# Molding the S&T Workforce: Analysis on the Implementation of Republic Act 7687 Among University of the Philippines Los Baños Undergraduate DOST Scholars

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## Abstract

*In the Philippines, the lack of access to education of the youth is seen as one of the salient concerns of the economy, hence, affects the socio-economic development of the country. This problem occurs from the poor implementation of policies and programs and lack of government support and initiatives which evidently are the root causes of the slow improvement of the Philippine education system. This study aims to assess the implementation of Republic Act 7687 or the act that institutionalizes the science and technology scholarship in the country in relation to the actual experiences of the UPLB undergraduate DOST scholars. In support to this, the actors involved in the policy implementation including the DOST-SEI and UPLB-OUR were also considered in this study. The specific issues and challenges towards the DOST scholarships were also discussed in this paper to help in improving the effectiveness of the Republic Act 7687 as a policy. To achieve the objectives of the study, the researchers employed both survey and structured interview research designs. Results showed that, in general, the student respondents are satisfied with how RA 7687 is being implemented at UPLB. However, the long and stringent process of the university's registration and late issuance of Form 5 and delay in the release of scholars' stipend/allowance became the major concerns of the respondents. Thus, researchers provided specific recommendations for DOST-SEI and UPLB-OUR to improve their system and process, specifically in managing the RA 7687 or the DOST Scholarship Program.*

**Keywords:** *DOST-SEI, Key Informant Interviews, Convenient Sampling, Republic Act 7687, UPLB-OUR.*

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# Introduction

Science, Technology and Innovation (STI) portrays a vital role in driving the economic growth of the Philippines as well as in addressing global issues and challenges. However, in the 2019 Global Competitiveness Index, the Philippines ranked 64th out of 141 countries and in terms of innovation capability it ranked 72nd with only 38% performance. According to the Philippine Development Plan (PDP) 2017 to 2022, the slow progress of the Philippines in innovation is caused by a weak STI culture, low government spending on Research and Development (R&D) and S&T activities, the problem in S&T human resources, lack of employment opportunities and maintaining S&T human capital, non-

substantial linkages among the actors in STI environment and weak STI infrastructure.

Moreover, the study of Albert et al (2020) proved that S&T workers are essential in supporting a country's economic growth. Thus, to boost S&T manpower, there is a need to: (1) provide services in support to current and future S&T workers, (2) encourage the young population to go into the S&T fields, and (3) offer financial assistance or scholarships.

To address these gaps/issues/challenges, there is a need to strengthen the Republic Act 7687 or the Science and Technology Scholarship Act of 1994 which is being implemented by the Department of Science and Technology - Science Education Institute (DOST-SEI). With the goal of enhancing the Science and Technology workforce, RA 7687 is provided to academically talented and competent students from poor families or those who belong to a low socio-economic status in society. DOST Scholarship qualifiers are required to pursue fields in sciences, engineering, other applied sciences, science and mathematics teaching or STEM-specialized courses in colleges/universities.

DOST-SEI has conducted various studies to assess the impact of its programs on scholars and beneficiaries. The research titled, "Most Significant Change Stories of Beneficiaries of the DOST-SEI Programs and Projects: A Qualitative Evaluation Study" identified the factors that contributed to the success of individuals who received scholarship grants, participated in teacher training programs, and were involved in promotion programs on science, technology, engineering, and mathematics (STEM) among youths. The Tracking of Actual Career Experience Report (TRACER) Study among DOST-SEI S&T Scholar Graduates (Undergraduate Level), on the other hand, was conducted to know and document the current situation (employment location and status) and professional achievements and relevant contributions both in the local and international arena of graduated DOST scholarship grantees.

It was observed that the DOST-SEI has focused its studies on the impact and effectiveness of the Scholarship Program and there is no assessment that focuses on the implementation of the Program at the University/College level. Especially, considering that there are reports that scholars of DOST experienced delays in the disbursement of monthly stipends and allowances which caused these students to not afford meals on some days, payment for dormitory bills also get delayed, some resulted in loaning or borrowing money from others to sustain their expenses, and others result to getting part-time jobs (Yang, 2019; Del Rosario, 2020). This conflicts with the goal of the program which is supposed to help cover the students' daily expenses on rent, utilities and basic necessities.

## Objectives of the Study

This study presents the status quo and past implementation of Republic Act 7687; hence, the researchers aim to distinguish the effects of this policy or program on the students who are the stakeholders of this study. Also, the following objectives will guide the researchers to give the direction of the results of this study:

1. Investigate how well the implementation of RA 7687 is from the perspective of the scholarship beneficiaries;
2. Investigate how well the implementation of RA 7687 is from the perspective of the actors involved in the implementation process (i.e. DOST-SEI and UPLB);
3. Identify the bottlenecks in the implementation of RA 7687; and
4. Provide policy recommendations to improve RA 7687

## Research Methodology

The study employed both survey and structured interview research designs to assess the implementation of Republic Act 7687 among UPLB undergraduate DOST Scholars.

### Respondents of the Study

The survey respondents consisted of 17 DOST undergraduate scholars from UPLB. The Key Informant Interview, on the other hand, includes SEI representative, Senior Science Research Specialist at the DOST-SEI and UPLB-OUR

staff, Students Records Evaluator II at the UPLB Office of the University Registrar.

## Sampling Procedure

Since the study primarily dealt with the assessment of the implementation of RA 7687, respondents of this study were purposively selected based on the following criteria:

1. Past or current undergraduate student in UPLB; and
2. Past or current beneficiary/recipient of DOST Scholarship Program (RA 7687)

Convenience sampling method, which is a non-probability sampling technique, was adopted to select the survey respondents for this study.

