devices are found in the metal industries; b) student-trainees spent more time on hands-on practice in the industries; c) all the industries gave them the opportunity to handle responsibilities; d) student-trainees got high sense of value for what they have learned, high competence in their ability to perform the task for which they were trained, and high levels of confidence in their ability to perform the trained skill. We have noticed also that the trend of development before and after the industry exposure is due to the effect of the industry immersion.

Table 4: Paired t-test on the Significance of the Difference between the Level of Development of Skills and Knowledge before and after the Industry Exposure.

Knowledge and Skills		*Mean Before*	*Mean After*	*Computed t-value*	*df*	*Probability Level*
Pair 1	Benchwork Operations Pretest-posttest	1.5230	3.4356	-19.256*	26	.000
Pair 2	Lathe Machine Operation Pretest-posttest	1.7748	3.4933	-21.110*	26	.000
Pair 3	Shaper Machine Operation Pretest-posttest	1.5693	3.5789	-32.655*	26	.000
Pair 4	Milling Machine Operation Pretest-posttest	1.3222	2.9389	-26.873*	26	.000
Pair 5	Drilling/Boring Machine Operation Pretest-posttest	1.5526	3.4744	-29.207*	26	.000
Pair 6	Honing Machine Operation Pretest-posttest	1.4200	2.8122	-18.886*	26	.000
Pair 7	Blueprint Reading and Machine Designing Pretest-posttest	2.0367	3.6533	-19.929*	26	.000
Pair 8	Overall Pretest-posttest	2.1215	3.3407	-24.557*	26	.000

*significant at .05 level

Table 4 shows that Pairs 1-8 of knowledge and skill have negative computed t-values that are significant at a= .05. All the null hypotheses on the difference of the pretest and posttest mean scores in each of the eight pairs were rejected. This means that each skill and knowledge to be developed is significantly higher than their level of development before the industry exposure.

Table 5: Level of Development on Attitudes and Habits among Mechanical Engineering Students before the Industry Exposure

Attitudes and Habits	*Mean Score*	*SD*	*Verbal Description*
1. Punctuality and Attendance	3.99	0.39	High
2. Productivity	3.77	0.48	High
3. Compliance to 5S	2.63	1.16	Moderate
4. Behavior and Attitude Towards Work	4.48	0.31	High
Overall	**3.72**	**0.31**	**High**

Table 5 shows the result of the mean scores in 4 areas of attitudes and habits. Items on Punctuality and Attendance, Productivity, and Behavior and Attitude towards work got High level. This is because the students were already trained in school. Meanwhile, Compliance to 5S (Sort: Keeping and disposal of items, Systemize: Arrangement of necessary items, Self-Discipline: Spontaneity and initiative, sweep: Cleanliness in the workplace, and Sanitize: Maintenance and Housekeeping) obtained Moderate level because students were not given updates and lecture in this area. This could also be due to the non-inclusion of 5S in the course content of the subject.

Table 6: Level of Development on Attitudes and Habits among Mechanical Engineering Students after the Industry Exposure

Attitudes and Habits	*Mean Score*	*SD*	*Verbal Description*
1. Punctuality and Attendance	4.80	0.29	Very High
2. Productivity	4.58	0.39	Very High
3. Compliance to 5S	4.38	0.39	Very High
4. Behavior and Attitude Towards Work	4.91	0.2	Very High
Overall	**4.67**	**0.2**	**High**

Looking into the different areas after the industry exposure, all the areas obtained a Very High level. This means that trainees were more attentive and more mature during the actual operation. The rating of Very High in the overall operations means that all the areas were given more attention in the industry exposure.

Table 7: Paired t-test on the Significance of the Difference between the Level of Development on Attitudes and Habits after the Industry Exposure

Knowledge and Skills		*Mean Before*	*Mean After*	*Computed t-value*	*df*	*Probability Level*
Pair 9	Punctuality and Attendance Pretest-posttest	3.9896	4.801	-11.622*	26	.000
Pair 10	Productivity Pretest-posttest	3.7730	4.5770	-9.516*	26	.000
Pair 11	Compliance to 5S Pretest-posttest	2.6307	4.3752	-9.092*	26	.000
Pair 12	Behavior and Attitude Towards Work Pretest-posttest	2.6307	4.3752	-9.092*	26	.000
Pair 13	Overall Pretest-posttest	3.77193	4.6678	-15.467*	26	.000

*significant at .05 level

It can be noted that all the computed t values on the areas on attitudes and habits are significant. Table 7 shows that Pair 9-13 has negative computed t- values that are significant at 8= .05. All the null hypotheses on the differences of the pretest and posttest mean scores in each of the four pairs were rejected. This implies that in each area on attitudes and habits to be developed after industry exposure is significantly higher than their level of development before the exposure.

