From Commitment to Action: Filipino College Students' Involvement in Agriculture in Selected Provinces in the Philippines

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ABSTRACT

This study determined which knowledge sharing and learning (KSL) intervention best fits agriculture and non-agriculture students in the Philippines, and documented each of the student groups' commitments to be intermediaries to farmers. Six months after the data had been gathered through survey method, the research team documented which KSL intervention each student group shared to others. The study also determined whether the students' expressions of commitment had been concretized into action. Samples were randomly selected from higher education institutions in the Philippines, namely, Central Mindanao University in Bukidnon, Central Bicol State University of Agriculture in Camarines Sur, Father Saturnino Urios University in Agusan del Norte, and Camiguin Polytechnic State College. A total of 44 agriculture students and 59 non-agriculture students were compared. The study found that agriculture students involved themselves using their technical knowledge of information and communications technology (ICT)-based tools, whereas the other group of students employed nontechnical and practical ways to help their communities—specifically by encouraging people to save rice. Agriculture students reached more farmers than the non-agriculture students did. The results of this study could guide policymakers in developing policies that would enhance students' involvement in agriculture.

Keywords: intermediaries, knowledge sharing and learning, college students, youth involvement in agriculture
JEL Classification: Q16

INTRODUCTION

According to the Philippine Commission on Higher Education, the number of enrollees in agriculture and other agriculture-related courses in the Philippines increased from 2004 to 2014 (CHED 2014a). However, the increment was far lower than that in other disciplines such as information technology, engineering, and education. Likewise, the passing rates in agriculture licensure examinations were low in 2011–2014 (CHED 2014b) despite the innovations introduced in higher education. Filipino youngsters ignore this discipline even though agriculture-related jobs have always been in demand.

Aside from these challenges, the out-migration of rural youth is also the global trend (Bezu and Holden 2014). Young people think that they are vulnerable with farming and insecure with employment in the rural areas, and thus would rather pursue other careers in the cities. Filipino farmers also encourage their children to get a college degree and have a more stable employment than what farming offers (Manalo and Van de Fliert 2013).

Different organizations have recommended ways to curtail such problems here (Abrina et al. 2013) and abroad. Sitienei and Morrish (2014) suggested incorporating topics in the agricultural curricula that would attract the youth, whereas Manalo (2016) called out the youth to actively participate in developing the sector. Some examples of the numerous efforts done toward this end are the project of the University of Georgia (American Farm Bureau Foundation for Agriculture 2016) and the Infomediary Campaign (Manalo et al. 2016). The former offers a course fit for all students that would effectively connect agriculture to everyday life, whereas the latter aims to attract the youth to engage in rice farming.

Youth involvement in agriculture is important because "the youth, by their very education, talent, innovation, energy, openness to new agricultural techniques and technology, are better poised to be more effective and efficient agricultural producers" (Afande, Maina, and Maina 2015). Past studies on extension have targeted the youth, in general, as respondents. This study chose agriculture (agri) and non-agriculture (non-agri) college students because the authors believe that all groups have roles to play in sustaining agriculture.

This present study can guide policymakers in the development of policies geared toward youth involvement in agriculture. Specifically, the study analyzed which knowledge sharing and learning (KSL) intervention best fits agri and non-agri college students. Moreover, the study compared which expressed commitments were translated into action, and it also enumerated the challenges that the students encountered to involve themselves in agriculture.

KSL is part of the knowledge management school of thought, in which the created knowledge is learned and shared to the targeted group.

METHODOLOGY

Data Collection

A KSL activity was conducted to expose college students to the growing challenges in agriculture, to offer them information and communications technology (ICT)-based tools such that agriculture can be "cool" and fun, and to inspire them to help farmers and thereby contribute to agricultural development. The students then identified themselves as intermediaries, serving as a link and information conduit of farming resources to farmers.

The goals of the KSL activity were achieved using technical and nontechnical extension techniques. Technical extension techniques included field tours and ICT-based

tools demonstrations that cover the following:

1. Android apps on knowledge resources (e.g., Pinoy Rice Knowledge Bank (PRKB), and Rice Knowledge Bank [RKB])
2. e-Extension
3. Diagnostic and nutrient tools (e.g., Rice Doctor (RD), Minus One-Element Technique App (MOET App), and Rice Crop Manager (RCM))
4. PhilRice Text Center (PTC)
5. Farmers' Contact Center (FCC)

On the other hand, nontechnical extension techniques included video presentations and testimonies of champions in agriculture.

