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Young Agriculturists' Journey: The Agricultural Science and Technology School Tracer Study

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Abstract

This study traced the graduates of Agricultural Science and Technology School (ASTS) in the Philippines using survey research. Majority of the 130 graduates were female and those who pursued college studies were taking-up agriculture-related courses. They oftentimes recognize the relevance of their learning from ASTS to their present undertakings. Hands-on experiences in doing projects had influence on the present occupational status of the graduates. Majority of the self-employed graduates are into agriculture-related endeavors. Work independence was considered the primary competency that they have gained from ASTS. They also strongly agreed on the competencies of the teacher as well as the facilities and equipment of the school. Agriculture is strongly important to the graduates and learning agricultural science in high school helped them get a good job. The field of agriculture was also found attractive for female students in the high school level. Students may also earn while studying. School administrators may adopt the curriculum being implemented by ASTS to maximize the opportunities of students to venture in the agriculture industry.

Keywords

Agriculture, education, graduates, occupation, retrospective evaluation

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Introduction

Preparing students for challenging careers in crop production, animal production, agricultural engineering, and homemaking arts and technical skills are critical to adequately prepare agricultural students to be effective employees for the work force in a knowledge economy (Zarafshani, Knobloch, & Aghahi, 2008). This has been the guidepost of the Agricultural Science and Technology School (ASTS) of Central Luzon State University (CLSU) in the Philippines, a special laboratory high school which was opened in school year 1996-1997. The main objective of the school was to train future farmers the modern ways of farming applying new technological innovations to upgrade agricultural produce. The mission was for the school "…to develop competent farmer-entrepreneur for socio-economic and sustainable development in the countryside", with its three-fold objectives, its targets were to: a) conduct science and technology orientation, b) use earn while you learn approach, c) involve parents in the educational process, and d) use the family farm concept. (CLSU BOR Res. No. 57-95). The hope has been, students would more easily find work when they leave school and become more productive and trainable, by teaching vocational skills (Lauglo, 2006).

Since the establishment of CLSU in 1907, a vast area of its 653-hectare campus has been devoted to farming. The first group of students were admitted to learn an agricultural curriculum that was hands-on-learning and earning while learning. As regards agriculture, many programs have been tried out in the past. They range from introducing periods of productive work into the school curriculum to offering prevocational subjects so as to facilitate an early orientation into the working environment, including that of self-employment (Hoppers, 1996). The ASTS has not undergone a comprehensive revisiting of its graduates since its establishment in 1996. Thus, this tracer study was aimed at looking into the journey of the alumni of the said institution.

Tracer study is an approach which is widely being used in most organization especially in the educational institutions to track and to keep record of their students once they have graduated. Through tracer study, an institution is able to evaluate the quality of education given to their graduates by knowing the graduate's placements and positions in the society which later can be used as a benchmark in producing more qualified and competitive graduates. Further, more graduate tracer studies provide important information that could help educational institutions assess the attainment of its vision, mission and goals (Banawan, 2014).

Tracer surveys are designed to find a group of individuals who have shared a specific type of training or educational background. They thus provide a basis to explore the impact of a common training or educational experience on labor market outcomes, and facilitate the collection of richer and more detailed information than generally provided in conventional household or labor force surveys. This allows for some important refinements to the specification of earnings equations; in particular, the independent role of parental background and schooling quality can be explored (Al-Sammarai & Reilly, 2006). Clearly, a tracer study should enable not only tertiary institutions but also specialized secondary institutions to get information from graduates and employers regarding the adequacy of the

educational training being provided (Cañizares, 2015). Making sense of its humble beginning and the prospects of the changing time, it is believed that ASTS through its graduates deserves a second look. The study generally aimed to trace the journey of the ASTS graduates. Specifically, it aimed to: (a) describe the personal profile of the respondents in terms of age, gender, civil status, reason for studying within line of agriculture and reason for choosing ASTS, information sources, parents' occupation, parents' monthly income while studying in ASTS, specialization taken, year graduated, academic achievement, municipality of origin, amount gained and received after studying, how the amount gained was used, social role, most significant learning from ASTS, (b) describe the educational profile of the respondents in terms of highest educational attainment and course taken after high school, (c) assess the retrospective evaluation to ASTS by the respondents in terms of competencies gained from the school, teacher competencies, school facilities and equipment, and their attitude towards agriculture, and (d) describe the occupational profile of the respondents in terms of employment status, nature of work, relevance of learning to their present undertakings

Literature Review

According to Alam (2008), the purpose of education is to provide adequate knowledge and social value. If education programs offered do not provide employment, parents will perceive that investment in education as not worthwhile. Work orientation in basic education help prepare youngsters for working life. It concerns aspects of school life that are in one way or another related to work: such as certain work-oriented subjects, productive work activities, topics in 'academic' subjects, and a variety of skills and attitudes intentionally or unintentionally promoted at school that may have a bearing on the way young people will participate in the economy (Hoppers, 1996). A vocationalized secondary education refers to a curriculum which remains overwhelmingly general or 'academic' in nature, but which includes vocational or practical subjects as a minor portion of the students' timetable during the secondary school course (Lauglo, 2004). Many secondary education graduates and those who did not continue their studies get engaged into agriculture. Further, incentives for students taking agriculture courses are needed (Alam et al., 2009).