## Research Instrument and Data Gathering Procedure

A survey questionnaire was primarily used as the study instrument. It consisted of three (3) parts - respondents' profile, respondents' perception on the implementation of RA 7687 and respondents' satisfaction on the services provided by DOST-SEI and UPLB with regards to RA 7687. The scholars' satisfaction was answered using a five-point Likert Scale. The survey was administered to respondents online through google forms. Another instrument used was an interview guide for the key informant interviews. Questions were crafted based on the knowledge and experience of key informants.

## Procedure for Data Analysis

Descriptive statistics was used to determine and analyze the respondents' profile, their satisfaction on the services provided by DOST-SEI and UPLB and their perception of the overall implementation of RA 7687. The data gathered were analyzed using frequency counts, percentages, and median scores. Descriptive statistics use the description as a tool to organize data into patterns that materialize during analysis.

Moreover, according to Boone (2012), descriptive statistics recommends the use of mode or median score for central tendency and frequencies for variability in analyzing ordinal measurement scales. Since, this study used a five-point Likert scale, which is considered as ordinal data, the median score was used.

The statistical analysis is based on the interpretation of Pimentel (2010) for Likert scaling data analysis. The latter suggested this table to eliminate the bias as each interval has a uniform difference.

Table 1. **Likert Scale Interpretation**

| Interval | Difference | Description |
|---|---|---|
| 1.00 - 1.79 | 0.79 | Strongly Disagree |
| 1.80 - 2.59 | 0.79 | Disagree |
| 2.60 - 3.39 | 0.79 | Neither Agree/ Disagree |
| 3.40 - 4.19 | 0.79 | Agree |
| 4.20 - 5.00 | 0.8 | Strongly Agree |

## Review of Literature

### Benefits and Importance of Scholarship Program

Scholarship becomes the bridge of those economically deprived families and disadvantaged groups to have access to education. Financial instability is one of the factors why students are deprived of quality education. Education was perceived as an investment for the future as it will provide opportunities to alleviate the lives of scholars, and will also contribute to our country's economic development (Morata, 2022).

Educational attainment has always been a significant factor in job considerations. College education, in particular, is considered by institutions as the most important part of one's educational journey. In a study conducted in the United

States of America, it was found that those with higher education earn more than those who do not. According to Crissey (2009), there was a disparity between the earnings of those who have different degrees, the earnings of a college graduate were 74% higher than that of a high school graduate while someone who has a graduate degree earned 31% more than those who have a bachelor degree.

Even after knowing the impact of higher education on an individual's socioeconomic well-being, the accessibility of this type of education was not available to everyone who desires to pursue it. Those who came from lower-income families with parents that did not have access to higher education were discovered to have a lower chance of finishing high school and entering college (Kauffman, Alt and Chapman 2004). A previous study done by the World Bank showed that the enrollment rate for college education had grown more for youths whose households were in the top 20% of the socioeconomic bracket than those potential students who were in the bottom 80% or those who were in the lower income bracket (Darvas et al, 2017).

Given the high demand for tertiary education as a means to secure one's socioeconomic standing, various organizations then came up with the concept of scholarships to provide aid to those who seek to have a chance in pursuing a college education and beyond. Scholarships were used to bridge the gap between those who were in the lower income bracket with the opportunity to enroll in college and attain a diploma to bolster their chance of obtaining a job that would provide them with a high wage.

**The Science, Technology, Engineering and Math (STEM) Education in the Philippines**
STEM strand is one of the requirements to be a DOST Scholar. Many Filipino students especially from the secondary level (Grade 7 to Grade 12) consider taking STEM-related courses or strands to be qualified for the RA 7687 or S&T Scholarship. These students usually come from the poorest of the poor families in the country.

In reality, STEM students face academic challenges from basic to advanced mathematics, hard sciences, and engineering and technology subjects that are academically challenging, especially those high school students who do not have enough intellectual capacity and problem-solving skills. According to McCharen and High (2020, pp. 41), majority of the K to 12 students choose the STEM strand because of its assumed career opportunities and number of available scholarships. Also, enrollment and persistence rates in STEM-related subjects in secondary schools are higher compared to the non-STEM related strands such as HUMSS, ABM, and GAS.

Besides the career motivations in pursuing STEM-related subjects or programs, another consideration is that skill-based jobs related to S&T are more available or prominent in the country. Perhaps the K to 12 programs of the Department of Education (DepEd) has given choice possibilities for our high schools in the country. However, it is yet debated by Filipino scholars and economic analysts how the K to-12 programs impacted the Philippine's education and employment performance.

**Republic Act 7687 and its Impact on the Philippine Economy**
RA 7687 was enacted to build up engineers, scientists, and technicians who will become professionals in their fields to enhance the Science and technology workforce. Scholarships will be given to those financially unstable families who cannot afford to fund the education of their talented and deserving sons and daughters. Specific qualifications must be met before the student is considered a scholar (Chan Robles, 2005). As of September 2022, there are 8,777 undergraduate (Figure 1) DOST scholars in private and state universities and 5,969 qualifiers for the RA 7687 program (Figure 2).

