern in the children's education. Teachers should know each student's learning style for them to know what teaching strategies and intervention activities they will be using in executing their subject matter. These were just a few aspects in the list of their social struggles that need to be given attention immediately.

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PREDICTORS IN THE LICENSURE EXAMINATION FOR TEACHERS USING DISCRIMINANT ANALYSIS

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ABSTRACT

*This study aimed to examine the relationship between the academic performance of the BaSC students and the success in the licensure examination for teachers (LET). A sample of thirty (30) graduates of Bachelor of Secondary Education major General Science from school year 2004 – 2008. The study used descriptive statistics included frequency, percentage and weighted mean and inferential statistics which includes ANOVA, *t* – test and discriminant analysis. Results revealed that the academic performance of the graduates tested at alpha 0.05 showed no significant difference.*

Furthermore, it proved that the performance of the students who took the LET when tested at alpha = 0.05 level of significance showed no significant difference with respect to LET results. It statistically proved that the performance of the student with respect to LET results were on the same level. Moreover, the academic performance of LET passers and non-LET passers were different. The LET passers have higher undergraduate grades in areas of Biology 102, Botany 101, Chemistry 102, Chemistry 104, Physics 101, Physics 102, GPA General Education, and GPA Professional Education while in Chemistry 101 and Zoology 101 were LET passers and non-LET passers have higher grade on both subjects. Finally four areas identified as good predictors of success in the licensure examination. These were the GPA professional education, Physics 102, Physics 101 and Chemistry 102.

Keywords: Licensure Examination for Teachers, Teacher education graduate, Predictor, Discriminant analysis, Success

INTRODUCTION

Quality education is the prime function of instruction according to Educational Testing Service (ETS), world largest private educational testing and measurement organization. High-quality teachers would likely produce good students. The quality of instruction is very important (Bloom 1973, 1976). As stated in the section 2 of the Republic Act (R. A.) 7836, also known as the “Philippine Teachers Professionalization Act of 1994”, the state recognizes the vital role of teachers in nation building and development through a responsible and literate citizen. The Professional Regulations Commission (PRC) prohibits any individual offering teaching profession without obtaining a valid professional license. This is to assure that all students will be given the best and quality education they deserve. The Licensure Examination for Teachers (LET) is a national qualifying examination for professional teachers as mandated by R. A. 7836.

Basilan State College (BaSC) is one of the 112 States Universities and Colleges in the country registered to Commission on Higher Education (CHED) offering Teacher Education Program. It has been in existence for 33 years from then on it has produced several teacher education graduates both in Bachelor of Elementary Education (BEED) and Bachelor of Secondary Education (BSED) with corresponding area of specialization/field. However, there has been a consistent decline on the passing percentage of the graduates in the Licensure Examination for Teachers.

Varsitarian (2008 as cited by R. Autida 2010), the PRC recommended sanction to poor performance of institution in the result of the board examination. The sanctions include reduction of government subsidies and termination of courses and programs for school having consistent zero or sub par passing rate. The Licensure Examination for Teachers result shows that in April of 2011, the institutional rating is 8.33% with the corresponding national percentage of 26.28%, and in September of 2011 the institutional rating is 3.30% with national percentage of 31.45% (Registrar’s report as affixed in Table A3. PRC Performance submitted to CHED). With these results, it serves as a challenging and a great task for the institution specifically the College of Education to improve the rate of passers.

Moreover, there are factors associated with the success in the LET of student such as the academic performance in the respective major subjects which serves as a basis to improve institutional ratings. These alarming concerns encouraged and motivated the researcher to look into or determine good predictors in LET performance of teacher education graduates using discriminant analysis.

STATEMENT OF THE PROBLEM

This study aimed to determine good predictors of success in the Licensure Examination for Teachers.

METHODOLOGY

The study was conducted at Basilan State College located at Sumagdang Isabela City. This was a quantitative descriptive, ex-post facto research. In this research the dependent variable were immediately be observable and the main concern was to find the antecedent that gave rise to the consequence. There were 30 respondents for the study which were the graduates of Bachelor of Secondary Education major in general science from academic year 2004-2008 of the Basilan State College who took the licensure examination for teachers. Purposive sampling was used in the study because they were the only graduates for the said academic year.