Image of agriculture and lack of interest in towards it were just two of the many problems why students do not engage on agriculture programs. (Dyer and Breja, 2003) When efforts were made to introduce instructional materials about agriculture teachers were able to make relevant connections to agriculture with their students (Pense et al., 2005). The computation of returns to education is important as it provides information on the benefits associated with investments made by both governments and individuals in education, and so can guide education policy (Al-Sammarai & Reilly, 2006).

Conceptual framework

This tracer study is anchored on the concept of program evaluation. As defined, program evaluation is the systematic collection of information about the activities,

characteristics, and outcomes of programs for use by specific people to reduce uncertainties, improved effectiveness, and make decisions with regard to what those programs are doing and affecting (Patton, 1986).

This is supported by Morell (1989) who stated that the most important use of follow-up evaluation involves the study of how the effect of a given treatment or program changes over time. He also emphasized that the importance of follow-up evaluation lies in its ability to assess a program's effect within the context of a person's continuing life experiences.

Methodology

Research design and locale of the study

The primary focus is to describe the graduates in terms of their personal, educational and occupational profiles, their reason for choosing to study at ASTS, and their attitude toward agriculture. The study was undertaken in the Philippines, specifically the Agricultural Science and Technology School (ASTS) of Central Luzon State University (CLSU), Science City of Muñoz, Nueva Ecija.

Respondents of the study

Only 130 out of 350 graduates (2010-2015) have responded due to the following circumstances: (a) a number of alumni have transferred to another place of residence; (b) a number of respondents were traced abroad. While the social media is a viable means of communicating with them, they were not interested to participate in the research; (c) a number of female respondents have already changed their surnames when they got married. This made it difficult to track some of them; (d) some were either busy, on travel, or simply uncooperative; (d) a number of alumni have already passed away.

Research instrument

A survey questionnaire consisting of three parts was prepared. Part I dealt on the personal profile of the graduate-respondents, Part II dealt on the educational and occupational profiles, Part III focused on the retrospective evaluation of the school program. The instrument was pre-tested and it has obtained a reliability coefficient of 0.876 using Cronbach Alpha.

Data gathering procedure and analysis

To gather the needed data, the study adopted the survey technique using self-administered questionnaire, and document perusal. Permission was secured from the office of the ASTS principal though a written request sent. Upon approval of the request, another letter request was made asking for the list of graduates from 2010-2015, together with their possible contact information such as addresses, cellphone numbers or social

networking sites. Access to the secondary data such as school enrolment forms, graduation programs, and students' permanent records were also requested.

All possible ways to communicate with the respondents were used. Home visits were done to administer the questionnaires personally. Permission and coordination with the barangay officials were first sought to gather data in the localities of the graduates. Some questionnaires were sent via e-mail and the social media such as Facebook. These social media, to include SMS were also used to follow-up gathering the needed data. Finally, for higher questionnaire turnout, the respondents were approached during programs and reunions in ASTS for the purpose. Descriptive analysis using frequency counts, percentages, weighted means, standard deviation and ranking were used to characterize the respondents and analyze the gathered data. Data were analyzed using Microsoft Excel program and the Statistical Package for Social Sciences (SPSS) version 21.

Findings and Discussion

Personal profile of the respondents

Age, the mean age of the respondents was 22.71 (Table 1). This result means that the graduates were relatively young since 74 (56.92%) of the respondents were graduates of 2010-2015. The overall mean age of 22 coincided with the school celebrate its 20th founding anniversary. This period also was found to have the largest bulk of the respondents as young adults.

Gender, the number of male student respondents in this study was less than that of the female students. Only 62 (47.7%) were male while 68 (52.3%) were female. This finding supported the result of earlier study conducted by Velasques (2007) who found the dominance of female students in the secondary level.

Table 1. *Personal profile of the graduate respondents*

Parameter	**Respondents (N=130)**	
	F	%
Age	Mean 22.71 SD 5.28	
Gender		
Male	62	47.7
Female	68	52.3
Civil Status		
Single	110	84.6
Married	18	13.8
Widow	1	.8
Separated	1	.8
Municipal Address		
Science City of Muñoz	38	29.2
Carranglan	16	12.3

Table 1. *Continued…*

San Jose City	14	10.8
Licab	14	10.8
Pantabangan	11	8.5
Rizal	10	7.7
Llanera	8	6.2
Talavera/Cabanatuan	7	5.4
Other Towns of Nueva Ecija	7	5.4
Towns Outside Nueva Ecija	5	3.8
Parent's Monthly Income		
Below 5, 000	34	26.2
5, 001 – 10, 000	46	34.6
10, 001 – 15, 000	27	20.8
15, 001 – 20, 000	15	11.5
20, 000 and above	9	6.9
Specialization taken		
Agriculture	70	53.8
Home Technology	60	46.2

In 1996, when ASTS started its operation, the school accepted only male students who were predominantly out of school youth. One of its admission requirements then was physical strength. The male applicants were tested first if they could lift one cavan of palay before admission. This was meant to prepare them for the rigors of farm works. However, this requirement was removed from the admission requirements when female students started to be admitted. Also, Home Economics specialization in 1997, has paved the way for the increase in number of female students.

Civil status, the respondents were predominantly single (110 or 84.6%). This conformed to the findings on age that showed the respondents were mostly young who were in their early 20's.