It was also provided in the data from DOST through the freedom of information (efoi) that the number of scholars will escalate as there are some qualifiers who are still complying for the scholarship grant requirements (DOST-SEI, 2022). Despite the increasing number of scholars, Cuyco (2019) mentioned in her article that the allocated budget for DOST is decreasing since 2018. As a matter of fact, the 2020 budget of the department had been cut by 80 million.
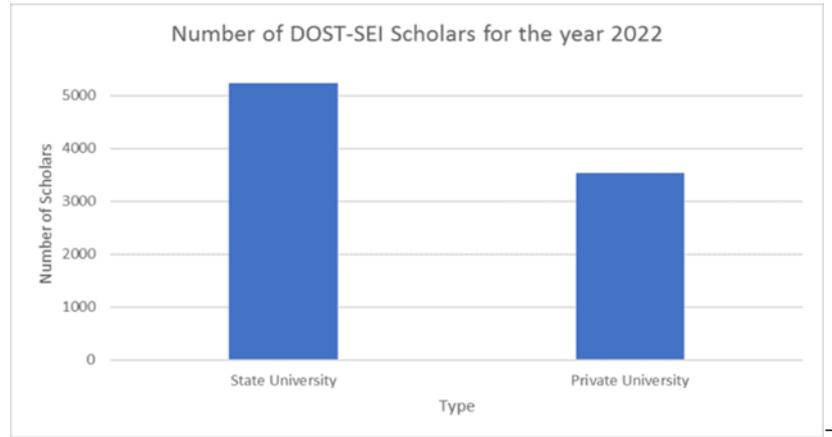
Figure 1. **Number of DOST-SEI Scholars for the year 2022**
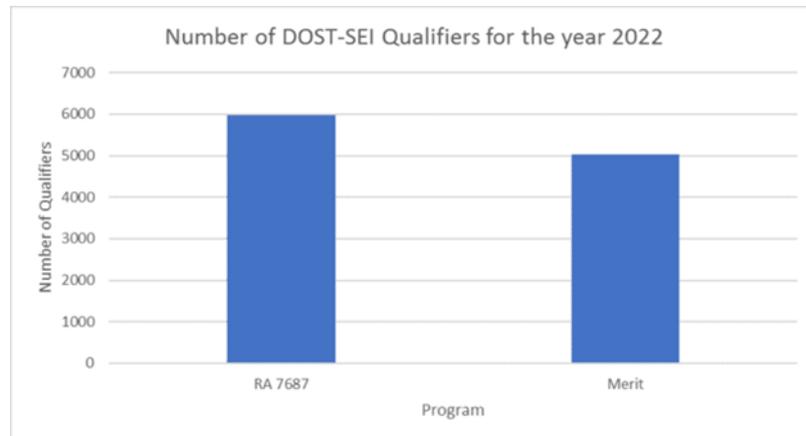Data Source: *Based on the data provided by the DOST SEI (eFOI)*



Figure 2. **Number of DOST-SEI Qualifiers for the year 2022**
Data Source: *Based on the data provided by the DOST SEI (eFOI)*

Capistrano et al. (2020) stated that Science, Technology and Innovations are the primary catalysts for economic growth. Compared to other countries such as Finland and Singapore, Philippines has a fewer number of scientists. As a support to the growing needs of scientists in the country, the Scholarship Act of 1994 was then promulgated. Scholars were evaluated using the Tracking of Actual Career Experience Report (TRACER), which enables the DOST to monitor the scholarship grantees' contributions to society and also their career development.

Aside from the grants that the students received from the DOST scholarships, the department also conducts training for the scholars to enhance the latter's volunteerism, and patriotism and be the catalyst for change such as the Comprehensive Community-Based Disaster Risk Reduction and Management Training. A hands-on experience about first-aid and other risk reduction training was taught to the scholars. Its goal is to have a scholar per community that will guide the precautionary measures in times of disaster. Furthermore, DOST wants to imply that intelligence also needs a kind heart in order to produce students that have care for their community that will contribute to the development of our nation (DOST-SEI, 2018).

**Impacts of S&T scholarship programs for Filipino students**
The study of Albert et al (2020) proved that S&T workers are essential in supporting a country's economic growth. Thus, to boost S&T manpower, there is an excellent need to (1) provide services in support for current and future S&T workers, (2) encourage the young population to go into the S&T fields, and (3) offer financial assistance or scholarships.

Along with providing scholarships, there is also a need to understand other factors that affect the supply of S&T workers. For instance, why are there fewer female S&T graduates entering the workforce as compared with males? Why do some S&T graduates (E.g. Mathematics and Statistics) leave the workforce earlier than other S&T graduates? Such issues must be studied to gather behavioral insights and create policies to encourage these people to be part of the S&T community. Moreover, the study argued that the timing of scholarships is very important. Considering that the highest tendency to enter the S&T fields is around the tertiary level, it was recommended that financial support should be concentrated at this level.

Considering these recommendations, DOST-SEI has conducted various studies to assess the impact of its programs on scholars and beneficiaries. The research titled, "Most Significant Change Stories of Beneficiaries of the DOST-SEI Programs and Projects: A Qualitative Evaluation Study" identified the factors that contributed to the success of individuals who received scholarship grants, participated in teacher training programs, and were involved in promotion programs on science, technology, engineering, and mathematics (STEM) among youths. Results of the study revealed that the majority of the interviewed scholars have described the scholarship program as an enabling mechanism for giving them the opportunity to pursue higher education.

Although the scholarship program was implemented in compliance with RA 7687 (amended by Republic Act No. 8248) or the Science and Technology Scholarship Act of 1994 and international loans, the DOST has provided opportunities for talented but unprivileged Filipino youth to study and pursue professions in STEM. Most of the participants were able to build careers in STEM while others pursued careers in different fields due to varied societal factors (DOST-SEI, 20021).