After each KSL activity was conducted (January–March 2016), a survey was administered among the students using a one-page questionnaire. It aimed to determine the most informative and useful KSL lessons for the students and to account their commitments to be intermediaries. All the students filled-out the questionnaire at the same time; a facilitator read and expounded on the questions before respondents were asked to answer.

Six months after each survey had been conducted, the research team contacted the same student respondents through their schools to schedule follow-up interviews. The subsequent interviews documented the actions that the students made in relation to the KSL activity that they had participated in, and the number of people that they, consequently, were able to help. Through face-to-face interviews, the research team was able to probe the students on their contributions to agriculture.

From the list of top rice producing provinces in the Philippines, the research team randomly selected Camarines Sur, Bukidnon, Agusan del Norte, and Camiguin. The tertiary institutions chosen were selected because these were the premier colleges in each province. Accordingly, the agricultural universities/colleges selected were Central Mindanao University (CMU) in Bukidnon and Central Bicol State University of Agriculture (CBSUA) in Camarines Sur. Meanwhile, the non-agriculture universities/colleges were Father Saturnino Urios University (FSUU) in Agusan del Norte and Camiguin Polytechnic State College (CPSC). A total of 510 students attended the KSL activities. Based on a 99 percent confidence level with a confidence interval of 10, the number of randomly sampled students, prorated to their courses were: 36 for CMU, 8 for CBSUA, 41 for FSUU, and 18 for CPSC.

Data Analysis

Agri and non-agri students were treated as the independent variable to see the similarities and differences in the responses of the two groups. The students rated which among the KSL presentations, which previously demonstrated to them during the KSL activity, were the most informative and useful to them. The frequency of their responses was converted to percentages.

The authors analyzed the students' involvement in agriculture using Alexander Astin's theory of involvement, which refers to "the investment of physical and psychological energy in various objects" (Astin 1984). Based on this, the research team documented the type/s of action/s that the student had done, the number of people they had been able to help, and the quality of responses they had received.

The research team also documented the instances when the students had not been able to use their knowledge, skills, and attitude gain from KSL. These constraints were characterized not as hindrances for students to contribute in agriculture but as challenges to be addressed to reach more people in the future.

Multiple responses to open-ended questions were clustered based on themes. The sample size in each table varies. With regard to the students' commitments, which were gathered during the

baseline survey, the sample sizes were 44 and 59 for the agri and non-agri students, respectively. All of the respondents were interviewed during the follow-up survey. The results showed that only 80 percent of the agri students and 92 percent of non-agriculture students had used the lessons of KSL. In addition, the sample size of those respondents who had shared the ICT-based tools and the reasons for not using KSL lessons were equal only to the samples who applied the same tools.

Limitations

The comparison between agri and non-agri students could have been more meaningful if both groups consisted of third and fourth year students only. Spreading the respondents across the different levels could introduce some variabilities in the research because of the age difference, which may have a bearing on the knowledge, attitude, and skills of the non-agri students.

RESULTS AND DISCUSSION

Demographic Profile of the Students

A total of 103 students participated in the baseline and follow-up surveys. There were more females (66%) than males (34%) in both agri and non-agri students (n = 75% vs. 25%, respectively). This sample showed the increasing involvement of females in a once male-dominated discipline.

The average age of the respondents was 20. Most of the agri students (77%) were 19–21 years old, whereas almost half (47%) of the non-agri students fell within the same age bracket. The youngest of the respondents were 16–18 years old (2% for agri students and 34% for non-agri students) while the oldest were 28–30 years old (3% for non-agri students). This means that the younger students could share the lessons they learned in KSL to more generations to come.

The respondents' courses were bachelor of science (BS) in agriculture (100%) for the agri students, and BS in business administration (69%) and in elementary education (31%) for the non-agri students. Agri students were in their third (36%) and fourth years (64%); non-agri were in their first (8%), second (10%), third (80%), and fourth (2%) years.

Note that this study covered only the course of the students as the independent variable. Further studies on the ages and year levels of the students could be explored later on.

KSL Presentations Fitted for Student

The agri students scored the video presentation as the most informative KSL technique (14%), whereas the techniques testimonies of agriculture champions, RD, RCM, and PRKB all had the same scores (11% each) (Table 1). Aside from the videos, the agri students scored technical extension techniques relatively higher than the other presentations. On the other hand, the non-agri students scored the testimonies of agriculture champions as the most informative KSL tool (27%). This is followed by ways of helping farmers (24%), and videos on the challenges to and advantages in agriculture (15%). In particular, the videos tackled the practical ways of helping farmers and emphasized that farming enables one to generate income while nurturing family relationships. Technical materials scored low relative to these presentations.