Municipality of origin, the Science City of Muñoz was found to be the major feeder of students in ASTS with 38 (29.2%) students coming from the place. This was followed by the nearby municipalities of Carranglan with 16 (12.3%), San Jose City and Licab, 14 (10.8%) graduates each. The rest were from Pantabangan (8.5%), Rizal (7.7%), Llanera (6.2%), Talavera and Cabanatuan, (5.4%). There were also graduates (5.4%) from the other municipalities of Nueva Ecija. The least 5 (3.8%) was from towns outside the province.

Parents' monthly income, more parents (34.6%) of the graduates were earning 5,001-10,000 pesos as their monthly income than those earning below 5,000 (26.2%). The rest (20.8%) were earning 10,001-15,000 while those who were earning 15,001-20,000 was only (11.5%). Much more, monthly income of the respondents' parents was found below the average family income of P22, 000.00 set by the Philippine Statistics Authority in its 2015 Family Income and Expenditure Survey. This finding showed that the parents who sent their children to ASTS monthly income had below the average family income. This showed that the objective of the school, "to help the poor but bright students to become future agriculture and homemaking arts entrepreneurs", has been achieved.

Specialization Taken in, *CLSU-ASTS,* while there was a greater number of female among the respondents, only (46.2 percent) enrolled in Home Technology as their field of specialization. Majority of them enrolled in agriculture (Table 7) (53.8%). This finding implies that while students of ASTS were predominantly female, more of them took interest in the rigid activities of farming as in the school. This goes along with the study of Zarafshani, Knobloch, and Aghahi, (2008) which asserted that preparing students for challenging careers in the crop production, animal production, agricultural engineering, homemaking arts and technical skills is critical to adequately prepare agricultural students to be effective employees for the work force in the knowledge economy.

Amount gained while in ASTS

Table 2 shows that more than one-fourth (30.77%) of the respondents earned 10,001-20,000 in their stint in the school. These respondents who earned 1,000-10,000 (28.46%), only 7.69 percent earned 20,001-30,000 while (1.54%) of the respondents earned 40,001-50,000 or more.

Table 2. *Amount earned while studying in ASTS*

Amount	Frequency	%
1, 000 - 10, 000	37	28.46
10, 001 - 20, 000	40	30.77
20, 001 - 30, 000	10	7.69
30, 001 - 40, 000	2	1.54
40, 001 - 50, 000 or more	5	3.85
Missing	28	21.54
TOTAL	130	100

The male students usually engaged in rice production, swine production, and goat raising while female their counterparts were engaged in food processing which like cooking of snacks foods as puto, siomai, lumpia, pan cake, turon, maja blanco, gelatin or dishes for meals like embutido, okoy. These activities would turn out smaller profits than rice production and swine and goat raising. Some female graduates though as their specialization have ventured into agriculture as their specialization with rice production.

Use of money Earned while studying in ASTS

Table 3 shows that tuition and allowance ranked first (44.62%) in the use of the money earned while studying. This means that a good number of the students went to school after finishing their studies in ASTS. The amount they earned as students helped them to pursue higher education. Some of the respondents (13.85%) used their earnings in establishing agriculture and entrepreneurial pursuits such as swine production, cow raising,

and other related businesses, and for family or personal expenses (13.08%) such as personal allowance, in applying for a job. Thirty-seven (28.46%) did not answer the question.

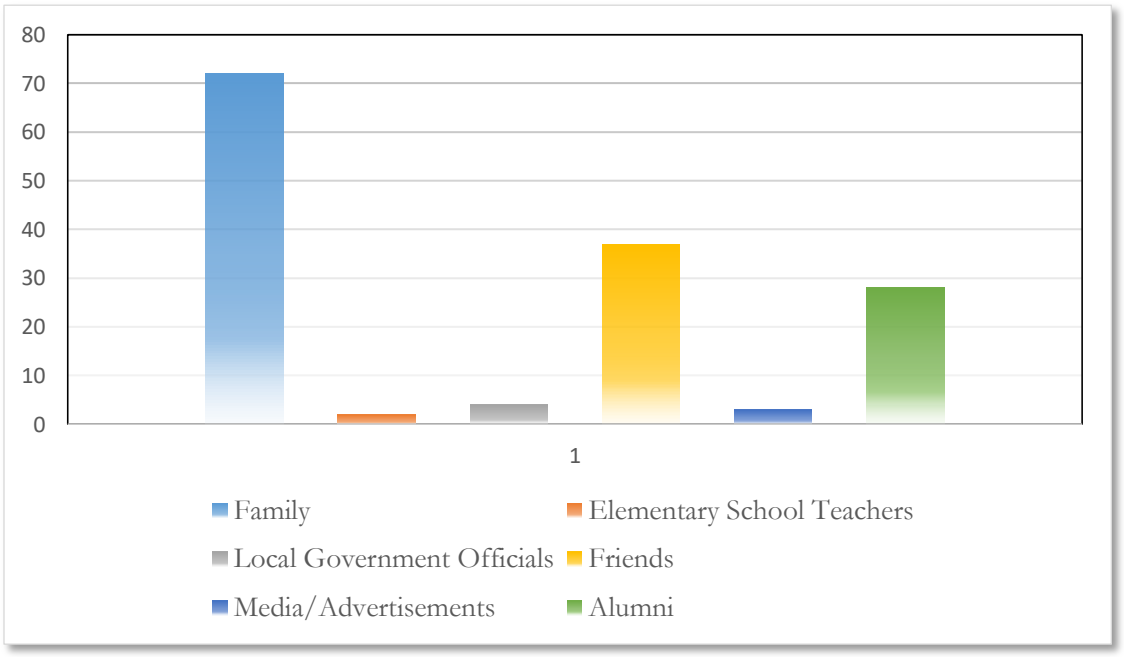
Table 3. *How the amount gained from ASTS was used*