The TRACER Study among DOST-SEI S&T Scholar Graduates (Undergraduate Level), on the other hand, was conducted to know and document the current situation (employment location and status) and professional achievements and relevant contributions both in the local and international arena of graduated DOST scholarship grantees. Results of the study showed that the Natural Sciences and Engineering and Technology has the highest concentration of scholar-graduates tracked (3 in every 10 scholars). It is followed by Education (with about 2 in every 10 scholars) while veterinary and agricultural sciences had the lowest concentration. About 7 in every 10 scholars were employed while one in every ten scholars was jobless. The reason cited by those who are still not working was because they are fresh graduates (64.7%).

Moreover, 90% of the scholars were employed in the S&T fi-elds, primarily in the Education Sector. Nine out of 10 scholars were working locally, with the majority of them holding permanent positions, mostly in the academe (government institutions) and private sectors. The scholar-graduates in the government sector and those in the private sector were on contractual status. Approximately 8 in every 10 scholars had a professional occupation, while only 2 in every 10 were classified as technicians or associate professionals. Completed Research/Patent/Innovation, Professional recognition/award and Publication articles were the top three pertinent contributions cited by the scholar-graduates.

**Cases, Dilemmas and Feedback of Scholars on DOST Scholarship Programs**
As revealed in the DOST-SEI Exit Survey in 2014-2015, the problems and challenges faced by DOST scholars included delayed release of allowance, failing grades, strict professors, delay in dissemination of information, difficulty in adjusting to College life and financial issues.

To address these issues/concerns, the scholar respondents recommended strategies to help improve the implementation and management of the DOST-SEI Scholarship Program. Among the recommendations are immediate release of allowance, preferably every first week of the month; increase the allowance and provide additional grants for thesis/dissertation, graduation fees and PRC Board review; conduct regular scholars' meetings and capacity building activities such as trainings and seminars; improve dissemination of information to scholars; and lower the

required General Point Average (GPA)

These examples showed how scholarship-winning scholars gained the respect of others and served a model student, especially those around them. The followings are scholars' testimonials according to DOST-SEI Exit Survey (2014-2015):

"Since I became a DOST scholar, my parents no longer worry about whether I can complete my studies, but also about my stipend and other expenses. Thanks to my scholarship, they are able to have money for my brother to go to college. At the same time, in my It has driven my two younger brothers to become more studious and inspired academically, as they said they want to be DOST scholars like me. It is an honor to be called a DOST Scholar, in our community I am one of those who have received a DOST-SEI. The scholarship has inspired people around me, and several others are currently receiving scholarships".

> *"I can inspire other people to know that poverty really isn't a barrier to getting an education and getting a degree."*

## Results and Discussion

The study chose different respondents per sector to see how effective the scholarship of DOST is on its stakeholder. Students, a DOST Science Education Institute employee, and an employee of the UPLB registrar's office were chosen as primary respondents. The student respondents answered an online survey which consisted of questions to evaluate how well the scholarship is implemented and follows its mandate. The DOST-SEI representative was interviewed online while the office of the registrar representative was approached via face-to-face to know their insights on the implementation of DOST Scholarship Program.

The total number of student respondents in the survey is **17**.

### Profile of the Respondents

Table 2 shows the socio-demographic characteristics of the respondents as well as their respective universities. Their age ranges from 19 to 22 years old with the majority being 20 years old (58.8%). The highest representation came from the College of Arts and Sciences (CAS) which has six in total (35.3%), while the least number of respondents came from the College of Agriculture and Food Science (CAFS) with only one respondent (5.9%). The research team experienced difficulty in finding students who qualified the respondents' criteria for this study, hence, the limitation of this study is that there were only a small number of respondents and not all the colleges were represented.

Table 2. **Sociodemographic profile of the respondents**

| Characteristics | Frequency (n=17) | Percentage |
|---|---|---|
| **Ages** | | |
| 19 | 4 | 23.5 |
| 20 | 10 | 58.8 |
| 21 | 1 | 5.9 |
| 22 | 2 | 11.8 |
| **Colleges** | | |
| CEAT | 4 | 23.5 |
| CAS | 6 | 35.3 |
| CAFS | 1 | 5.9 |
| CEM | 4 | 23.5 |
| CHE | 2 | 11.8 |

The study tried to get both the perspective of past and current DOST scholars but were unable to find enough of past scholars to answer the survey. As can be seen in Table 3, 16 (94.1%) students that answered the survey were current DOST scholars while only one (5.9%) was a past scholar.

Table 3. **Type of DOST Scholars**

| Type of Scholar | Frequency (n=17) | Percentage |
|---|---|---|
| Current | 16 | 94.1 |
| Past | 1 | 5.9 |

**Respondents' Perception on RA 7687 (DOST Scholarship Program)**

The respondents indicated the strengths and weaknesses of the DOST scholarship, eight (8) out of the 17 students indicated the strengths of the DOST scholarship as follows: 1. Stipends and allowances included in the DOST scholarship; 2. Eases the financial burden of their parents/guardians; and 3. Provides better opportunities after graduation. The collected responses to this question also indicated the weaknesses of the DOST scholarship based on the personal experiences of the respondents. These include: 1. The pressure of maintaining grades due to UPLB's difficult academic standards; 2. Delayed receiving of stipends and allowances; and 3. Limited slots for scholars. The researchers also compared the indicated strengths and weaknesses of DOST scholarship from the responses of DOST-SEI's representative —the delayed issuance of stipends and allowances is admittedly one of the problems that DOST-SEI have to address at present. Limited slots for prospective scholars is also a major issue that can be rooted from budgetary constraints of DOST.