The document analysis technique was used in gathering answers to the research problem. The documents examined were treated with confidentiality namely: transcript of records (TOR) of the graduates from 2004-2008 from the Registrar's Office which served as the basis for their academic performance that served as the predictors of the success LET which includes the grades in the major subjects, GPA professional education and the GPA general education And the official results of Licensure Examination for Teachers from 2004-2008 from the Office of the Professional Regulatory Commission (PRC). In the study both descriptive and inferential statistics were used. Frequency, percentage and weighted mean were used for the descriptive part while inferential statistics the Analysis of Variance (ANOVA), t-test, and discriminant analysis were used.

REVIEW OF RELATED LITERATURE

Different researchers have analyzed factors that can help predict performance in the licensure exam. Quiambao et al, (2015) conducted an ex post facto research method on predicting performance board examination showed that the teachers' educational attainment, teachers' length of service, quality of library facilities, quality of laboratory facilities, students' intelligence quotient, and students' grade point average were significant predictors for passing the licensure examination for teachers. Visco (2015) revealed Teaching Aptitude Test (TAT) and attendance in LET review classes are good predictors of LET performance.

On the study conducted by Pachejo et al, (2013) 227 samples were investigated on academic predictors of the licensure examination for teachers' revealed the correlation of the 3 components of academic subjects such as general education, professional education and specialization with the overall LET results. Yanto et al, (2008) studied on the predictors of students performance in student teaching and the success in the (LET) of Bachelor of Elementary Education (BEED) graduates of the Camarines Norte State College. 212 BEED graduates were considered and results revealed that the students with 32 – 62% igh school scholastical ratings passed the LET and possessed higher general average in student Teaching which includes Instructional Skills (IS) , Classroom Management (CM) and Personal Qualities and Attitudes (PQA) .

J. B Pascua et al, (2011) on a descriptive survey method study on the determinants of LET performance of the teacher education graduates in a state university. Concluded that degree course is associated with performance in the LET, the higher the Grade Point Average (GPA), the higher is the expected LET performance; the higher is the English Proficiency, the higher is the LET performance; and as the Admission Test score increases, there is a tendency that the LET score would be high.

Aranillo et al. (2009) in a descriptive-correlation study indicated that performance in pre service education is notably correlated with the performance in LET in terms and general education and professional educa-

tion, the performance in area of specialization was found to be insignificant. Hilario (2000 as cited by J. B. Pascua 2011) studied factors influencing LET in Cordillera Administrative region. It was found that the faculty qualification and curricula do not significantly influence the performance of the institution in the licensure examination. The admission and retention policy of the institution has a significant positive influence on the performance in the examination.

In addition, Mendezabal (2013) showed that there as significant relationship between study habits and attitudes and performance in licensure examination. Erimafa et al. (2008 as cited by Autida 2010) conducted a research using discriminant analysis to predict class obtained in a University system. The study revealed that GPA and the grade in statistics score dealing with probability distribution (STA 202) have a booster effect to predict the class of degree for graduating students. Denton and his associates (2009) examine the applicant for admission and completion of an online certification program by means of discriminant analysis, revealed that attaining a criterion score on TEXAS content test is the best single predictor for determining whether an applicant will become candidate in the program.

Another result by Montemayor et al. (2009) who venture on study that reveals that mock examination will significantly influence performance in an actual examination. The samples under study were the 44 BEED and 76 BSED in school year 2007. Descriptive correlation method was employed. Findings show that the mock examination formulated by the College of Teacher Education in the University of Cordillera is a convincing predictor for the Licensure Examination for Teachers

RESULTS AND DISCUSSIONS

Table 1. Summary of the ANOVA Results on the Academic Performance

Groups	Sum of Squares	df	Mean Square	F	Sig.	Remarks
BetweenGroups	1.502	9	.167	1.296	.238	No significant difference
Within Groups	37.342	290	.129			
Total	38.844	299				

Based from the tabulated data, it revealed the F value of 1.289, whose significance value of .238 which was greater than alpha = 0.05 level of significance. Therefore, it was concluded that there was no significant difference in the academic performance in terms of grade average means of the student who took the Licensure Examination for Teachers. Statistically the academic performance of the BaSC student who took the Licensure Examination for Teachers from 2004 - 2008 was on the same level. This implied that the levels of the academic performance of the student in terms of grade average means were closely related with each other.