	F	%
Allowance/Tuition	58	44.62
Family/Personal Expenses	17	13.08
Farming/Agriculture	18	13.85
No Answer	37	28.46
TOTAL	130	100

Source of information about ASTS

Figure 1 shows that majority (55.4%) of the respondents indicated family as their major source of information about ASTS is their family followed by friends with 37 (28.5%) and alumni with 28 (21.5%).

Figure 1. *Sources of information about ASTS*



Familiarity of their families about the school could be attributed to the popularity of CLSU where ASTS is located. Known for its agriculture expertise, families of alumni as well

as their friends are instrumental in promoting thru words of mouth the training the school could offer. Meanwhile, local government officials were claimed by 3.1 percent while media/advertisements were claimed by 2.3 percent and elementary school teachers by 1.5 percent of the respondents.

Factors considered in choosing ASTS and agriculture as a course

Table 4 shows that obtaining quality education ($\bar{x}$=4.49) is the primary reason why students chose to study in ASTS. This was followed by their interest in agriculture ($\bar{x}$=4.21). This implies the high regard of students to the institution which also offers quality collegiate courses being a Commission on Higher Education (CHEd) Center of Excellence in the field of agriculture. CLSU has been primarily known as a premier agricultural school in the country. This was followed by affordable tuition, with a mean rating of 4.25. However, the fee being referred to by the respondents here is really not tuition but only miscellaneous fees since the school offers free secondary education pursuant to its mandate.

Table 4. *Reasons for choosing ASTS and agriculture as a course*

ITEM	(N=130) M	SD	Verbal Description
Interest in agriculture	4.21	1.00	Strongly Agree
Improving family business related to agriculture	4.02	.95	Agree
Prospects for immediate employment	3.83	.97	Agree
Affordable tuition	4.25	.97	Strongly Agree
Provision of Scholarship	3.48	1.17	Agree
Influence of Parents	4.08	1.06	Agree
Influence of Friends	3.69	1.17	Agree
Near to home	3.12	1.39	Moderately Agree
Quality education	4.49	.80	Strongly Agree
Average Mean	3.91		Agree

Legend:
1.00-1.79 Strongly Disagree
1-80-2.59 Disagree
2.60-3.39 Moderately Agree
3.40-4.19 Agree
4.20-5.00 Strongly Agree

Provision of scholarship has been second to the lowest among the factors with a mean rating of 3.48. While ASTS offers free secondary education, this has not been the primary reason of the respondents in enrolling to the said school. Respondents moderately agree that the reason for studying in ASTS its nearness to home ($\bar{x}$=3.12). This conforms to the data on municipality and origin that showed Science City of Munoz as the top provider of the students in ASTS. The distance of their residence to the school has never been a concern since students stay in the dormitory of the school.

Academic achievement of respondents

Table 5 shows that majority of the respondents (56.2%) have graduated from ASTS with honors. Also, majority of the respondents (53.8%) were involved in co-curricular activities in school. This could mean those in the honors list were active in co-curricular activities. This implies that the respondents have actively participated in the co-curricular activities. Also, this is a good indication that the school strategies for developing students not only focus on the academic aspect but also on the activities that make the students well-rounded individuals.

Table 5. *Academic achievement of respondents*

PARAMETER	**RESPONDENTS (N=130)** F	%
Honors received		
With	73	56.2
Without	57	43.8
Co-curricular Activities Involvement		
Involved	70	53.8
Not Involved	60	46.2
High School Average		
High (88.41-94-85)	34	26.15
Average (81-96-88.4)	74	56.92
Low (75.5-81.95)	22	16.92
	Mean	85.3662
	SD	4.30459

Agriculture and Home Technology related contests have been undertaken in the school. These include marcotting, fertilizer computation, cooking and sewing among others. The revival of the Future Farmers of the Philippines (FFP) in 1997, an annual gathering of agriculture students, has given students opportunities to join in various co-curricular activities. This activity was also undertaken in the university with other students from then other three Laboratory High Schools of CLSU.

Considering the grade point average, majority (56.92%) of the respondents have obtained average level. Meanwhile, 26.25 percent were on high level and 16.92 percent were on low level. It reveals that the respondents who have graduated from ASTS have good scholastic performance while studying in the school. This can be explained by the fact that even they work in the field and practicing agriculture and homemaking arts, their level of scholastic performance was not affected, and still have good grade. According to the proponent for the revival of the school, Dr. Fortunato A. Battad, ASTS curriculum envisions to produce agricultural entrepreneurs and future leaders. The school holds

entrance examination for the incoming new students. Most of the students accepted in the school were found to have academic honors in their elementary education.

