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Career Development and Attributes of Scholar Graduates from State Universities in Region 8, Philippines

Elmer A. Irene[1] and Milagros M. Greif[2]
[1]Samar State University, Catbalogan City, Philippines
[2]Cebu Normal University, Cebu City, Philippines

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ABSTRACT

Career success calls for certain individual attributes that would contribute to one's achievement and satisfaction of career goals, and build a harmonious relationship with everyone in the workplace. This study assessed the career development of scholar-graduates and their graduate attributes. The study employed a mixed method embedded research design involving participants based on the list from the science scholarship institute. The respondents totaled 81 which constitutes 37% of the total population. A modified Tracer survey instrument of CHED and a researcher-made interview guide were employed. Scholar-graduates were contacted through Group Chat messenger while others were informed through their batchmates' referral. Quantitative and qualitative data were collected and analyzed at the same time. Based on the findings, the career status of the scholars in terms of eligibility, training, advanced studies, and employment status are mostly in place and they have the ideal attributes geared towards reaching career success but a few have no eligibility, no advanced studies and are working at a non- S&T track. Moreover, scholar-graduates have understood and experienced these attributes at the university. Thus, together with other factors that help shape them, these are now being demonstrated and utilized in the workplace at a great extent. The notable finding includes scientifically-inclined attributes under competencies that are not shown as the dominant graduate attributes compared to other attributes along with values and qualities. It is then recommended to enhance the academic courses, maximize instructional strategies, and strengthen the scholarship program to enhance scientifically-inclined attributes among science scholars.

Keywords*: DOST scholar, career development, graduate attributes, scholarship, STEM*

INTRODUCTION

College degrees help figure out one's career but it does not end after getting the degree one should strive for continuous development. Career development is a holistic human process that requires ideal characteristics and a proper setting to reach career success.

Across the globe, scholarship as a strategy is used to entice students to take up courses and thereby produce graduates who are needed in a particular field or workforce. Previous studies aimed at determining key elements of a successful scholarship program found that a scholarship program was given as a workforce strategy and these are applied to a wide range of workforces. However, they found no clear evidence of whether the scholarship program enhances workforce retention (Foreman, Perry & Wheeler, 2015). On the other hand, a scholarship was seen as essential to support ongoing professional development (Hungerford and Hodgson, 2013).

A need to constantly check the status and job performances of scholars is a must to ensure the effectiveness of its program. Furthermore, it is necessary to look into the development of graduate attributes among Science, Technology, Engineering, and Mathematics (STEM) scholars being the future science and technology practitioners of the country who would inspire the young ones to take up science-related careers. Moreover, any influences and factors that contribute to career development can shed light on the current status of the scholars.

One way to investigate the factors that influence their science career is through graduate tracer study. For instance, one study among alumni found that personal, family, academic experiences, and academic teachers could reliably predict both choices of major and choice of science careers (Small, 2005) while race, gender, socioeconomic status, math interest, and science self-efficacy were the most important predictors of STEM career aspirations among high school students (Mau & Li, 2018). There are also contributory factors that lead to the development of graduate attributes among STEM students in which these intervening factors do not emanate from within the individual but are external in nature (Schneider, 2015). Moreover, Herok, Chuck, and Millar (2013) looked into the graduate attributes in science-based disciplines and investigated how these attributes were contextualized into learning objectives and activities together with how outcomes were measured and assessed. They recommended refocusing academic orientation to ensure that attained graduate attributes are aligned with the expectations of the university and wider community.

The Department of Science and Technology (DOST) in the Philippines through its human resources development agency, the Science Education Institute (SEI) provides government funding for scholarships, awards, and grants geared at developing, implementing, and supporting programs to promote science and technology culture in the country. In 2014, the agency's supported scholars reached 11, 117 which is 21% higher in number than in 2013. A year after, it even surged to 55% which now has 18,700 scholars (SEI-DOST Annual Report, 2015). With this growing number of scholars, aimed at achieving a good number of S&T professionals and leaders, a scholarship program is crucial in attaining this goal. Among the DOST scholars, the agency, DOST-SEI, conducted a tracer study involving scholar-graduates from 2000 to 2012 (SEI, 2015). A total of 3,426 scholar-graduates were tracked but this number only represents 15.3% of the total graduates from 2000 to 2012. This number does not represent the entire population and the result of this tracer study does not reflect the actual situation of all the scholar-graduates of the program. Moreover, the SEI tracer study only covers the employment status of the scholars but graduate attributes that are crucial in determining career success were not included.