Table 2. Summary of the LET result (passed/failed) from 2004 – 2008

Year	No. of Student who took the LET (<i>first taker</i>)	No. of Student who passed the LET	No. of Student who failed the LET
2004	10	3	7
2005	6	1	5
2006	12	5	7
2007	0	0	0
2008	2	2	0
Total/Average	30	11 (36.6%)	19 (63.33%)

Based from the data, out of thirty (30) students who took the LET (first taker) only 11 passed which means 36.6 % based on the total number of sample and 19 failed which is 63.33% of the total sample. According to PRC to pass the examination, an examinee must obtain an average rating of not less than 75% and must have no rating lower than 50% in any of the test to pass the licensure examination.

Table 3. Summary of the performance of the BaSC graduates with respect to LET results.

	Sum of Squares	df	Mean Square	F	Sig.	Remarks
Between Groups	6.156	2	3.078	.044	.957	No significant difference
Within Groups	6029.800	87	69.308			
Total	6035.956	89				

Based from the findings it revealed that the F value of .044, whose significance value of .957 was greater than alpha = 0.05. Therefore it was concluded that there was no significant difference in the performance of BaSC students who took the LET from 2004-2008 with respect to the LET results. Statistically, the performance of BaSC students who took the LET from 2004-2008 with respect to the LET results was on the same level. This implied that the level performance of the students in the LET were closely related.

Table 4. Eigenvalues.

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	2.706 ^a	100.0	100.0	.854

First 1. Canonical discriminant functions were used in the analysis.

Based from the table, it disclosed with the canonical correlation of 0.854, this can be explained that 72.93% of the variation in the grouping variable (whether a student passed or failed in the LET).

A high correlation showed a function that discriminated well. The present correlation of 0.854 was not high (1.00 is perfect). So therefore it discriminated well.

Table 5. The structure matrix.

	function
	1
GPA Professional Education	.620
Physics 102	.499
Physics 101	.433
Chemistry 102	.363
Biology 102	.287
GPA General Education	.280
Botany 101	.247
Chemistry 104	.247

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions. Variables ordered by absolute size of correlation within function.

According to the structure matrix, results revealed that there were four areas identified as good predictors of success on the licensure examination for teachers. These were the GPA in professional education, Physics 102, Physics 101 and Chemistry 102 (in decreasing importance).

Table 6. Classification results.

		LET Result	Predicted Group Membership		Total
			1	2	
Original	Count	1	10	1	11
		2	1	18	19
	%	1	90.9	9.1	100.0
		2	5.3	94.7	100.0
Cross-validated ^a	Count	1	7	4	11
		2	2	17	19
	%	1	63.6	36.4	100.0
		2	10.5	89.5	100.0

a. Cross validation is done only for those cases in the analysis. In a cross validation, each case is classified by the functions derived from all cases other than that case.
 b. 93.3% of original grouped cases correctly classified.
 c. 80.0% of cross-validated grouped cases correctly classified.

The classification results revealed that 80.0% of cross-validated grouped cases correctly classified which means that of the respondents were classified correctly. Over it greater than 25% hit ratio, therefore, it was acceptable. Further it showed that non-LET passers were classified with slightly better (94.7%) than those who were LET passers (90.9%).

CONCLUSION

The results revealed that the academic performance of the BaSC BSED major in General Science graduates were on the same level. This implied that the levels of the academic performance of the student in terms of the grade average means were closely related with each other. Furthermore, it proved that the performance of the student with respect to LET results were on the same level. This implied that the level performance of the students in the LET were closely related. Moreover, the academic performance of LET passers and non-LET passers were different. The LET passers have higher academic performance specifically the undergraduate grades in areas of Biology 102, Botany 101, Chemistry 102, Chemistry 104, Physics 101, Physics 102, Grade Point Average (GPA) in General Education, and Professional Education except in Chemistry 101 and Zoology 101. Both LET passers and non-LET passers have higher grades. Finally it revealed that there were four areas identified as good predictors of success in the Licensure Examination for Teachers. These were the GPA in Professional Education, Physics 102, Physics 101 and Chemistry 102 (in decreasing importance).

RECOMMENDATIONS

The Professional Education faculty, as well as the Science Department faculty must continuously update their skills in teaching. The need for the faculty to pursue graduate studies and attend short term courses to get updated with the newest trends in teaching. It was recommended to use other factors that will possibly influence or affect the performance in the licensure examination. For instance, non-academic profile of student, the GPA of the elementary and secondary performance, attitude towards the school work, hours of studying, teacher's factor, environmental factor, parent's encouragement, influences of the environment etc.