Educational Profile of the Respondents

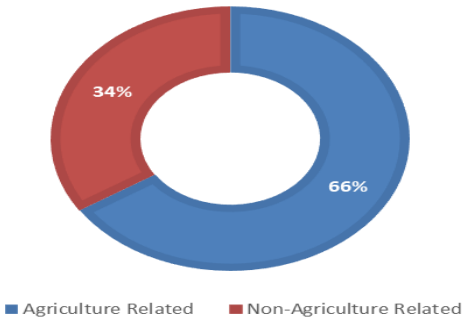
Highest educational attainment, Table 6 shows that majority (55.38%), of the graduate respondents have not pursued higher education after high school. However, some (30.0%) became college graduates and finishers of vocational courses, (12.30%). These findings could be attributed to lack of financial capability of the parents to send their children to higher education. As showed earlier, majority of the parents had income below P15, 000.00 per month. However, according to Rodriguez (2013), there were alumni of ASTS who did not pursue their higher education because the training they had from the school was sufficient to venture in entrepreneurship like operating and managing restaurant, operating sari-sari store, operating a computer shop, mushroom production, engaged in rice farming and crops and swine production.

Table 6. *Highest educational attainment*

PARAMETER	RESPONDENTS (N=130) F	%
High School	72	55.38
Vocational	16	12.30
College	39	30.00
Graduate Degree	0	0
No Answer	3	2.31
Total	**130**	**100**

Course pursued after ASTS, Of the 44 respondents who were still studying, 29 (65.9%) were taking courses related to agriculture while 15 (34.1%) were taking-up non-agriculture courses. The former must have taken the opportunity of further specializing agriculture in the university. Majority of those residing within the province could have taken advantage of their accessibility to CLSU which is known for its prime agri-technology course offerings.

Figure 2. *Course being pursued by those still studying*



Occupational profile of the respondents

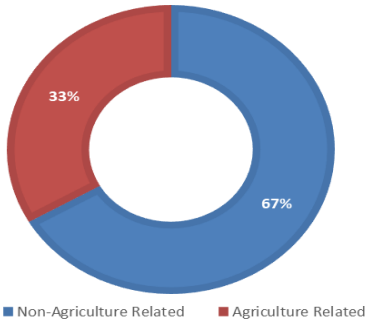
Occupational status, Table 7 shows that 50 (38.5%) respondents are employed, 20 (15.4%) are self-employed while 44 (33.8%) are still studying. Only 16 (12.3%) are unemployed.

Table 7. *Occupational status of the respondents*

ITEM	**(N=130)**	
	F	%
Employed	50	38.5
Self-employed	20	15.4
Unemployed	16	12.3
Studying	44	33.8
Total	130	100

Nature of work/occupation, of the 50 respondents who are employed, 36 have answered the question on nature of work (Fig. 3). Only 12 (33.33%) are on agriculture-related occupation while 24 (66.67%) are on non-agricultural related occupation. While the primary aim of ASTS is to prepare the students in the field of agriculture, majority of its graduates who were employed were into non-agricultural related occupation. This result was similar that of Rodriguez (2013) who found out that alumni of ASTS were employed in companies like food chain, factory, hospitals, security agencies and malls in the Philippines and OFW as nurse, factory worker, seaman and security guard. This reality find support in the words of Bagtang (2013) who said that "Much of today's youth shun farming because of its perceived hardships, and many farming families are part of the country's poor sector."

Figure 3. *Nature of work/ occupation*



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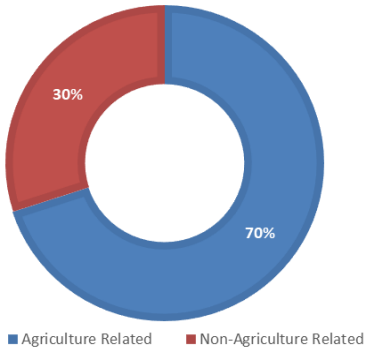
Extent of relevance of learning from ASTS to present undertakings

The respondents rated oftentimes (x=4.36) the extent of relevance of their learning from ASTS to their present undertakings. This means the respondents have recognized the importance of their training in ASTS. This conforms to the findings of Rodriguez (2013) who asserted that hands-on experiences in undertaking of projects had a greater influence on the present occupation of the graduates. Further, such findings also claimed that whatever occupation they have is an indication that their past training in ASTS, through its curriculum, had helped them develop their potentials and inspired them to pursue that occupation.

Nature of work of the self-employed respondents

The purpose of preparing the ASTS graduates to pursue agriculture and entrepreneurial ventures have been achieved by 70% of those who are on self-employment in agriculture related endeavors as shown in Figure 5. Only 30% of the self-employed graduates are on non-agriculture related endeavors.

Figure 4. *Nature of work of self-employed*



Results of this present study supports the findings of Rodriguez (2013) that one of the agriculture related self-employment of the female alumni was in mushroom production, while the male alumni were in swine production and rice and crop planting.

Retrospective evaluation

***Competencies gained from ASTS*, t**able 8 shows in general, that respondents strongly agreed *($\bar{x}$=4.44)* with the competencies they gained from the school. Work independence was considered by the respondents as the primary competency they gained. As shown in Table 10, respondents strongly agreed *($\bar{x}$=4.66)* with the statement, "Studying in ASTS enhanced my ability to work independently". Independence is being developed in the school as early as the first year of the students. With its characteristic as a boarding school, students are being exposed to basic farm and household chores in their early stay in the school. Basic bed fixing, early rising, breakfast preparation and other household chores are among the non-curricular activities undertaken in the dormitory by the students. Being

trained to personally take care of themselves, they could deal with life's challenges in an easier way.

