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# Work immersion performance appraisal and evaluation of Grade 12 STEM students in science and technology-based industries

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**Abstract.** In the Philippines, youth unemployment continues to hinder meaningful economic development due to job-skills mismatch, lack of knowledge and skills training, and work experiences. To address the problem, Department of Education's (DepEd) K to12 Program added two (2) years of Senior High School which is an advantage for students to develop relevant skills as early as high school. One of the goals of the K to 12 Basic Education Program is to develop the competencies, work ethic, and values relevant to pursuing further education and/or joining the world of work among learners. This study involved twenty-five (25) Grade 12 STEM strand students who were immersed in a science and technology-based industries. The work immersion lasted for eighty (80) hours where students performed different tasks assigned to them by the work immersion partner institution supervisors. The students' performance appraisal and evaluation were evaluated by their respective supervisors. Results showed that most of the students were evaluated outstanding and that their performance exceeds the required standard. The positive learning gains suggest that work immersion enables the students to acquire and develop the skills of teamwork, communication, attendance and punctuality, productivity and resilience, initiative and proactivity, judgment and decision making, dependability and reliability, attitude, and professionalism. Moreover, the students perceived their experiences as an avenue to test themselves and apply what they have learned in a non-school scenario where they were not only able to apply their previous training but are also able to experience the social interactions in a work environment. Their experiences in science-based work immersion partner institutions developed many skills and values that would help them as they move from high school to real life.

## 1. Introduction

In the Philippines, youth unemployment continues to hamper meaningful economic development. The Labor Force Survey reports that in 2016, about 48.4 percent of the 2.4 million unemployed were between 15 to 24 years old, with some level of high school education. The Department of Labor and Employment

(DOLE) often cites job-skills mismatch as one of the reasons behind unemployment. Among the youth, their lack of knowledge and skills training or work experience puts them at a disadvantage. To improve their employment prospects, it is an advantage for students to develop relevant skills as early as high school. In 2013, DepEd's K-12 program added two years of SHS to the curriculum [1].

Work Immersion is one of the course requirements for graduation. A Senior High School student has to undergo Work Immersion in an industry that directly relates to the student's postsecondary goal. Through Work Immersion, the students are exposed to and become familiar with work-related environment related to their field of specialization to enhance their competence. Specifically, the students are able to: (i) gain relevant and practical industrial skills under the guidance of industry experts and workers; (ii) appreciate the importance and application of the principles and theories taught in school; (iii) enhance their technical knowledge and skills; (iv) enrich their skills in communications and human relations; and (v) develop good work habits, attitudes, appreciation, and respect for work. These prepare them to meet the needs and challenges of employment or higher education after graduation [2].

In this study, students were immersed in a science and technology-based industries. The work immersion lasted for eighty (80) hours where students performed different tasks assigned to them by the work immersion partner institution supervisors. This program, if properly implemented, will foster personal and professional growth and enrich students' learning experiences, provides opportunities for students to learn outside the classroom in a work environment that will augment students' academic learning and develop work-ready graduates. Additionally, through work immersion, students bring new ideas and innovation to industry, government and community organizations.

## 2. Theoretical Background

Kolb's [4] experiential learning theory was the framework for this study. It suggests that experiential learning opportunities should be grounded in a theoretical framework to ensure each opportunity is educational. "Learning from experience" therefore, begins with experiential education in the broadest sense and is followed by experiential learning in the field and one of the ways in which learning in the field can be facilitated is through work-integrated learning [7].

According to Roberts [5], experiential education refers broadly to a philosophical process that guides the development of structural and functional learning experiences, attends to the ethics of knowledge and outlines the encompassing standards for learning environments. Further, experiential learning is considered to represent the specific techniques or mechanisms that an individual can implement to acquire knowledge or meet learning goals. Experiential learning can be facilitated in postsecondary education through work-integrated learning, which is a broad term that encompasses various learning opportunities centered on the integration of academic learning and practical application in a chosen work environment [6].