One of the findings of the SEI tracer study is 8 out 10 of scholar-graduates were employed. Moreover, in terms of occupational fields, 40.5% were working in the Engineering field and 10.7% have jobs in the Technical or Technician fields. However, a significant percentage (15.5%) was working in non-S&T fields. Only a few were involved in Basic and Applied Sciences, 6.2%, and 7.9%, respectively. The same observation was also noted among those working in the academe/teaching (4.2%). This initial finding is in contrast to the goal of the scholarship which is to increase the workforce in S&T fields.

This study assessed the career development of the scholar-graduates and their attributes from region 8 in the Philippines. Specifically, this paper sought to discuss the developmental stages in the careers of the participants as well as the attributes and factors that helped shaped these characteristics.

MATERIALS AND METHODS

Research Design

The study employed a mixed method embedded design wherein quantitative data were obtained through a questionnaire while qualitative data were collected from the interviews and open-ended questions from the questionnaire. In an embedded design, quantitative and qualitative data are collected and analyzed at the same time, and qualitative data were used to substantiate the findings of the quantitative data (Muraleedharan, Ragavan, Bage & Devi, 2022). In this study, qualitative data were used to support or refute the findings of the quantitative data.

Research locale and participants of the study

The respondents were scholar-graduates of Bachelor of Science (BS) and Bachelor of Secondary Education (BSE) courses from the 10 state universities of region Eastern Visayas in the Philippines. Total enumeration based on the list provided was considered, however, not all have responded to the invitation to answer and some are no longer available. Since the focus of the study is to describe the status of the scholar-graduates connected to science education and especially working in the academe, the study delimits the

participants to scholars who took BS and BSE courses specialized in mathematics, biology, chemistry, physics, and other physical sciences only. There were 81 or 37% who responded but this number is within a credible response range of 30-40% for a graduate tracer study (Badiru & Wahome, 2016). Those who participated in the interview were labeled as participants and were coded as P1, P2, P3, etc. while those who answered the open-ended questions in the questionnaire were labeled as respondents and were coded as R1, R2, R3, etc.

Research Instruments

There were two instruments used in the study. The first one is a modified Graduate tracer survey instrument of the Commission on Higher Education (CHED) and the other one is a researcher-made interview guide for the follow-up interview with selected participants. The modified tracer survey instrument is composed of two parts. The first part includes personal information of the graduate, educational background, professional examinations passed, training and advanced studies taken, present occupation, employment status, and employment satisfaction. The items were either answerable by filling in the blank or to choose from the prepared options. An open-ended question is also provided to extract detailed information from the respondents. The second part is the graduate attributes section of the instrument. The graduate attributes are based on the graduate attributes by CHED stated in section 2 of CMO 46, series of 2012 which includes the knowledge and skills as well as the values and attitude towards work and professionalism ethics of the graduates. Further, these attributes were clustered based on the Outcomes-based Education typology of the CHED (CHED, 2014). These items are answerable by the Likert scale in terms of extent from 1 to 5. An option for other attributes is also provided in the questionnaire for the respondent to write. On the other hand, the interview guide was used for the follow-up interview focusing on the scholarship program and the development of graduate attributes. The answers of the participants were transcribed and coded using apriori themes which revolve around the impacts of the scholarship program, opportunities, and challenges encountered by the participants. This qualitative approach was used to extract information regarding the extent of influence and development of scholar graduates' attributes.

The instruments had undergone expert validation for content validity by inviting experts to scrutinize the content of the questionnaire and interview guide. Because it is a modified instrument, a reliability test for the first instrument was conducted. Test-retest reliability obtained a Pearson r value of 0.93 which is interpreted as a very high correlation. Further, the computation of Cronbach's alpha to measure internal consistency got a result of 0.852, which is interpreted as "good" internal consistency.

Ethical Consideration

The researcher asked for approval to conduct a tracer study among scholars of DOST-SEI from the director of SEI who obtained the list of scholars. The respondents were informed of the purpose of the study and they were invited to participate in the survey through Google forms and to be interviewed personally or by phone. The first page of the form asked for their consent and once they agreed, they may proceed to answer. The researcher administered the questionnaire personally or through electronic mail or social networking sites such as Facebook and Messenger. The data collection covered five months from November to March.