The students' experiences to this kind of activities could be the primary the reason why the respondents also strongly agree *($\bar{x}$=4.55)* with the statement "It's easier to get along with the challenges of life because of what I learned from ASTS". Since ASTS is a basically an agriculture school, students have been "made more aware and responsive of environmental concerns" to which the respondents strongly agreed with *($\bar{x}$=4.55)*.

Table 8. *Competencies gained from ASTS*

ITEM	(N=130) M	SD	Verbal Description
Time management was imbued to me by the rigorous schedule of academics and field works in ASTS	4.35	.74	Strongly Agree
Laboratory activities in ASTS equipped me with entrepreneurial skills	4.40	.72	Strongly Agree
Supervised Farming/Homemaking enabled me to develop needed specific skills	4.42	.74	Strongly Agree
Studying in ASTS enhanced my ability to work independently	4.66	.60	Strongly Agree
Lecture classes in ASTS developed my writing, critical thinking and problem-solving skills	4.46	.72	Strongly Agree
It's easier for me to get along with the challenges of life because of what I learned from ASTS	4.55	.67	Strongly Agree
I became inspired in initiating community activities	4.28	.82	Strongly Agree
I can now take leadership roles in community activities	4.23	.87	Strongly Agree
My training at ASTS made me more aware and responsive on environmental concerns	4.55	.64	Strongly Agree
My high school experience in ASTS had prepared me well in my college education	4.53	.77	Strongly Agree
Average Mean	4.44	.52	Strongly Agree

Legend:
1.00-1.79 Strongly Disagree
1-80-2.59 Disagree
2.60-3.39 Moderately Agree
3.40-4.19 Agree
4.20-5.00 Strongly Agree

These findings could also be attributed to the university's distinctly agriculture characteristics promoting environmental friendly programs such as, waste segregation and other modes of farming. Moreover, the forest-like stature of the school, hosting to various trees and animals may also be considered an influential factor for this strong agreement of the respondents. Respondents also strongly agreed *($\bar{x}$=4.53)* that the kind of high school experience they had from ASTS had prepared them well in college education. They also strongly agreed *($\bar{x}$=4.46)* that lecture classes in ASTS had developed their writing, critical thinking, and problem-solving skills. It was also strongly agreed *($\bar{x}$=4.42)* by the respondents that Supervised Farming/Homemaking enabled them to develop needed specific skills. Laboratory activities in ASTS have also been helpful in equipping them with entrepreneurial

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skills (x=4.40). Moreover, the respondents also strongly agreed *($\bar{x}$=4.35)* that time management was imbued to them by the rigorous schedule of academics and field works in ASTS. However, two items were rated least by the respondents. These were "becoming inspired in initiating community activities ($\bar{x}$=4.28), and taking leadership roles in the community ***($\bar{x}$=4.25)***. This meant participation in socio-civic activities was not prioritized by the respondents or this was not emphasized by the school. Nonetheless, the respondents strongly agree *($\bar{x}$=4.44)* that they have gained the stated competencies from ASTS.

Teacher competencies

In general, all the teacher competencies were strongly agreed with by the respondents as shown in Table 9. Rated with the highest mean *($\bar{x}$=4.52)* was the statement, "Teachers were competent in Agriculture and Home Technology". This was followed by teachers of ASTS were supportive and kind to students *($\bar{x}$=4.48)* and teachers have also employed different teaching strategies to provide maximum learning opportunities to students *($\bar{x}$=4.47)*. Only one was of lower mean rating but still described as "strongly agree".

Table 9. *Teachers competencies*

ITEM	(N=130) M	SD	Verbal Description
a. Teachers were competent in agriculture and home technology	4.51	.74	Strongly Agree
b. Different teaching strategies are employed by teachers to provide maximum learning opportunities to students	4.47	.75	Strongly Agree
c. Positive climate during lecture and laboratory sessions was always provided by the teacher	4.29	.74	Strongly Agree
d. Teachers were supportive and kind to students	4.48	.69	Strongly Agree
e. Teachers displayed dignified practice of the teaching profession	4.43	.71	Strongly Agree
Average Mean	4.44	.58	Strongly Agree

Legend:
1.00-1.79 Strongly Disagree
1-80-2.59 Disagree
2.60-3.39 Moderately Agree
3.40-4.19 Agree
4.20-5.00 Strongly Agree

According to Rodriguez (2013), teachers must show openness and keen sense of humor and must understand the students' diversity in terms of ability to development of good relationship. With teachers who mostly graduated with degrees in agriculture and home economics, students believed to have been provided with quality instructions by their competent teachers. At present, two among the faculty of school have doctorate degree while the rest have master's degrees. This conforms to the hiring policy of the university that

the minimum educational qualification of teachers in the institution is a master's degree holder. This is further strengthened by the vertical articulation policy among higher education institutions which provides that courses finished by the teachers must be aligned to the department in which they belong. While the respondents still strongly agree *($\bar{x}$=4.29)* that "Positive climate during the lecture and laboratory was always provided by the teacher", this item was rated lowest by the respondents. Further, the lowest rating may also be attributed to the students' physical and mental conditions brought by rigid actual farm and home training of the school. In general, the respondents strongly agreed *($\bar{x}$=4.44)* with the statements on the teachers' competencies of ASTS. This implies that students appreciate and highly regard the capability of the teachers.