As to the overall perception of the 17 respondents towards the DOST scholarship, they indicated that the DOST scholarship is the best science-based scholarship in the country. The respondents further indicated that STEM education should be promoted better in the country and DOST enables poor students to avail of education. Hence, despite the lapses of DOST scholarships—this program has helped numerous poor students in the Philippines.

**Respondents' Satisfaction on the Implementation of RA 7687**

Nine (9) statements were asked to evaluate the respondents' satisfaction on the implementation of DOST Scholarship Program (RA 7687). Below are the responses of the scholars.

*Statement 1: The DOST scholarship is to your satisfaction (in terms of allowances, stipends, benefits, services)*

The satisfaction of the respondents on their scholarship, in general, was very high and can be marked as a positive response. It can be seen on Table 4 that 10 students (58.8%) rated that they were very satisfied with the service provided by the DOST scholarship while six students (35.3%) rated that they were satisfied. There was also one student (5.9%) that responded that he/she was dissatisfied with the scholarship. The main reason for the overall positive satisfaction rating of the students to the DOST scholarship was because the stipend or the allowance that was provided to them by the scholarship were enough to provide for their needs while they were studying in the university. Additionally, the respondents stated that the stipend they received helped alleviate the burden on their parents regarding their college education.

Table 4. **Satisfaction rating of DOST Scholars on the program**

| Type of rating | Rating | No. of Respondents | Percentage |
|---|---|---|---|
| Positive | 5 | 10 | 58.8 |
| | 4 | 6 | 35.3 |
| Neutral | 3 | - | - |
| Negative | 2 | 1 | 5.9 |
| | 1 | - | - |

All of the respondents share the same sentiments, opinions, and perceptions on the impacts of DOST scholarships

and all are positive. Their responses indicated that: 1. DOST stipend really helps my family financially; 2. DOST is the primary source of my income for college expenses; 3. DOST helps me afford my primary needs. Evidently, the 17 respondents support the effectiveness of DOST stipends in terms of financial aspects.

*Statement 2: The deliverables (i.e allowance, stipends, etc.) provided by DOST scholarship arrives on time*

Considering that the stipend/allowance was the main reason why the respondents rated the scholarship high, the next question asked was if the financial support arrived on time or were there any other issues that prevented them from receiving the stipend. Table 5 shows that there was a split between those who rated positively or those that agreed that the DOST scholarships gave them their allowance on time.  Seven (41.2%) agreed on the statement while six (35.3%) were neutral on the issue, and there are four (23.5%) who rated negatively and said that their allowance does not arrive on time.

Table 5. **Satisfaction rating of the deliverables of the DOST Scholarship**

| Type of rating | Rating | No. of Respondents | Percentage |
|---|---|---|---|
| Positive | 5 | 1 | 5.9 |
| | 4 | 6 | 35.3 |
| Neutral | 3 | 6 | 35.3 |
| Negative | 2 | 3 | 17.6 |
| | 1 | 1 | 5.9 |

*Statement 3: The DOST staff or employee handling your scholarship treat you with respect and kindness*

The DOST staff responsible for communicating with the scholars were also rated by the respondents. The result shows a positive rating for the staff as the scholars were treated with respect and kindness when interacting with the DOST staff as can be seen in the Table 6.

Table 6. **Satisfaction rating on the staff of the DOST Scholarship**

| Type of rating | Rating | No. of Respondents | Percentage |
|---|---|---|---|
| Positive | 5 | 9 | 52.9 |
| | 4 | 8 | 47.1 |
| Neutral | 3 | - | - |
| Negative | 2 | - | - |
| | 1 | - | - |

*Statement 4: They implement the rules and policies fairly for DOST scholarship programs*

DOST scholars agreed to the statement that the scholarship's rules and regulations were fairly implemented. The 41.2% and the interpretation for the statement 4 based on the Likert Scale table (see Table 1) depicts that the staff objectively implies the guidelines.

Table 7: **Fair implementation of the DOST Scholarship's rules and regulations**

| Type of rating | Rating | No. of Respondents | Percentage |
|---|---|---|---|
| Positive | 5 | 7 | 41.20% |
| | 4 | 7 | 41.20% |
| Neutral | 3 | 2 | 11.80% |
| Negative | 2 | 1 | 5.90% |
| | 1 | 0 | 0.00% |

*Statement 5: The staff or employees DOST are able to answer any questions/inquiries regarding DOST scholarships*

Aside from being treated with respect and kindness, the respondents were also asked if the DOST-SEI staff answer their queries and provide the needed information clearly and understandable. It can be seen in Table 8 that the staff were able to answer any queries that the students have. The ratings that the respondents gave were overall positive regarding if the staff were able to answer the questions. The staff were able to provide clear and sufficient information for the students regarding the requirements and procedures for the scholarship.

Table 8. **Satisfaction rating of the ability of the staff to answer any questions**

| Type of rating | Rating | No. of Respondents | Percentage |
|---|---|---|---|
| **Positive** | 5 | 6 | 35.3 |
| | 4 | 5 | 29.4 |
| **Neutral** | 3 | 2 | 11.8 |
| **Negative** | 2 | 3 | 17.6 |
| | 1 | 1 | 5.9 |

*Statement 6: The staff or employees of DOST provide clear and sufficient information regarding the scholarship requirements and procedures*

It can be seen in Table 9 the evidence that the respondents were satisfied with the information that they received from the DOST staff as they rated the employees positively.