RESULTS AND DISCUSSION

Profile of the Respondents

The respondents come from 10 state universities in the region. The scope covers six provinces, four major cities, and two municipalities where these universities are located. Most respondents come from Eastern Samar, Northern Samar, Samar, Leyte, Southern Leyte and Biliran provinces, 38 or 46.9% come from Leyte while only two, or 2.5% from Northern Samar province. Of these 10 universities, two universities peg the highest number of respondents at 55 or 68% and 53 or 65%, respectively. Meanwhile, five universities have the least number of respondents with less than 10. In terms of the field of specialization, there is an almost equal number of respondents from the BSE and BS degrees with 40 and 41, respectively. Moreover, there are more respondents whose specializations are in mathematics, and biology and

fewer in physical science and chemistry. Females have the higher number with 48 or 59% while males are only 33 or 41% in the distribution. The majority are still single, with only four or 4.9% who are married, and the average age is 22.58 years old.

Career Development

This study examines the career development of scholar-graduates based on the professional examinations passed, training and advanced studies taken, employment position and status as well as one's employment satisfaction. Based on the data shown in table 1, the majority of the scholar-graduates have passed professional examinations such as Licensure Examination for Teachers, Civil Service Professional Examination, and Chemistry Board examination. However, about 21 or 25.9% have no eligibility yet in terms of professional examinations passed and some have not taken graduate courses or training related to their field of specialization.

Table 1. Professional Development

Professional Examination	**Frequency**	**%**
LET	34	42.0
CSC Professional	11	13.6
Chemistry Board Exam	7	8.6
Both LET and CSC Professional	8	9.9
None	21	25.9
Training / Advanced studies		
MA / MS	14	17.3
Training/s related to work	21	25.9
Specialized training/s	3	3.7
Ph.D. / EdD	3	3.7
Others (supplemental courses)	1	1.2
None	39	48.1

These scholar-graduates who have no eligibility will find difficulty in landing a government position that requires eligibility. For those already employed, it implies that the respondents are working on jobs not requiring eligibility, especially in private companies. On the other hand, some graduates deferred taking board examinations, especially in the case of BS Math and BS Biology graduates in which they do not have board examinations. Meanwhile, scholars who have graduated with Latin honors have acquired eligibility by PD no. 907. These grantees are supposed to work in the country for their return to service but without eligibility, they cannot be given permanent status in a government agency. This result conforms to the result of the SEI tracer study, only 8 out of 10 were employed and those graduates were working not aligned in the STEM track, thus, defeating the goals of the scholarship program of increasing the number of S&T practitioners.

The DOST scholarship provides training and seminars for scholars' continuing education, yet apparently, not all have availed of this privilege. Aside from that, one of the opportunities that have opened to scholars is the opportunity for graduate studies but it, too, was not availed by all respondents. One reason why graduates take a break and do not proceed to graduate studies is employment. Filipinos generally, after graduating from college want to earn and experience working and be able to establish themselves as employees rather than preparing themselves as future administrators through graduate degrees. This observation conforms to the findings of a study by Arar & Abramowitz (2017) that the reasons for graduate students are desires for self-fulfillment and further education, and professional development is of less importance.

Table 2. Employment Development

Occupation	Frequency	%
Junior high school teacher	32	39.5
Senior high school teacher	8	9.9
Chemist	7	8.6
Facilities engineer	1	1.2
College instructor	5	6.2
Government employee	1	1.2
Other jobs related to the degree	8	9.9
Other jobs not related to the degree	3	3.7
Status		
Regular or permanent	37	45.7
Temporary	13	16.0
Casual	3	3.7
Contractual	14	17.3
Self-employed	3	3.7
No job	11	13.6
Level		
Very satisfied	17	21.0
Satisfied	34	42.0
Somewhat satisfied	15	18.5
Dissatisfied	3	3.7
Very dissatisfied	1	1.2

According to the result of the tracer study of SEI, about 15.5% percent of the scholars are employed in a non-S&T track. The number is minimal but this finding violates the initial agreement of scholarship that scholars must be aligned in the S&T professions and must serve the country. However, when jobs in the Philippines are not available, scholar-graduates may tend to look for other jobs outside the country. The agency, DOST, on the other hand, assists the scholar-graduates to land a job in a government agency but if the scholar does not want to work in a public office, there is no clear sanction being imposed provided, however, that will render return of service to the country.