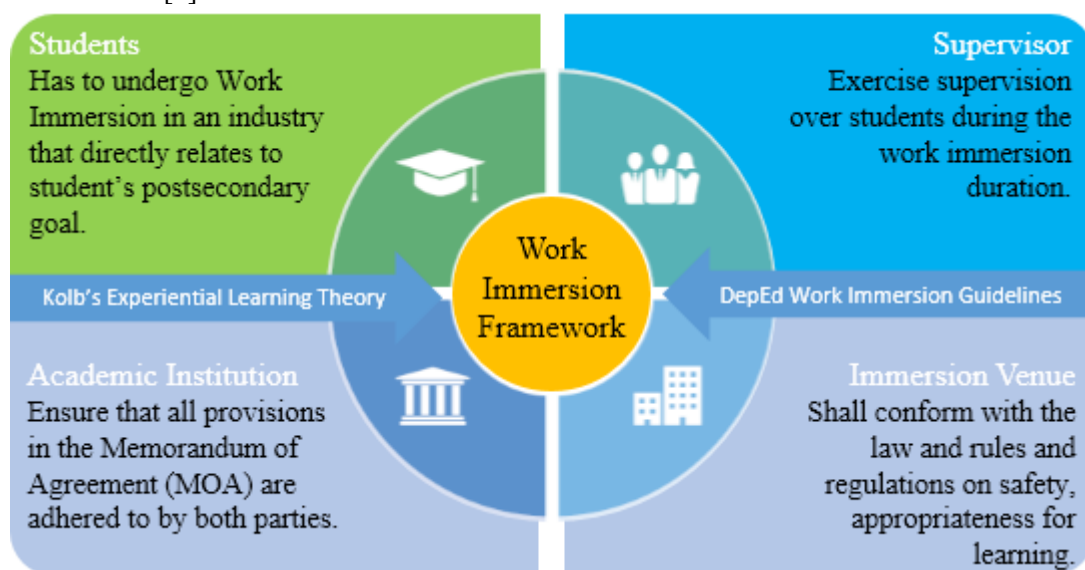


Figure 1. Work Immersion Framework

In the Philippine setting, the Department of Education (DepEd) formulated guidelines for work immersion based on the rich experiences of modeling schools, technical-vocational schools, partnership focal persons, industry partners, and youth development advocates [3]. The guidelines can provide process support in fostering relationships and strengthening partnerships so that learners will have access to suitable work immersion venues and other related resources and are immersed in actual work environments such as workshop offices and laboratories in which their prior training is relevant.

### 3. Methods

#### 3.1 Target Group

The target respondents of this study were the twenty-five (25) Grade 12 STEM strand students of Sotero B. Cabahug FORUM for Literacy, Consolacion, Cebu, Philippines. The students conducted their work immersion in two companies, namely, (1) KNOWLES Electronics (Philippines) Corporation which is a leading global supplier of advanced micro-acoustic, audio processing, and precision device solutions, serving the mobile consumer electronics, communication, medical, military, aerospace, and industrial markets and (2) Department of Agriculture which is the executive department of the Philippine government responsible for the promotion of agricultural and fisheries development and growth. The students immersed for eighty (80) hours which is the minimum requirement of the Department of Education as a subject requirement for graduation from secondary education. Prior to the work immersion proper, the students were asked their preferred department for their place of assignment. The final place of assignment was finalized by the work immersion steering committee of the school and the work immersion partner institution supervisor which considered each of the student's preferred course to take up in college, intelligence quotient (IQ), and the results of the National Career Assessment Examination (NCAE).

#### 3.2 Methods of Inquiry

This study employed a qualitative research approach which sought to evaluate the students' performance during the work immersion period. During the pre-immersion period, students attended the pre-immersion orientation where they learned about work ethics, safety in the workplace, workplace rights and responsibilities, confidentiality in the workplace, and effective conflict resolution and teamwork skills. The students also attended the job interview skills training.

To measure the performance of the students during the entire period of duration, the work immersion steering committee of the school constructed the Student's Performance Appraisal and Evaluation Sheet to be filled up the students' respective partner institution supervisor. It consisted of behavioral item listed within the competency bands, with 5 being the most and 1 is the least. The supervisor is directed to select the evaluation most suited for the work immersion students.

The students' performance and evaluation sheet measured the different behavioral competency skills necessary in the immersion workplace. There are five (5) competencies for Teamwork, four (4) competencies for Communication, three (3) competencies for Attendance and Punctuality, six (6) competencies for Productivity and Resilience, six (6) competencies for Initiative and Proactivity, three (3) competencies for Judgment and Decision Making, four (4) competencies for Dependability and Reliability, five (5) competencies for Attitude, and four (4) competencies for Professionalism.