The students' answers were dispersed among the KSL presentations. ICT-based tools were informative for the agri students, but the non-agri group preferred the practical and nontechnical presentations. Technical extension techniques, such as RCM (16%) and MOET App (16%), were the most useful presentations for the agri students. This was followed by RD (14%), PRKB (14%), and PTC

Table 1. Respondent rating of most informative and useful KSL presentation

KSL Presentation	% Most Informative		% Most Useful	
	Agriculture (n = 44)	Non-agriculture (n = 59)	Agriculture (n = 44)	Non-agriculture (n = 59)
Technical Extension Techniques				
MOET App	2	2	16	8
RD	11	8	14	8
RCM	11	3	16	3
PRKB	11	3	14	3
RKB	9	7	2	7
PTC	9	–	11	5
e-Extension	5	3	5	3
Field tour to see farming machines and other innovations in farms	–	5	–	8
Farmers' contact center	–	–	11	–
Nontechnical Extension Techniques				
Videos on challenges in and advantages of agriculture	14	15	2	17
Testimonies of champions in agriculture	11	27	2	8
Being a link to farmers and farming information	7	2	3	10
Advocate saving rice, eating pigmented rice and rice substitutes (Be Riceponsible)	7	–	–	–
Careers in agriculture	2	–	–	–
Diversification, intensification, and integration of rice-based farming	–	–	2	–
Ways of helping farmers	–	24	2	19

Notes: PRKB = Pinoy Rice Knowledge Bank
PTC = PhilRice Text Center
RCM = Rice Crop Manager
RD = Rice Doctor
RKB = Rice Knowledge Bank

(11%). MOET App and RCM are diagnostic tools that determine the nutrients needed by rice plants. These ICT-based tools offer no new information, but the computation for nutrient management is made easy by these tools. For the non-agri students ways of helping farmers (19%) and videos (17%) were the most useful tools because these offered easy ways of involving oneself in agriculture.

ICT-based tools were useful for the agri students, whereas the practical and nontechnical presentations were the useful tools for the non-agri group. The most informative KSL presentations were the most useful as well. Testimonies and the Be Riceponsible campaign scored high in the criteria of "most informative," but these same KSL techniques scored low in the "most useful" criteria. The MOET App scored low as "most informative", but scored high as the "most useful."

It can be said that the students can easily grasp the content of the testimonies and the Be Riceponsible campaign because of their nontechnical nature. However, they were not seen as useful for the respondents' academics, unlike the MOET App. Although they may have gathered new information from the testimonies, they did not know how to apply them yet.

Commitment to Help

Out of the 44 agri students, 73 percent said they would share ICT-based tools (Table 2). It is assumed that they gained new knowledge and skills, and were willing to share these to their communities. The students considered their educational courses in enumerating the help that they could offer. Agri students were more likely to share knowledge, skills, and attitude in rice production to farmers, whereas non-agri students' commitments leaned outside rice production. They were more concerned with rice consumption (Be Riceponsible campaign with 47%), followed by sharing of ICT-based tools (37%), which is much lower than the agri students' 73 percent.

Non-agri students also committed to share the importance of agriculture/farmers (17%) to the people they would encounter. Accordingly, the KSL activity that they had participated in changed their perspective about agriculture as being traditional and laborious. They also said that because of the KSL activity, they were able to appreciate the efforts of farmers. With that, they promised to engage in agribusiness (15%), help farmers engage in agribusiness (7%), and teach farmers how to budget (2%). Similarly, these students were able to incorporate their bachelor's degrees with their commitments.

Table 2. Commitments of students to help farmers and to contribute to the agriculture sector

Commitments*	% Agriculture (n = 44)	% Non-agriculture (n = 59)
Share ICT-based tools	73	37
Advocate saving rice, eating pigmented rice and rice substitutes (Be Riceponsible)	27	47
Teach the importance of agriculture/farmers	9	17
Teach farmers the updated technology in rice farming	9	8
Apply proper farming practices	5	–
Link farmers to resources	5	–
Be a farmer	2	5
Plant food	2	2
Use the lessons learned in KSL in own farm	2	–
Develop varieties that will increase farmers' yield	2	–
Engage in agribusiness	–	15
Thank farmers	–	12
Patronize local agricultural products	–	7
Help farmers to engage in agribusiness	–	7
Protect nature	–	2
Teach farmers how to budget	–	2

Notes: *Multiple response
ICT = Information and communications technology
KSL = Knowledge sharing and learning

Mission Accomplished

Although some of the student respondents did not use KSL lessons, most (80% of agri students and 92% of non-agri students) engaged in agriculture. A total of 35 students made eight changes for their communities. Majority of them shared ICT-based tools (91%) and 11 percent of them disseminated the ICT-based tools brochure (Table 3).