As to their employment, the majority of the respondents are employed with permanent status. Yet, despite having graduated as scholars, others are holding temporary, casual, and contractual status which comprise a total of 30 or 37% of the respondents. Yet, one notable finding is the unemployment of 11, or 13.6% of the respondents. It can be averred from this result that being a scholar is not a sure guarantee of permanent status. In a government agency, due to a limited number of plantilla positions, jobs are given either for contractual or job order employees. Likewise, scholars employed in state universities, usually begin as temporary or provisionary until they have finished their master's degrees. Only then, they can obtain their permanent position. Moreover, scholars who do not have eligibility cannot be given a permanent position in a government agency. In related tracer studies, it is found out that majority landed on the first job related to their course (Centillas, Lumbay & Larisma, 2017; Chavez et al., 2016). Meanwhile, in the tracer study of DOST-SEI, among the tracked scholar- graduates who are employed, only 82.2% are holding permanent positions and 13.8% are employed either as contractual or temporary employees (SEI, 2015).

In terms of employment satisfaction, the majority of the employed respondents are either very satisfied or satisfied with their employment while very few are dissatisfied to very dissatisfied in their current jobs while others did not respond to this question because they are not yet employed. Being satisfied in their employment implies work productivity and excellent performance. This result supports the matching theory (Flomo, 2013) that the degree they have finished in college matches the job they have taken and they are satisfied with their decision of career choice. However, when asked if they will leave the STEM track if there are bigger opportunities outside of STEM, participants have mixed reactions. Participants 1, 3, 4, 5, and 9 are in agreement that they will not leave STEM:

> *"No, I won't. Since I see this opportunity as the perfect spot for me, for my skills and my abilities." (P1)*

> *"As far as my preference and feelings now are considered, I will not leave my STEM profession. My conviction is doing the job that resonates with who I am and what I want will make me feel contented... a wealth infinitely more than a high-end desk with piles of dollars on it." (P5)*

Participants 2 and 6 did not deny that if given a chance for a greener pasture, they will leave STEM.

> *"I would say yes, I will do it not just for me but for the good sake of my family. I want to give them a good life and a house to live in." (P2)*

> *YES... I will take it. As a person, my number one aim is to help people that surround me. And if the answer to that dream is to leave STEM, I am willing to do it. (P6)*

Graduate Attributes

The graduate attributes of scholar-graduates are studied in terms of the extent how which they are introduced and experienced while the respondents are still in the university. The same attributes are asked in terms of how these attributes were demonstrated, assessed, and utilized in the workplace. Generally, all attributes whether these are demonstrated while they are still at the university or even when they are already at the workplace pegged on a scale of the great extent to a very great extent. There are some thoughts to ponder as to what are supposed to be the dominant attributes. In this paper, science graduates did not show scientifically-inclined attributes such as being innovative/inventive thinkers, critical/creative problem solvers, effective communicators and responsible stewards of nature to have pegged at a very great extent or the dominant ones. As science scholars, they are expected to be scientifically inclined yet, yet other attributes such as Values and Qualities were higher. The only attribute along with competencies that have surfaced as a dominant attribute during the assessment is an effective communicator attribute. Hence, it is important to look into how these attributes are introduced, developed, taught, and assessed to ensure that the right attributes are attained commensurate with the expectations of the wider community (Herok, Chuck & Millar, 2013).

The Extent of Attributes while still in the University

Introduced attributes refer to the attributes introduced by the HEI and incorporated into the academic courses. The attributes considered and used in the study are the graduate attributes by CHED stated in the section of CMO 46, series of 2012. These attributes are clustered based on the Outcomes-based Education typology (CHED, 2014). In this study, the extent of introduced attributes is measured in terms of how well they are understood by the respondents. On the other hand, experienced attributes are experienced or are observed by the respondents as done to them by other students, faculty, and staff in the university. All the clustered attributes are pegged to a great extent as introduced and experienced in the university. It can be averred that the SUCs where the scholars have graduated have done their job in complying with the mandate of CHED for outcomes-based education and producing the desired graduate attributes. The university community understands that graduate attributes are desirably developed during the student's time at the institution and, consequently, "shape the contribution they can make to their profession and as a citizen" (Bowden, Hart, King, Trigwell, & Watts, 2000).