**Table 1.** Descriptive Information for the student's performance appraisal and evaluation

<b>Behavioral Competencies</b>	<b>Sample Item</b>
Teamwork	Willing to work with team members to improve team collaboration on a continuous basis.
Communication	Consistently delivers accurate information both written and oral.
Attendance and Punctuality	Is punctual on a regular basis.
Productivity and Resilience	Can work under pressure and delivers the required tasks.
Initiative and Proactivity	Recognizes and takes immediate action to effectively address problems and opportunities.

Judgment and Decision Making	Has the ability to make creative and effective solutions to problems.
Dependability and Reliability	Has the ability to follow through and meet deadlines.
Attitude	Shows sensitivity to and consideration for other's feelings.
Professionalism	Follows all policies and procedures when issues and conflict arises.

After the evaluation process, the data was gathered and the mean rating of each behavioral competencies was computed. Remarks, comments, and suggestions of the partner institution supervisor were also considered in this study.

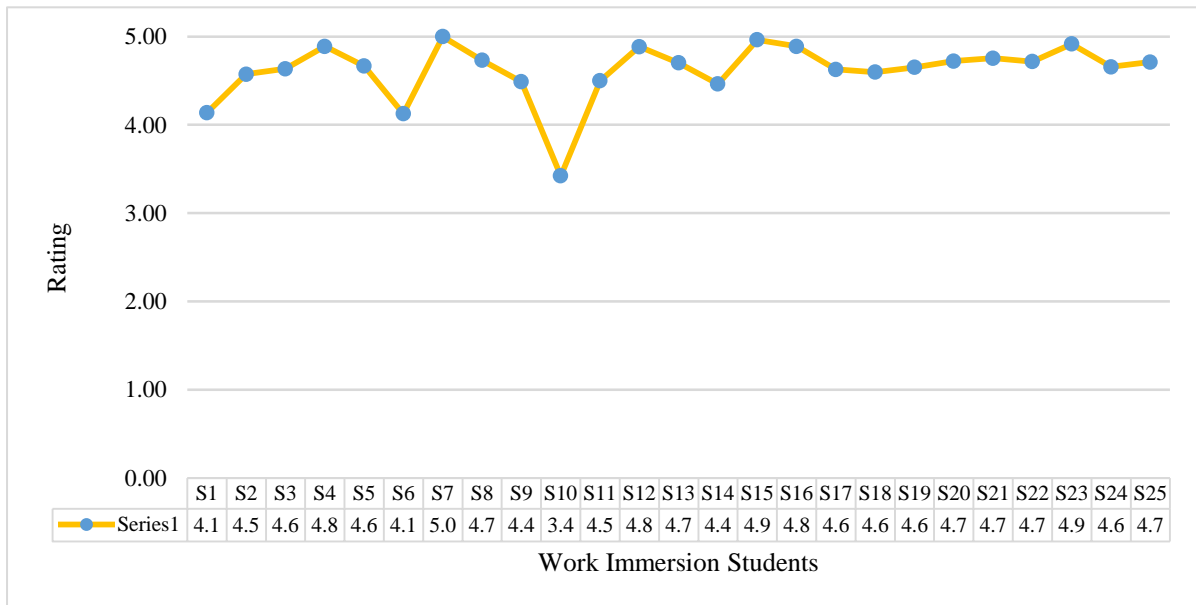
**Table 2.** Descriptive information for each rating of the work immersion student's performance and evaluation

Rating		Description
4.51-5.00	Outstanding	Performance exceeds the required standard.
3.51-4.50	Very Satisfactory	Performance fully met job requirements. Able to perform what was expected of a person in his/her position.
2.51-3.50	Satisfactory	Performance has met the required standard. Can perform duties with minimal supervision.
1.51-2.50	Fair	Performance partially meets the required standard. Less than satisfactory could be doing better.
1.00-1.50	Needs Improvement	Performance does not meet the required standard. Major improvements needed.

#### 4. Results and Discussion

During the work immersion proper, students (1) reported to the company based on the agreed time frame, (2) received orientation from the company on the nature of business, description of the product and services, target clientele, organizational structure of the company and its rules and regulations, (3) participated in the activities of the different offices and departments of the company where they are assigned, (4) prepared reports on the activities performed, received orientation on the different processes of the business establishment such as: safety, production, maintenance, quality control and assurance, customer care, housekeeping, and hygiene, (5) performed hands-on activities that are related to the skill acquired in his/her chosen field of specialization, (6) rendered reports to the work immersion teacher and the industry supervisor.