Facilities and equipment

Facilities and equipment are essential provisions of quality education in an educational institution. Appropriate management and utilization of these provisions are vital in the realization of the goals and objectives of the school. Table 10 shows that of the five statements about facilities and equipment, the respondents rated strongly agree *($\bar{x}$=4.28*) only with the statement, "Farms areas for experiential planting are enough for the students". The rest received lower mean rating described as "agree." This could be attributed to the university's vast area for farming. The school has been allotted 23 hectares to be used for its laboratory in agriculture activities.

Table 10. *Facilities and equipment of ASTS*

ITEM	(N=130) M	SD	Verbal Description
a. The ASTS has adequate classrooms and laboratory rooms for the students	4.04	.98	Agree
b. Agriculture and Home Technology subjects have the needed facilities and equipment for the lessons taken	4.16	.85	Agree
c. Up-to-date technology such as farm tools, tractor is provided by ASTS to its students	4.08	.89	Agree
d. Farms areas for experiential planting are enough for the students	4.28	.95	Strongly Agree
e. The school has adequate dormitory facilities for students	4.13	.98	Agree
Average Mean	**4.14**	**.78**	**Agree**

Legend:
1.00-1.79 Strongly Disagree
1-80-2.59 Disagree
2.60-3.39 Moderately Agree
3.40-4.19 Agree
4.20-5.00 Strongly Agree

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The students indicated agreed *(x̄=4.16)* that Agriculture and Home Technology subjects have the needed facilities and equipment for the lessons taken in ASTS. "Up-to-date technology such as farm tools, tractor is provided by ASTS to its students" *(x̄=4.08)*. The lowest mean rating but was still described as "agree", was the statement "The ASTS has adequate classrooms and laboratory rooms for the students." *(x̄ =4.04)*. This conformed with the data gathered that school has only six classrooms for lecture and discussion and one (1) laboratory room for Home Economics technology. Somehow, difficulty is encountered when classes are divided for specific lessons in the fields of specializations. The ASTS administration resorted to maximizing the spaces available by using the Dormitory Mess Hall as additional laboratory for HE-related activities and the Social Hall for group undertakings.

Augmenting this particular concern has been the focus of the school's partnership with the Parent-Teacher Association (PTA). Through this, additional teaching-learning equipment, like eight computer, three microscopes, refrigerator and additional sewing machines were provided. As such, the respondents agreed with the provision of facilities and equipment of the school (*x̄=4.14*).

Attitude towards agriculture

As shown in Table 11, the respondents rated strongly agree *(x̄=4.62)* on "Agriculture is important to our life." and "Learning agricultural science helps me get a good job." *(x̄=4.20.)*

Table 11. *Attitude towards agriculture of the respondents*

ITEM	(N=130) M	SD	Verbal Description
Learning agricultural science helps me get good job	4.2	.76	Strongly Agree
The agricultural science that I learn is relevant to my life	4.19	.9	Agree
I am curious about discoveries in agriculture	3.95	.94	Agree
Knowing agricultural science gives me career advantage	4.16	99	Agree
Agriculture is important to our life	4.62	.61	Strongly Agree
Average Mean	4.08	.75	

Legend:
1.00-1.79 Strongly Disagree
1-80-2.59 Disagree
2.60-3.39 Moderately Agree
3.40-4.19 Agree
4.20-5.00 Strongly Agree

These manifest the respondents' positive regard to agriculture. Being enrolled in a primarily agricultural school, could widen the understanding of the respondents to the importance of agriculture in terms of getting a job. The respondents agreed on the remaining indicators as shown in Table 17. Rated lowest but still described as "agree" was the statement "I am curious about discoveries in agriculture" *(x̄= 3.95)*. These experiences had

been relatively meaningful to the students. As revealed in the study of Rodriguez (2013), students consider planting rice and vegetables as one of the best experiences they had in ASTS.

Membership in organizations

Table 12 shows that only 17 (13.1%) of the respondents are active on their social role being members or affiliates of organizations in the community. Most (86.9%), of the respondents were not affiliated with or member of any organization. The Division of Public Secondary School Association, Philippine Agricultural Society, Crop Science Society, and Philippine Society of Soil Science and Technology were among the organizations to which the respondents were affiliated to.

Table 12. *Membership in organizations of the respondents*

ITEM	(N=130) F	%
Affiliated	17	13.1
Not affiliated	113	86.9
Total	130	100

Respondents' non-affiliation could be attributed to the least rated competency gained from ASTS about assuming leadership roles. While students have been developed for agriculture and entrepreneurial pursuits, participation or taking a lead in various socio-civic activities has been the least priority of the graduates.

Problems encountered and possible solutions

While the need for additional classrooms and laboratories has already been mentioned in the earlier discussion, a marketplace, among others, for the commodities and products produced by the students in their laboratory was deemed necessary. Also the incumbent principal mentioned, capital for the purchase of additional piglet for the swine production project of students is wanting. For this, ASTS has sought the help of the university administration for its provision. Another concern was enhancing the research capability of the students by providing research subject.