Table 3. The extent of Attributes while still in the University

Introduced Attributes	N	Mean	SD	QD
Qualities	81	4.13	0.755	GE
Values	81	4.10	0.738	GE
Competencies	81	3.94	0.716	GE
Mean		4.06		GE
Experienced Attributes				
Qualities	80	4.26	0.663	GE
Values	80	4.15	0.658	GE
Competencies	80	4.14	0.686	GE
Mean		4.18		GE
Grand Mean		**4.12**		**GE**

Legend:	Scale	Qualitative Description (QD)
	4.21 – 5.00	*Very Great Extent (VGE)*
	3.41 – 4.20	*Great Extent (GE)*
	2.61 – 3.40	*Moderate Extent (ME)*
	1.81 – 2.60	*Some Extent (SoE)*
	1.00 – 1.80	*Small Extent (SME)*

In the university, professors have varied ways of contextualizing the attributes in their academic lessons. Some use inspiring stories integrated into the lesson, others use attributes to relate to practical lessons in life and provide activities that require the use of such attributes and other ways. Respondents answered the open-ended questions and these are some who answered:

> *"My professors have always taught us regarding the aforementioned attributes and have shown us how it is manifested contextually."(R1, R10, R21)*

> *"We always have an inspiring and inspirational story in every lesson."(R4)*

> *"By giving activities which require critical thinking skills and in which values can be integrated."(R28)*

> *"Most of our instructors gave activities that hone these attributes. Treating other people fairly, for instance...one of my instructors back then, have let us (his students) try the "Lifeboat exercise", then explained how important it is to be fair to everyone regardless of their economic status in life." (R34)*

Other respondents state that the attributes are incorporated in the discussions (R15, R29) others relate them to real-life lessons (R12, R18) while others contend that these attributes are embedded in the culture of the university such as honesty, ethical and work standards (R9, R12, R25, R31). Others admitted they could not observe them (R46, R71).

The Extent of Attributes in the Workplace

The ranking of the three clusters is the same in the introduced and experienced attributes, but all the means of the three clusters in the demonstrated attributes are pegged at a very great extent description as compared to a great extent only for introduced and experienced attributes. It can be averred from this finding that there is consistency from the introduced attributes, to the experienced attributes and now, in the demonstrated and utilized attributes. One notable result is the change of ranking from introduced, experienced, and demonstrated when respondents are asked about the assessed and utilized attributes. It can be noted that competencies are more emphasized than values in the workplace. Professional and personal development often require graduate attributes that are suited to the needs of the industry and society. Hence, it is a lifelong learning process which does not limit only to professional discipline-based knowledge but also through practice and commitment. Given the limited recall of knowledge of students and the rapid expansion of information, these skills are essential for professional and personal participation in society (Scoufis, 2000).

Specific Dominant Attributes in the cluster

Attributes under the values cluster such as treating others with dignity, respect of others' rights,

and responsible steward of nature were dominant attributes introduced and experienced by the respondents while they are still in the university. The first two is then demonstrated and utilized in the workplace. On the other hand, all specified attributes under the qualities cluster such as lifelong learner, work standard, and ethical standard are demonstrated, assessed, and utilized. Meanwhile, only one attribute under the competencies cluster namely, effective communicator appeared to be dominant in the assessed attribute only. As DOST scholars and science and math graduates, the dominant attributes are expected in the competencies cluster such as being innovative/inventive thinkers, critical/creative problem solvers, effective communicators, and responsible stewards of nature which are described as scientifically-inclined attributes. However, none of these appeared to be experienced in the university to a very great extent. This finding is supported by Batomalaque (2012) in his paper citing that Filipino student lack science culture due to curriculum deficiencies, a dearth of instructional materials, and teacher training. Moreover, graduate attributes such as technical and employability skills like communication are not competitive among the graduates (Hanapi & Nordin, 2014; Husain, Mokhtar, Ahmad & Mustapha, 2010). Thus, a need to strengthen the competencies such as effective communication, innovativeness, creativity, critical problem-solving, and informed decision-making among our scholar-graduates.