After the work immersion proper which lasted for eighty (80) hours, the students were evaluated by their respective supervisors with regards to their performance. Results showed that nineteen (19) students have a rating of Outstanding which means that their performance during the work immersion exceeded the required standard. Moreover, there are five (5) students who were rated as Very Satisfactory, this means that the students' performance fully met the job requirements and that they were able to perform what was expected of a person in his/her position. There is only one (1) student who was rated with Satisfactory wherein the student's performance has met the required standard and was able to perform duties with minimal supervision.



**Figure 2.** Work Immersion Students' Performance and Evaluation Rating

It can be shown from the results that the students learned the importance and applied the principles and theories taught in school and that they developed the competencies needed in the workplace. The weighted mean for Teamwork is 4.71 (Outstanding), students' performance exceeded the required standard where they consistently worked with others to accomplish goals and tasks, treated all members in a respectful courteous manner, actively participated the activities and assigned tasks required, willingly worked with team members to improve team collaboration on a continuous bases, and considered the feedback and views of the team members when completing as assigned task.

Communication has a weighted mean of 4.54 (Outstanding) where students' performance exceeded the required standard of actively listened to supervisor and/or co-workers, comprehended written and oral information, consistently delivered accurate information both written and oral, and reliably provided feedback as required, both internally and externally. The competency of Attendance and Punctuality has a weighted mean of 4.71 (Outstanding), students' performance exceeded the required standard where they was punctual on a regular basis, maintained good attendance, and informed their respective supervisors in a timely manner when absenteeism and tardiness may occur. For Productivity and Resilience, it has a weighted mean of 4.54 (Outstanding) where students consistently produced quality results, met deadlines and managed time well, did multitasking, worked under pressure and delivered the required tasks, had effective and efficient time management, and efficiently informed their respective supervisors of any challenge or hindrance related to given task or assignment.

Moreover, work immersion students developed the competence of Initiative and Proactivity with a weighted mean of 4.60 (Outstanding). Based from the evaluation, students completed assignments with minimum supervision, completed tasks independently and consistently, sought support as need arises, recognized and took immediate action to effectively address problems and opportunities, engaged in continuous learning, and contributed new ideas and shared skills to improve the department/organization. Students also established the competency of Judgment and Decision Making with a weighted mean of 4.58 (Outstanding) where they analyzed problems effectively, had the ability to make creative and effective solutions to problems, and demonstrated good judgment in handling routine problems. Additionally, students also developed the competency of Dependability and Reliability with a weighted mean of 4.58 (Outstanding) where they possessed the ability to follow

through the meet deadlines, had commitment for their actions, can adjust easily to changes in workplace, and displayed a high level of performance at all times.

Furthermore, the evaluated showed that work immersion students displayed a high level of Attitude with a weighted mean of 4.62 (Outstanding). STEM students offered assistance willingly, showed a positive work attitude, showed sensitivity to and consideration for other’s feelings, accepted criticism positively, and showed pride in work. For the last competency, Professionalism has a weighted mean of 4.68 (Outstanding) where students respected the persons in authority, used all tools, equipment and facilities responsibly, followed all policies and procedures when issues and conflict arises, and their physical appearance conformed to the workplace and placement rules.

**Table 3.** Work-related Skills Performance Appraisal and Evaluation of STEM Students

Competencies	Mean	Description
Teamwork	4.71	Outstanding
Communication	4.54	Outstanding
Attendance and Punctuality	4.71	Outstanding
Productivity and Resilience	4.54	Outstanding
Initiative and Proactivity	4.60	Outstanding
Judgment and Decision Making	4.58	Outstanding
Dependability and Reliability	4.58	Outstanding
Attitude	4.62	Outstanding
Professionalism	4.68	Outstanding

STEM students also perceived their work immersion experiences as an avenue to improve their work-related competencies, helps them make informed career choices, and creates employment opportunities straight out of Senior High.



**Figure 3.** Work Immersion Student performing his task in the Test Engineering Department of Knowles Electronics (Philippines) Corporation

## 5. Conclusion

From the findings of the study, it showed that most of the students were evaluated outstanding and that their performance exceeds the required standard. The positive learning gains suggest that work

immersion enables the students to acquire and develop the skills of teamwork, communication, attendance and punctuality, productivity and resilience, initiative and proactivity, judgment and decision making, dependability and reliability, attitude, and professionalism. Moreover, the students perceived their experiences as an avenue to test themselves and apply what they have learned in a non-school scenario where they were not only able to apply their previous training but are also able to experience the social interactions in a work environment. Their experiences in science-based work immersion partner institutions developed many skills and values that would help them as they move from high school to real life.

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