Table 9. **Satisfaction rating of the ability of the DOST Staff to provide adequate and informative answers**

| Type of rating | Rating | No. of Respondents | Percentage |
|---|---|---|---|
| **Positive** | 5 | 7 | 41.2 |
| | 4 | 7 | 41.2 |
| **Neutral** | 3 | 2 | 11.8 |
| **Negative** | 2 | 1 | 5.9 |
| | 1 | - | - |

*Statement 7: Any information regarding DOST scholarship is easy to obtain through their online and/or in person platforms*

Table 10 shows that the respondents were in agreement that the information regarding the scholarship was easily accessible through online platforms or in person.

Table 10. **Information was easy to obtain**

| Type of rating | Rating | No. of Respondents | Percentage |
|---|---|---|---|
| **Positive** | 5 | 4 | 23.5 |
| | 4 | 7 | 41.2 |
| **Neutral** | 3 | 3 | 17.6 |
| **Negative** | 2 | 2 | 11.8 |
| | 1 | 1 | 5.9 |

*Statement 8: Complaints and issues are addressed in a timely and effective manner by DOST*

Knowing that there were a few issues regarding the allowance or some other deliverables, it was asked to the students if their complaints and issues were addressed by the DOST staff in a timely manner. Table 11 shows that a majority of the respondents (58.8%) indicated that they were neutral to this statement and that they experienced that it was very

random where their issues would be resolved. Sometimes the issues were resolved quickly but other times it took an extended period of time before it was addressed.

Table 11. **Satisfaction rating on the resolution of complaints and issues in a timely manner**

| Type of rating | Rating | No. of Respondents | Percentage |
|---|---|---|---|
| Positive | 5 | 3 | 17.6 |
| | 4 | 2 | 11.8 |
| Neutral | 3 | 10 | 58.8 |
| Negative | 2 | 2 | 11.8 |
| | 1 | - | - |

*Statement 9: Your personal records in their system are accurate and updated*

Majority of the respondents (52.9%) agreed that their records in the DOST-SEI's system are accurate and updated. There are five respondents (29.4%), however, answered neutral in this statement.

Table 12. **Information was updated and accurate**

| Type of rating | Rating | No. of Respondents | Percentage |
|---|---|---|---|
| Positive | 5 | 9 | 52.9 |
| | 4 | 3 | 17.6 |
| Neutral | 3 | 5 | 29.4 |
| Negative | 2 | - | - |
| | 1 | - | - |

**Overall Satisfaction on the Implementation of DOST Scholarship Program**

The interpretations of the UPLB DOST scholars' responses in the survey is shown in Table 13. The ratings on the 9 statements are provided, including the average satisfaction rating which is "Agree". This suggests that the majority of the scholars are satisfied with the services provided by the DOST.

It was also observed that majority of the students neither agree or disagree on Statement 2 (The deliverables (i.e allowance, stipends, etc.) provided by DOST scholarship arrives on time) and Statement 8 (Complaints and issues are addressed in a timely and effective manner by DOST). This response may be due to the thinking of the students that their answer has an effect on their scholarship, thus, they chose the safer answer which is "neither agree nor disagree". The researchers made sure that the results will be used for academic purposes only. Furthermore, the researchers complied with the privacy of the information given by the students in accordance with the Data Privacy Act of the Philippines.

Table 13. **Likert Scale Interpretation on the Satisfaction on the services provided by DOST-SEI and UPLB on Republic Act 7687**

| Statements | Median | Interpretation |
|---|---|---|
| Statement 1 (The DOST scholarship is to your satisfaction (In terms of allowances, stipends, benefits, services) | 5 | Strongly Agree |
| Statement 2 (The deliverables (i.e allowance, stipends, etc.) provided by DOST scholarship arrives on time) | 3 | Neither agree or disagree |
| Statement 3 (The DOST staff or employee handling your scholarship (for submission of application requirements and other documents, or those you communicate with regarding the scholarship) treat you with respect and kindness) | 5 | Strongly Agree |
| Statement 4 (They implement the rules and policies fairly for DOST | 4 | Agree |

| scholarship programs) | | |
|---|---|---|
| Statement 5 (The staff or employees DOST are able to answer any questions/inquiries regarding DOST scholarships) | 4 | Agree |
| Statement 6 (The staff or employees of DOST provide clear and sufficient information regarding the scholarship requirements and procedures) | 4 | Agree |
| Statement 7 (Any information regarding DOST scholarship is easy to obtain through their online and/or in person platforms (Facebook, website, and other internet sources)) | 4 | Agree |
| Statement 8 (Complaints and issues are addressed in a timely and effective manner by DOST) | 3 | Neither agree or disagree |
| Statement 9 (Your personal records in their system are accurate and updated) | 5 | Strongly Agree |
| Average | 4 | Agree |

**Bottlenecks and Problems encountered by DOST Scholars**

As mentioned in the previous paragraphs, one of the prevalent issues that the students experienced regarding the scholarships were issues regarding their stipend or allowance, specifically the delay in its release. Table 14 illustrates that the majority (76.5%) of the respondents experienced a delay in receiving their stipend. One of the primary reasons that they did not receive it on time was because their Form 5 was also released late. While the delay of the release of the Form 5 is the primary reason, it can be said that these issues lie on the side of the student or at least the college where they were from as it is in the policy of the program that no stipend would be released without proof of enrollment. Although the secondary reason that the respondents agree upon now lies in the office of the DOST Scholarship program, as can be seen on Table 15 the lack of manpower of DOST in regards to handling the paperwork of the scholars (15.4%) was the secondary reason that there was a delay in the release of the allowance.