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COMPUTER COMPETENCY OF TARLAC NATIONAL HIGH SCHOOL TEACHERS : AN IMPACT TO ICT

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INTRODUCTION

The students of the 21st century are known to be digital natives. They are also labeled as Generation X. These learners are born in the exposure of technology specifically of internet, computers, and other modern gadgets. With such environment, the learners' interests are more focused on their age and on the things they often see. That's why the challenge to education is to be adept with those technology.

Lucido (2007) stated that with the evolving pace of the innovation in today's Information Age is so dynamic that within the first decade of the 21st century, computer technology in education has matured to transform into an educative information and communication technology (ICT) in education. Traditional teaching methods can still be used. However, there are lots of equipment to be used to make the teaching- learning process easier, enjoyable, and meaningful to our students.

With such trend, education uses technology to cater quality learning to the students. Such technology are either communication media and audio-visual media. Communication media involves the internet, electronic mail (either text or video), chatrooms, blog sites, news services (like of print, video clip), music, movie, and television rom. On the other hand, audio visual media are of concerning text, sound, graphics, charts, photos, powerpoint presentation, CD, VCD, DVD player, CDVCD, DVD player, educational software, educational websites, softwares, coursewares, school registration/ records and accounting.

Faculty members, staff, and administration should have that skill and use that acquired skill to make their work easier, to gain comfort, to make teaching experiential, and to connect with our students. These technology will be useless if they will just be displayed, stocked, and remain unused. With such, different trainings were conducted and continued to be scheduled to assure that facilitators of learning are ready for the "techi" age.

According to Webster Encyclopedia dictionary, skill is the ability to do something as product of practice, learning, drills, and mastery. Unlike of talent, it is not something innate to the being of the person. People have to be skillful so that they can go with the rapid transitions of life. This is the main reason why different institutions are giving skill trainings to different schools as well to group of people so that illiteracy and unskillfulness can be solved.

Empowerment is very much needed in any endeavor that a person has or is undergoing. Support from his higher ups can boost the motivation of any individual. There are some teachers who are hesitant to undergo to different trainings. Age factor is one of their reasons. But if support from people around them are very much evident, teachers will take the global challenges.

With such evidences, the researchers were so enthusiastic to investigate on the impact of the different ICT trainings being conducted to our educators. Assessment of the trainings were done through the computer competency of the participants and their strengths and weaknesses so that proper enhancement of the program can be done. Also, this study aims to distinguish whether the goals of the trainors are being achieved in helping our educators to produce globally competitive students by training the teachers with gadgets that can help their work easier, comfortable, and more adept to their clientele.

STATEMENT OF THE PROBLEM

This study was designed to describe the computer competency of high school teachers at Tarlac National High School during the calendar year 2011. More specifically, it sought to answer the following questions:

- What is computer competency of Tarlac National High School Teachers who had ICT trainings during 2011 in:
 - MS Word,
 - MS Excel, and
 - MS Powerpoint?
- What are the strengths and weaknesses of the respondents on the basic computer skills and as such as in:
 - MS Word,
 - MS Excel, and
 - MS Powerpoint?
- What are the common problems faced by the respondents that affect their computer competency level?

METHODS AND MATERIALS

This study used the descriptive-survey research. Corresponding letter of request to seek permission from the school administrator was submitted and approved prior to the actual data gathering the research team. Only the high school teachers at Tarlac National high School who undergone ICT trainings for the calendar year were taken as respondents.

A validated competency test from Module quizzes from Innovate: A Mentor's Guide to ICT Foundation Competencies by Microsoft Philippines was utilized to determine the level of computer competency of the selected respondents in the ICT trainings during 2011. The test was administered for a period of one day by the data gathering group of the research team on August 3, 2011. Scores in the competency test were determined for each area of application, i.e word, excel and power point. The mean scores per area were determined and reported in percentage.

These mean scores in percentage served as the basis in determining the competency level of the participants in the ICT trainings. The strengths and weaknesses of the respondent on the basic computer skills were identified also per area of application. The answers of the respondents in each question per area of application were identified as correct or wrong answer and frequency were tallied. The item per each area of application wherein frequency of wrong answer is significantly high was identified as the weakness of the respondents. On the other hand, item/s wherein frequency of correct answer is high is/are identified as the strength of the respondents. Results from the frequency tally were rank and served as the basis in identifying the strengths and weaknesses of the respondents.

A one-on-one interview with the respondents was also employed to ensure that the findings and results of the study conducted are not based only on their acuity. Answers were tallied based on the frequency of the answers of the respondents and reported in ranks. All data were collected and presented in frequency, percentage, and rank distributions.