4. Conclusions

1. The machine shop knowledge and skills among mechanical engineering students before the industry exposure were hardly developed in the academic institutions.
2. The levels of development on shop knowledge and skills among mechanical engineering students after the industry exposure increased in all areas.
3. The industry exposure has an impact in the development of a skills and knowledge and attitudes and habits among mechanical engineering students.
4. The student trainee's attitudes and habits were already formed in the academic institutions but were still improved especially in the area of compliance to 5S. The industry exposure still has an impact on their attitudes and habits.
5. The Level of development on attitudes and Habits among mechanical engineering students after the industry exposure also increase.
6. The impact of attitudes and habits of the student trainees was minimal because the same can be formed and learned in the academe. However, the level of their attitudes and habits were raised to the highest while they were in the industries.
7. Not all four academic institutions which were included in the study have the same number of hours in their Industry exposure or OJT. And not all four academic institutions offer Industry exposure or OJT as a requirement. However, regardless of number of hours, their knowledge and skills and attitudes and habits were still developed.

5. Recommendations

Taking the findings and conclusions into consideration, the following are recommended:

1. That the industry exposure or OJT must be continued among engineering schools in Davao City because the study found out that the industry exposure was able to improve the knowledge and skills of students and elevated their levels.
2. That the academic institutions should increase the number of hour's requirement of Industry Exposure Program. That the machine shop laboratory equipment in the academe should be upgraded.
3. That the academic institutions should strengthen the industry-exposure program to maximize the development of the skill, knowledge, attitudes and habits of mechanical engineering students and to implement the Faculty Return to Industry program for better immersion of faculty handling the course or subject.
4. That the way attitudes and habits are formed in the academic institutions be upheld. The culture of compliance to 5S and International Standardization for Organization or ISO be imbibed in the academic institutions and its inclusion in the syllabi must be considered.
5. That the skills other than machine shop skills being developed in the academe be also given attention to equip or prepare them for actual employment.
6. That the academic institutions should work hand in hand to make the Industry Exposure Program or on-the job training (OJT) be an effective tool in the development of knowledge, skills, attitudes and habits. That the academe should strengthen the linkage and collaboration between private agencies and government institutions (e.g. Mechanical Engineering Network (MEN), Philippine Society of Mechanical Engineers (PSME), Metalworking Industry Association of the Philippines (MIAP), Southern Mindanao Chamber of Metals Industries, Incorporated (SMCMII) , Technical Panel for Engineering, Architecture and Maritime Education (TPEAME), local government offices (GO) and non-government organizations (NGO), etc.) to assist the enhancement of industrial training.
7. That the industry exposure or on the-job training or OJT must be a requirement in the mechanical engineering curriculum to ensure the development of student-trainees' knowledge and skills and attitudes and habits. And that the academic institutions should improve the classroom instructions and delivery system and adopt curriculum development. Revisions of the mechanical engineering curricula must be always considered to answer the demands and needs of the industries.

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Author Profile

Dr. Rosello Lyndon H. Roble is a Professor of Mechanical Engineering in the University of Southeastern Philippines (USeP), a state university in Davao City, Philippines. He obtained his B.S. in Mechanical Engineering from the University of Mindanao and is a Professional Mechanical Engineer. He was the Dean of USeP College of Engineering from 1994-1999, 2006-2010, 2011- May 2014 before he became the Vice President for Administration from June 2014 up to November 2015. He underwent a UNIDO-sponsored training course on Photonics Technology at Nanyang Technological University, Singapore in 1998. He holds a Masters Degree in Mathematics and is a Doctor of Technology. He presented a paper entitled "Implementation of Mechanical Technology and Engineering Ladderized Curriculum" in Bali, Indonesia sponsored by SEAMEO Voctech in 2008. He also visited Vietnam, and Malaysia. He was a recipient of Educational visit to mining firms in Canada in 2012 hosted by Sagittarius Mining Incorporated (SMI). Dr. Roble was the 1998 President of the Philippine Society of Mechanical Engineers (PSME) Davao Chapter. He was also the PSME's 1997 National Most Outstanding Member, 1998 The Outstanding Mechanical Engineer (TOME) in Education and 2006 Fellow and Fellow of the Royal Institute of Educators (FRIEdr) in Singapore.

He is married to Catherine M. Roble, Ph.D. and have two children Katrina Belen and Immanuel Lyndon.