Table 14. **Delay in the release of the stipend of the students**

| Delay | Frequency (n=17) | Percentage |
|---|---|---|
| Yes | 13 | 76.5 |
| No | 4 | 23.5 |

Table 15. **The reasons why there was a delay in the release of the stipend of the scholars**

| Reason | Frequency (n=13) | Percentage |
|---|---|---|
| Delay on the release of Form 5 | 8 | 61.5 |
| Lack of manpower of DOST (Those who handle paper works of RA 7678 scholarship program) | 2 | 15.4 |
| They are excessively demanding for the requirements | 1 | 7.7 |
| I don't know why but I received my 2nd wave of stipend after that semester | 1 | 7.7 |
| All of the above | 1 | 7.7 |

To further expound upon the issue of the delayed release of the allowance, it was also asked to the students how often this delay occurs. The most common answer that the students gave was that they experience this at least once or twice (60%), followed by those who experience it thrice or more (26.7%). The frequency of the delay of the allowance release can be seen on the table below.

The researchers also gathered their experiences in the DOST scholarship application process. 9 students indicated they did not experience any inconvenience with the DOST scholarship application process. They experienced a smooth and efficient process. On the other hand, eight (8) students indicated they experienced challenges with the application process specifically in following: 1. Unresponsiveness in social media; 2. Difficulty in obtaining needed requirements;

3. Mistakes in providing information and managing records. These encountered challenges were also mentioned by the DOST-SEI Senior Research Specialist, SEI representative.

Table 16. **Frequency on the delay in the release of the stipend of the students**

| Delay | Frequency (n=15) | Percentage |
|-------|------------------|------------|
| 0 | 2 | 13.3 |
| 01-Feb | 9 | 60 |
| 03-Apr | 4 | 26.7 |

**Results of the Key Informant Interviews on DOST-SEI and UPLB-OUR Respondents**
**DOST-SEI**
To understand how well the implementation of RA 7687 is from the perspective of the actors involved in the implementation process, SEI representative at the DOST-SEI and UPLB-OUR staff, Students Records Evaluator II at the UPLB-OUR were interviewed by the researchers.

SEI representative admitted that there is indeed delays in the release of scholars' stipend and allowance due to the following reasons: (1) DOST-SEI needs to check the requirements submitted (i.e. signed a scholarship agreement with parents, form 5 proving that they are enrolled in an S&T course and students need to open a landbank account) before releasing the assistance, (2) DOST-SEI downloads the funds to DOST regional offices and universities who will directly release the assistance to scholars and (3) restrictions in the Commission on Audit (COA) rules that need to be followed and complied to release the budget. To address this, DOST-SEI explains to students that financial assistance will be delayed for the first months during the orientation of scholarship policies.

Contributing to the delay is the number of queries received by DOST-SEI on a daily basis which consumes most of their time and effort. There are only Five (5) staff who handle the Scholarship Programs of DOST-SEI and the non-existence of a database that can indicate immediate information as to the status of scholars' stipend/allowance provided by DOST. The providing of responses takes some time due to the need to search for their individual files/records in the database.

Another challenge faced in the implementation of RA 7687 is the difficulty in reaching other municipalities (mostly the low-class municipalities and farmland areas located in provinces). Unfortunately, there are still numerous municipalities that do not have S&T scholars. To address this, DOST-SEI presently conducts promotional activities and information campaigns such as *Push4Science Campaign* to reach these municipalities which is actually a diverse and considerate program of DOST.

SEI representative was also asked for her recommendations to further improve the implementation of Republic Act 7687. Three recommendations were identified: First, the need to continue the online application even after the COVID-19 pandemic to encourage more students, hence, online platforms are effective channels of communicating to the present generation of students. Since online applications are currently being implemented, the application rate is very high. The usual process where the students need to personally submit their application at DOST-SEI might be a hindrance for students to apply for the scholarship.

The second recommendation is to explore the possibility of conducting a computer-based exam instead of a pen and paper exam which is convenient for students. This is to save time and resources (for printing exam papers, for paying many proctors and examiners, etc.) and ensure the immediate release of results. DOST-SEI also receives complaints on the slow process of releasing exam results. According to DOST-SEI, the process of inserting the exam paper in their machine for checking takes ample time. Thus, a computer-based exam using an application/information system is recommended and faster.

Lastly, the third recommendation is the necessary update and maximize the use of their online databases. To monitor the status of the students and their academic performance and records, DOST-SEI has a central database and at every start or end of the semester, the scholarship coordinators in universities and DOST regional offices are required to submit status reports of the scholars which are then inputted in the database. The said database can only provide statistics on the number of completed, ongoing, terminated and suspended students. At present, DOST-SEI is working on a new database called *Science and Technology Scholarship Information Management System (ST-SIMS)* which allows scholarship coordinators to access and populate the database. Hence, instead of submitting a status report, they can directly input it in the database for storing. Access to information is no longer centralized to DOST-SEI but also to DOST regional offices and Universities which eases the process.