FINDINGS

1. The overall computer competency of the high school teachers at Tarlac National High School is competent. This is shown on the scores of the teachers on the given competency test wherein 50.33 percent are competent. With such findings, we can therefore say that the ICT trainings have given impact to their trainees.
 - 1.1. The computer competency of the high school teachers in MS Word is highly competent. This reflected on the computed frequency percentage which is 41.67. This further describes that they more than the average level on the knowledge and application of skills in connection to MS Word.
 - 1.2. The level of competency of the teachers in MS Excel is Competent. This is based on the com-

puted frequency percentage of 39.58. Meaning, the respondents have met the basic requirements needed on using the MS Excel.

1.3. The level of competency of the respondents on MS Powerpoint is Competent. This is based on the computer frequency percentage of 47.92. The teachers are average in terms of the concepts and basic skills connected to doing presentations down to delivering it.

2. The respondents are strong in the use and concept of MS Word. This is substantiated by the 81.25 percent who passed the 10 item part of the test. On the other hand, MS Excel and MS Powerpoint are the weaknesses of the respondents. This is the result of the percentage of failures which are 64. 58 percent and 66. 67 percent respectively.

2.1 The high school teachers were described based on their strengths and weaknesses in connection to the skills included in MS Word. Rank one on their strengths is working with document. The other specific skills that ranked two to 6 are working with texts, word basics, working with tables, working with paragraphs, and managing files. With such rank order, it was also found out that the specific skill which the high school teachers have to improve is in managing files.

2.2 The respondents were described based on their strengths and weaknesses in connection to the skills included in MS Excel. The number one strength of the high school teachers in MS Excel is learning the fundamentals. The number two to number 6 on the strengths of the teachers in MS Excel are functions and formulae, creating and working charts, formatting worksheets, setting up worksheets for printing, working with cells and cell data, and modifying workbooks. With such order, the weakness of the teachers in MS Excel is modifying workbooks. This was the result for it ranked last among the strengths of the teachers.

2.3 The respondents were described based on their strengths and weaknesses in connection to the skills included in MS Powerpoint. The strength of the teachers in MS Powerpoint is working with multimedia. Other skills connected to MS Powerpoint from rank two to seven are working with other programs, formatting presentations, learning the fundamental, drawing and working objects, editing a presentation, and delivering a presentation. The weakness of the high school teachers in MS Powerpoint is delivering a presentation since it ranked last on the strengths.

3.0 Majority of the high school teachers indicated that absence or lack of computer units is the common problem that affect their computer competency. This was found out for this reason rank one. Other reasons that rank two to six are computerization is not a priority, insufficient knowledge and skills, no administrative skills, prefer to use manual than computer method, and hectic schedule for the whole day.

CONCLUSIONS

1. The respondents are competent on the basic computer skills as manifested on the highly competent description for the MS Word and competent description for the MS Excel and MS Powerpoint. Indeed, level of the competency is varied based on the respondents.
2. Strengths and weaknesses are identified as a whole and per application. As whole, the respondents are at best in the use of MS Word, while they still need to improve in MS Excel and MS Powerpoints. Moreover, there are still weaknesses that have to remedy per application to improve the competency level of the teachers.
3. Problems of the computer equipment needed to apply ICT is the main factor that affect the level of the respondents. Insufficiency of the computer equipment is a pivotal concern why the respondents are averagely in the “techi” world.
4. The impact of the trainings to the respondents are magnified as seen on the level of computer competency.
 - There is still a room for the enhancement of the program and trainings such as:
 - Continuous ICT trainings during Semestral Break.
 - Provide computer in every classroom so that trained teachers can apply their knowledge and skills in

ICT trainings.

- Provide higher level of training to those who are knowledgeable with the basic skills in ICT like movie maker and others.
- More training programs.
- School should provide computers for teachers.
- Formulate a program that will address this problem on a quarterly basis.
- Have an internet connection for the school.

RECOMMENDATIONS

In the light of the findings and conclusions drawn, the following are offered for recommendations:

1. The suggestions of the respondents on how to enhance the ICT programs and trainings being offered to the teachers should be considered and implemented by the concerned authorities in the department.
2. ICT trainings should be given to all. Since, we cannot avoid to use the technology at this times, trainings as such should be available and highly motivated to everyone.
3. Funding on the ICT aspect of education should be reviewed and improved. Eventhough we have skillful people in ICT if they do not have equipment that they can use, their learning is useless.
4. A replication of this study is suggested to be conducted by the researchers in other places or in a broader scope.



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