Table 4. The extent of Attributes in the Workplace

Demonstrated Attributes	**N**	**Mean**	**SD**	**Qualitative Description**
Qualities	76	4.54	0.55	VGE
Values	76	4.48	0.521	VGE
Competencies	76	4.42	0.548	VGE
Mean		4.48		VGE
Assessed Attributes				
Qualities	71	4.03	1.026	GE
Competencies	71	3.96	0.935	GE
Values	71	3.74	1.015	GE
Mean		3.91		GE
Utilized Attributes				
Qualities	62	4.37	0.7	VGE
Competencies	62	4.31	0.752	VGE
Values	62	4.22	0.714	VGE
Mean		4.30		VGE
Grand Mean		**4.23**		**VGE**

Table 5. Specific Dominant Attributes per cluster

While still at the University			**In the Workplace**		
Cluster	*Introduced*	*Experienced*	*Demonstrated*	*Assessed*	*Utilized*
Qualities		Lifelong learner	Lifelong learner	Work standard, Ethical standard	Ethical standard, Work standard
Values	Treating others with dignity Respect for other's rights Responsible steward of nature	Respect for others' rights Treating others with dignity	Respect for others' rights, Treating others with dignity		Treating others with dignity
Competencies				Effective communicator	

Concerning how these attributes are demonstrated in their workplaces, the respondents have averred that most of the attributes being utilized in their work are those needed in dealing with their co-workers, clients, and their immediate supervisor. Although scientific attitudes and values are necessary, human relationship is more emphasized in their actions. These scholar-graduates are expected to manifest scientifically-inclined attributes but evidently, they are still

learning at this stage and observing work and ethical standards. Innovativeness, creativity, informed decision-making, and effective communication is attributes that are wanting among our S&T professionals. However, there are still gaps between what the employer expects from them and what industry attributes are not demonstrated at the workplace (Griesel & Parker, 2009).

For the assessed attributes, at the workplace, standards are set as policies but some values are innate and there are no set standards for them. The literature identified similar attributes such as love of God, honesty, love for truth, perseverance and hard work are the values considered important in the job (Aguila et al., 2016; Dotong et al., 2016; Buenviaje et al., 2015). Meanwhile, being kind, compassionate, and showing empathy to others are not explicitly measured in the assessment tool for they are difficult to measure quantitatively. For instance, to assess compassion, there must be an agreed definition and adequate measures because there lacks of psychometrically robust measure for this attribute (Strauss et al., 2016).

When respondents are asked what attributes are least difficult to demonstrate, compassion, honesty, and other values are mentioned. Respondents 10, 11, 17, and 18 and many others have common answers.

"Compassionate. This is as easy as a walk in the park. We teach everyone to be compassionate. We can be compassionate anytime by giving a hand to others who need help." (R10, R17, R18)

"Honesty does not need to be assessed anymore. It has always been with me." (R11, R22)

For the dominant attributes such as qualities in the workplace, this result shows conformity to the ethical and work standards being encouraged in the workplace. In other related studies, they indicated that the graduate attributes very relevant to employability are communication, human and technical skills (Menez, 2014; Celis, Festijo & Cueto, 2013) critical thinking and problem-solving skills (Loquias, 2015) and professional integrity (Dimalibot et al., 2014). In addition, love of God, honesty, love for truth and perseverance and hard work are the values considered important in the job (Aguila et al., 2016; Dotong et al., 2016; Buenviaje et al., 2015).

Factors Contributing to Graduate Attributes' Development

The respondents identified five factors that helped developed their attributes. These are academic courses, extra-curricular activities, internship training, employment, and the DOST scholarship program.

Table 6. Factors Contributory to the Development of Graduate Attributes

Factors	No. of Responses	%	Rank
Academic courses	67	89.3	1
Employment	59	78.7	2
DOST scholarship	55	73.3	3
Extra-curricular activities	45	60.0	4
Internship	38	50.7	5

As shown in table 6, academic courses, employment, and DOST scholarship have the highest number of responses. The respondents spent four years in the university and those years, they are still in the stage where they are learning to develop skills, abilities, and competencies necessary for their future. Employment, DOST scholarship, and internship training are enabling factors outside the university that helped hone these attributes. This result implies the role of the university to provide varied activities to hone their full potential. The scholarship program has policies and mandates for them to follow to achieve the goals of the program. Likewise, in the workplace, policies are set for them to abide by, thus, scholar-graduates have to develop a set of attributes along with their work requirements.

As can be gleaned in table 6, problem-based learning is seen as the most cited instructional strategy that helped develop graduate attributes.

On the other hand, the least is small group projects. In a way, problem-based learning can be done through a small group project but the role of each member must be specified and each has a contribution to the solution of the problem. The disadvantage of a group project is when the other members do not cooperate with the task, the active member who is usually the leader takes all the responsibility for finishing the project. Hence, a small group project is viewed by respondents as the least factor that would develop ideal attributes.