**UPLB Office of University Registrar (UPLB-OUR)**
Before the implementation of the Republic Act 10931 or the Free tuition policy in state universities, it was mentioned during our Key Informant Interview that the DOST fulfills its commitment on time. Since the "free tuition" policy is implemented or the Republic Act 10931, the university is no longer processing or giving any services that involve DOST scholarship (i.e., scholarship tagging). Nevertheless, the Office of the University Registrar provides the FORM 5 of the students which is one of the required documents for DOST scholarship application (UPLB-OUR staff, 2022).

According to the results of the survey 8 out of 13 scholars answered that the "delay on the release of form 5" is the reason why they encountered a delay on their stipend. As we interviewed the UPLB-OUR staff, she mentioned that the prolonged registration period based on the memorandum that being released by the higher ups really affects the release of the document. Aside from that, the OUR is now requiring the students to provide a certification which will serve as a proof that they are DOST scholars before they can request for a copy of form 5. Furthermore, she also stated that the students may request an advance copy of the form 5 with an additional payment of Php 50.

## References

[1] Albert, J., Tabundam A., David, C.,Francisco, K., Labina, C., Cuenca, J., Vizmanos, J. (October 2020). The Future S&T Human Resource Requirements in the Philippines: A Labor Market Analysis. https://www.sei.dost.gov.ph/images/downloads/publ/pubSthrr.pdf

[2] Arellano Law Foundation. (n.d.). *Republic Act No. 8248*. The LawPhil Project. https://lawphil.net/statutes/repacts/ra1997/ra_8248_1997.html

[3] Canonizado, I. C. (2021, October 3). *Input-Process-Output model*. HubPages. https://discover.hubpages.com/education/IPO-Model-of-Research

[4] Capistrano, M. J. P. R., Sario, S. S., & Robielos, R. A. C. (2020). *Impact Assessment of DOST-SEI Undergraduate Scholarship Program from 2005 to 2014 using Analytic Hierarchy Process (AHP) and Decision Hierarchy Table*. Detroit 2020. http://ieomsociety.org/detroit2020/

[5] Chan Robles. (2005). *Republic Act No. 7687 Republic Act No. 7687 - An Act Instituting a Science and Technology Scholarship Program and Other Purposes*. chanrobles.com. https://www.chanrobles.com/republicacts/republicactno7687.html

[6] Del Rosario, D. (2020). *Science scholars and the unscientific problems gov't throws their way*. https://technology.inquirer.net/106081/science-scholars-and-the-unscientific-problems-govt-throws-their-way

[7] Department of Science and Technology - Science Education Institute. (2021). Most Significant Change Stories of Beneficiaries of the DOST-SEI Programs and Projects: A Qualitative Evaluation Study. https://www.sei.dost.gov.ph/images/downloads/publ/pubChangeStories.pdf

[8]   Department of Science and Technology - Science Education Institute. (December 2020). Tracking of Actual Career Experience Report (TRACER) Study among DOST-SEI S&T Scholar Graduates (Undergraduate Level) Fact Sheet No.5. https://www.sei.dost.gov.ph/images/downloads/publ/pubtracerFsSchGrad2020.pdf

[9]   Department of Science and Technology - Science Education Institute. (2018). *Sei scholars as game-changers for CBDRRM*. DOST. Retrieved November 30, 2022, from https://www.sei.dost.gov.ph/index.php/news-archive/239-dost-sei-scholars-as-game-changers-for-cbdrrm

[10]  Department of Science and technology (DOST). *RA 7687 Scholarship (RA 7687).* https://region6.dost.gov.ph/ra-7687-scholarship-ra-7687/

[11]  Department of Science and technology (DOST). *Science and Technology Undergraduate Scholarships.* https://www.sei.dost.gov.ph/images/downloads/2018Undergradbrochure.pd

[12]  Department of Science and technology (DOST). *Philippine Laws and Jurisprudence Databank. 2019. Republic Act No. 8248. Manila: The LawPhil Project.* https://www.lawphil.net/statutes/repacts/ra1997/ra_8248_1997.html. (Accessed 10 April 2019).

[13]  Exit Survey: DOST-SEI S&T Undergraduate Scholars (October 2014-June 2015). Department of Science and Technology Science Education Institute.

[14]  Morato, P. R. (2022, May 19). *The impact of scholarships*. Philippine Star. https://www.philstar.com/opinion/2022/05/20/2182393/impact-

[15]  Pimentel, J. L. (2010). *A note on the usage of likert scaling for research data analysis.* https://www.researchgate.net/publication/331231816_A_note_on_the_usage_of_Likert_Scaling_for_research_data_analysis

[16]  Ramon Albert, J. G., Maria Tabunda, A. L., Primo David, C. C., Francisco, K. A., Labina, C. S., Cuenca, J. S., & Flor Vizmanos, J. V. (2020). *Future S&T Human Resource Requirements in the Philippines: A Labor Market Analysis.* https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps2032.pdf

[17]  Senate of the Philippines. *An Act Further Strengthening the Science and Technology Program of the Government, Amending for the Purpose Republic Act No. 7687, Otherwise Known as the Science And Technology Scholarship Act Of 1994.* https://issuances-library.senate.gov.ph/legislative%2Bissuances/Republic%20Act%20No.%208248

[18]  Department of Science and Technology (n.d.). *S&T Scholarships | DOST7.* https://region7.dost.gov.ph/programs/st-scholarships

[19]  Yang, A.Y. (2019). *Science scholars dismayed over delayed monthly stipends.* https://news.abs-bn.com/news/08/30/19/science-scholars-dismayed-over-delayed-monthly-stipends

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