Conclusions and Recommendations

This tracer study was limited only to the Agricultural Science and Technology School (ASTS) of Central Luzon State University. It focused on its graduates' personal, educational and occupational profiles covering the period 2010-2015. This study also looked into the retrospective evaluation by the graduates in terms of competencies gained, teacher competencies, facilities and equipment and overall attitude towards agriculture. The following conclusions and recommendations are hereby presented:

a. The field of agriculture has also been more attractive to female students in the secondary level compared with other parallel curricular specialization such as Home Technology. Thus, it is therefore recommended that further exposure and opportunities for female students in the field of agriculture may be provided in the form of co-curricular and extra-curricular activities to enhance further their interests in the field.

b. It is possible for a student to earn even more than P50, 000.00 while studying in ASTS. Thus, more entrepreneurial activities may be initiated by the school which could harness the marketing potentials of the students. Further strategies and mechanisms also need to be implemented by the school administrators in exploring viable and systematic outlet for marketing the farm produce of the students. It is also recommended that administration of high schools with the same curricular focus adopt the ASTS curriculum to maximize the opportunities of students to venture in the agriculture industry.

c. There was a low turnout of students who eventually got employed on jobs related to agriculture immediately after high school. Thus, career advocacy campaigns may also be undertaken emphasizing the various opportunities and engagements in agriculture that students can enter into after ASTS. Career progression and further specialization on agriculture may also be introduced as viable option for career development. While the curriculum of the ASTS is terminal in nature, students may be further encouraged to explore further trainings after high school.

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References

Alam, G. M. (2008). The role of technical and vocational education in the national development of Bangladesh. *Asia-Pacific Journal of Cooperative Education, 9*(1), 25-44.

Alam, G. M., Hoque K. E., Khalifa, M. T. B., Siraj, S. B., & Gani, M. F. B. (2009). The role of agriculture education and training on agriculture economics and national development of Bangladesh, *African Journal of Agricultural Research, 4* (12), 1334-1350.

Al-Sammarai, S., & Reilly, B. (2008). Education, employment and earnings of secondary school and university leavers in Tanzania: Evidence from a tracer study. *Journal of Development Studies*, *44*(2), 258–288.

Banawan, M., & Ereies, J. M. (2014). *The Ateneo de Davao University graduate tracer: An online tool for graduate tracer studies*. Retrieved from http://research.addu.edu.ph/university-funded-researches/the-ateneo-de-davao-university-graduate-tracer-an-online-tool-for-graduate-tracer-studies/

Cañizares, M. J. F. (2015). Tracing University of San Carlos' science and mathematics education graduates: How well are we in developing teacher professionals? *International Journal of Research Studies in Education, 4*(2), 69-86.

Dyer, J., & L. Breja, (2003). Problems in recruiting students into agricultural education programs: A delphi study of agriculture teacher perceptions. *Journal of Agricultural Education, 44*(2), 75-85.

Hoppers, W. (1996). *Searching for relevance: The development of work orientation in basic education*. Paris, France: UNESCO, International Institute for Educational Planning.

Lauglo, J. (2006). Vocationalised secondary education revisited. In: Maclean R., Wilson D.N., Lauglo J., Maclean R. (eds) *Vocationalisation of Secondary Education Revisited. UNESCO-UNEVOC Book Series Technical and Vocational Education and Training: Issues, Concerns and Prospects.* Dordrecht: Springer.

Lauglo, J. (2009). Vocationalized secondary education, *International Handbook of Education for the Changing World of Work,* pp 2295-2312.

Li, Y., & Lerner, R. (2011). Trajectories of school engagement during adolescence: implications for grades, depression, delinquency, and substance use. *Developmental Psychology, 47*(1), 233-247.

Morell, J. A. (1979). *Program evaluation in social research*. New York, NY: Pergamon Press.

Noonan, R. (2000). *Notes on the theory and practice of forward and reverse tracer studies*. Occasional Papers No. 3, Wedec International Management Institute.

Panit, N.M., Bentor, S. S., & Ongy, E. E. (2013). Employment outcomes of graduates of an agricultural school. *Journal of Society & Technology*, *3,* 83-89.

Patton, M. Q. (2008). *Utilization-focused evaluation, 4th ed.* Los Angeles, CA: Sage Publications.

Pense, S., Leising, J., Portillo, M., & Igo, C. (2005). Comparative assessment of students agricultural literacy in selected agriculture in the classroom programs. *Journal f Agricultural Education, 46*(3), 107-118.

Philippine Department of Agriculture [DA]. (2012*) Food staples sufficiency program 2011-2016: Enhancing Agricultural Productivity and Global Competitiveness*. Quezon City, Philippines: DA

The Manila Times. (2013, June 22). *Aging Filipino farmers to affect food security*. Retrieved from http://www.manilatimes.net/aging-filipino-farmers-to-affect-food-security/12166/

Orosa, R. L. (2013, April 14). Agri workers among lowest paid – NSO. *The Philippine Star*. Retrieved from http://www.philstar.com/agriculture/2013/04/14/930285/agri-workers-among-lowest-paid-nso

Rodriguez, T. G. (2013). *Tracer study of the agricultural science and technology school graduates: implication for curriculum improvement (*Unpublished Master's Thesis). Central Luzon State University, Philippines.

Velasques, J. V. (2007). Teaching and learning styles and academic performance of high school students of Munoz National high school in Mathematics, English and science and technology. *Education Digest, 8*(1), XX-XX.

Zarafshami, K., Knobloch, N.A., & Aghahi, H. (2008). General perceived self-efficacy of Iranian college of agriculture students. *Journal of International Agricultural and Extension Education*, *15*(1), 69-84.

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