Table 7. Instructional Strategies that help develop Attributes

Strategies	No. of Responses	%	Rank
Problem-based learning	64	88.89	1
Field trips and seminars	46	63.89	2
Laboratory activities	45	62.5	3
Lecture-based classes	43	59.72	4
Small group projects	35	48.61	5

Impacts of Scholarship

A scholarship brought positive effects on the lives of scholars. Aside from the free tuition, a monthly stipend, clothing, uniform, book, and other allowances are enjoyed by the scholars. Moreover, academic prestige and recognition in the university added to the impact of the scholarship on the respondents. Respondents expressed gratitude to DOST-SEI for the scholarship has made many impacts on their lives. As shown in Table 8, of the five top most impacts, financial help ranks first, followed by academic prestige and recognition.

DOST undergraduate scholarship offers a lot of opportunities during its scholarship period. RA 7687 also known as the "Science and Technology Scholarship Act of 1994" is four years while Junior Level Science Scholarships (JLSS) also known as the "Fast-Tracked Science and Technology Scholarship Act of 2013" is enjoyed by the scholars in their last two years of their schooling. During this period, DOST conducts training and seminars for the continuous education of grantees. Apart from these, internships, training, and seminars are also enjoyed by most respondents. Others have immediate employment after graduation. Such is the case of JLSS scholars who are designed to fill in the newly-opened positions for senior high school due to the implementation of the K 12 program. Scholars who wish to proceed to graduate studies can also avail themselves of another scholarship for the masters and doctorate levels. In addition, financial assistance is also extended through the other programs of DOST for scholars who travels abroad for research or presentation purposes.

Table 8. Impacts, Opportunities, and Challenges of Scholarship

Impacts	**No. of Responses**	**%**	**Rank**
Financial help	81	100.0	1
Academic Prestige	75	92.6	2
Recognition	75	92.6	3
Visibility to faculty and other students	70	86.4	4
Greater learning opportunities	25	30.9	5
Opportunities	**No. of Responses**	**%**	**Rank**
Internship training	65	80.3	1
Attendance to training and seminars	64	79.0	2
Employment	35	43.2	3
Graduate studies	22	27.2	4
Travel abroad	2	2.5	5
Challenges	**No. of Responses**	**%**	**Rank**
Many school requirements	55	67.9	1
High expectations of a scholar	45	55.6	2
Delayed allowance	35	43.2	3
Financial management	30	37.0	4
Family pressure	26	32.1	5

Challenges Encountered by Scholars

The benefits and privileges of scholarship availed do not come without challenges and difficulties scholars must hurdle and overcome. Respondents felt that one of the odds of being a scholar is the many requirements and projects to accomplish. They cannot refuse or feel relaxed for their grades are at stake. They have to maintain the grade requirement and pass the subject to continue with the scholarship. Hence, the many school requirements are mostly cited as a challenge, followed by high expectations which put pressure on them. The third is when the stipend does not come on time. Others have trouble managing their allowance in which sometimes they overspent or expect the allowance to come but it fails on the expected date, so depression sinks in.

Respondents possess qualifications fitted for a scholar-graduate. They have learned the competencies taught to them, and they understood, experienced, and learned these attributes needed for life outside the university. In the workplace, they are demonstrating and utilize these attributes to perform their tasks and to foster harmonious relations with their colleagues and clients. Moreover, there are interrelated factors that helped develop attributes of the scholar- graduates. In addition, the development of these attributes does not rely solely on the influences and efforts of the university but on other factors which play crucial roles including but not limited to scholarship, employment, and interaction with colleagues which helped in honing the attributes of the respondents.

CONCLUSION AND RECOMMENDATION

The career development of scholar-graduates consisted of a multifaceted process that requires ideal graduate attributes that are honed through the different stages of one's career stages including in the university and the workplace. Graduates' profiles in terms of eligibility, advanced studies, and employment status are mostly in place and they have the ideal attributes geared toward reaching career success. Moreover, scholar-graduates have been taught and experienced the attributes at the university. Thus, together with other factors that helped shape these attributes, they are now demonstrating and utilizing them in the workplace. However, not all have acquired desired qualities for some have no eligibility, no advanced studies undertaken, and not working in S&T-related jobs. Scientifically-inclined attributes under Competencies, although still to a great extent, yet did not come out as the dominant attributes compared to Values and Qualities attributes. It is then recommended to enhance the academic courses, maximize instructional strategies, and strengthen the scholarship program to enhance scientifically-inclined attributes among science scholars.

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