Since most of the actions that had been done by the agri students to their communities had been related to ICT-based tools, the authors dissected the specific tools they had used. Results showed that they had shared PTC (38%), RD (38%), MOET App (19%), RCM (9%), and RKB (3%) (Table 4). Sharing the PTC number was an easy task. Although they were not able to answer technical questions, they at least linked people to experts. The same could be said of the non-agri students.

Some 17 percent also advocated "Be Riceponsible" by encouraging people to finish rice on their plates and not waste even a single grain (Table 3). They also encouraged people to eat pigmented rice or other crops. Meanwhile, 14 percent of agri students, together with their organizations, conducted a KSL activity for high school students. During interviews, students revealed that some of the high schoolers enrolled in agriculture classes in their senior high. Moreover, KSL lessons moved agri students to volunteer in agricultural community work such as weeding and repair of irrigation canals (3%). This proved that students found other ways to help aside from their committed actions or lessons learned during the KSL activity. In six months, the agri students managed to create changes in their communities. The study believes that these actions would soon create a ripple effect.

Meanwhile, out of the 54 non-agri students, 52 percent advocated practical ways to save rice (Table 3). Although many agri students shared ICT-based tools, only a few (17%) non-agri

Table 3. Actions of students for their communities

Actions*	% Agriculture (n = 35)	% Non-agriculture (n = 54)
Shared ICT-based tools (i.e., in class discussions and exercises, and during friendly conversations)	91	17
Shared Be Riceponsible	17	52
Reechoed KSL	14	–
Shared the information on improved farming practices (i.e., weeds, pest and diseases management, variety of seeds, use of LCC, no burning of rice hull, mechanization, mushroom production)	11	2
Disseminated brochures on ICT-based tools	11	–
Shared the importance of agriculture/farmers	9	22
Engaged in agricultural community work	3	6
Linked farmers to resources	3	2
Shared that there is money in agriculture	–	7
Encouraged people to engage in agriculture	–	4
Thanked a farmer	–	2

Notes: *Multiple response
ICT = information and communications technology
KSL = knowledge sharing and learning
LCC = leaf color chart

Table 4. ICT-based tools that students shared to their communities

ICT-Based Tools*	% Agriculture (n = 32)	% Non-agriculture (n = 9)
PTC	38	33
RD	38	11
MOET App	19	–
RCM	9	22
RKB	3	11
PRKB	–	22

Notes: *Multiple response

MOET App = Minus-One Element Technique App
PTC = PhilRice Text Center
PRB = Pinoy Rice Bank
RCM = Rice Crop Manager
RKB = Rice Knowledge Bank

students did the same. Their classmates had attended the same activity, which diminished their network of people to whom they could share the tools. Moreover, the tools are technical and require prior knowledge of agricultural concepts.

A few (6%) engaged in agricultural community work such as waste segregation, weeding, and repair of irrigation canals. Non-agri students said that KSL widened their perspective about the environment. Some of the interviewees claimed that after they had participated in the KSL activity, they started to care more about the environment.

The other techniques that the non-agri students shared were: linking farmers to resources (2%), thanking farmers (2%), sharing information on improved farming practices (2%), encouraging people to engage in agriculture (4%), and sharing that there is money in agriculture (7%). These actions support what Goemans (2014) claimed that "showcasing the career paths of successful young farmers and 'agripreneurs' as exemplary models can encourage youth to engage in the agricultural sector." In general, non-agri students kept their commitment to contribute to agriculture, albeit they did not use their courses to help farmers. Their commitment to teach farmers in the financial aspect of farming is yet to be fulfilled.

Aside from the types of actions done by the students, the study also considered their reach. A total of 663 family, friends, coworkers, farmers, students, and neighbors were reached by the agri students (Table 5). They reached more students than farmers, creating more intermediaries to help farmers. On average, one agri student reached 10 students and 4 farmers. Farmers were informed about ICT-based tools (133), improved farming practices (3), and received ICT brochures (5) (Table 6). Meanwhile, non-agri students mostly reached their neighbors (405) and their family members (180); only 90 farmers were reached. In six months, each non-agri student reached only two farmers on average, rarely interacting with them. They helped farmers by participating in agricultural community work and sharing of ICT-based tools.

On the other hand, agri students reached the most people when they reechoed the KSL activity to 250 high school students (Table 6). This is followed by sharing of ICT-based tools to family, friends, farmers, students, and neighbors. The non-agri students, on the other hand, reached the biggest number of people (380) when they participated in agricultural community work. Advocating for the people to save rice reached 213 families, friends, students, and neighbors. Only 49 families, coworkers, farmers, and neighbors were informed about

Table 5. Total and average number of people reached by the students

Kinds of People Helped	Agriculture (n = 35)		Non-agriculture (n = 54)		Total People Reached
	Total People Reached	Ave. No. of People Reached per Student	Total People Reached	Ave. No. of People Reached per Student	
Students	360	10	81	2	441
Neighbors	22	1	405	8	427
Farmers	142	4	90	2	232
Family	40	1	180	3	220
Friends	89	3	101	2	190
Others	10	0*	1	0*	11
Total	663	19	858	16	1,521

Note: *Average is less than 1

ICT-based tools, while 91 people were informed that there is money in agriculture. The number of people reached here is higher than sharing the ICT-based tools because sharing success stories in agriculture is easier to do for non-agri students.

Broken Promises

Fourteen students failed to apply the KSL lessons to their communities. The theory of involvement postulates that the "effectiveness of any policy or practice is directly related to its capacity to increase student involvement" (Astin 1984).

As such, could it be said that KSL was not effective in its goal to involve students in agriculture? The top answer of agri (56%) and non-agri (80%) students was that KSL lessons were not their priority to share because most of their time was allocated to academic requirements. Moreover, agri students (22%) said that they could not initiate help in their communities because they did not know any rice farmers. Meanwhile, the non-agri students (20%) said that they had a difficult time connecting KSL lessons with their courses.

CONCLUSIONS

This study arrived at three conclusions. First, knowledge sharing and learning (KSL) activity supplements students' skills and knowledge. Technical extension techniques best fit agri students, whereas nontechnical extension techniques are better suited for non-agri students. Second, consistent with their expressed commitments, agri students applied their technical skills to contribute to agriculture in their communities. Meanwhile, non-agri students resorted to practical and nontechnical ways to get involved in the said sector. They encouraged people not to waste rice and to value farmers. Both groups of students tapped more intermediaries instead of directly reaching farmers. Lastly, noninstitutional problems hindered certain students from being involved in agriculture. They either lacked free time, access to gadgets or internet, or interaction with farmers.

The study recommends using specific KSL activities to reach out to various students such that they can be more involved in agriculture. Non-agriculture students can also be tapped to be agriculture advocates. Further study can determine the specific ways of incorporating KSL activities to tertiary curricula.

Table 6. Total number of people reached by the students per action

Actions Done by the Students to Help	Agriculture (n = 35)							Non-agriculture (n = 4)							Grand Total
	*1	2	3	4	5	7	Total	*1	2	6	3	4	5	Total	
Engaged in agricultural community work	3	–	–	–	–	–	3	30	–	–	50	–	300	380	383
Shared ICT-based tools (i.e., in farmers' meetings, in class discussions, and exercises)	22	17	133	20	2	10	204	7	–	1	40	–	1	49	253
Reechoed KSL	–	–	–	230	20	–	250	–	–	–	–	–	–		250
Shared Be Riceponsible	4	20	1	10	–	–	35	111	69	–	–	10	23	213	248
Shared the importance of agriculture/farmers	3	50	–	–	–	–	53	18	12	–	–	–	79	109	162
Disseminated ICT-based tools' brochure	5	–	3	100	–	–	108	–	–	–	–	–	2	2	110
Shared that there is money in agriculture	–	–	–	–	–	–	–	–	20	–	–	71	–	91	91
Shared the information on improved farming practices (i.e., weeds, pest and diseases management, variety of seeds, use of LCC, no burning of rice hull, mechanization, mushroom production)	3	–	5	–	–	–	8	5	–	–	–	–	–	5	13
Encouraged people to engage in agriculture	–	–	–	–	–	–	–	6	–	–	–	–	–	6	6
Linked farmers to resources	–	2	–	–	–	–	2	2	–	–	–	–	–	2	4
Thanked a farmer	–	–	–	–	–	–	–	1	–	–	–	–	–	1	1
Grand Total	40	89	142	360	22	10	663	180	101	1	90	81	405	858	1,521

Notes: *Kinds of people reached: 1 = family; 2 = friends; 3 = farmers; 4 =students; 5 = neighbors; 6 = co-worker; 7 = others

ICT = information and communications technology KSL = knowledge sharing and learning LLC = leaf color chart

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