Impact of English Language on GPA, Training Delay Time, and Attrition Rate in the Technical Institutes

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Abstract

English language is one of the most important tools which used in technical institutes to deliver skills, science and knowledge to trainees. Its importance also comes through increasing demand from employers who need qualified human resources with technical skills and English language. Training in English started upon admission to technical institutes. The level of achievement of trainees in English courses is influenced by several factors, including the short duration of training in technical institutes. The poor performance of trainees in the English language courses and their lower marks affect in the efficiency of operation, reducing costs due to the decrease number of trainees, the extent of training time and poor training outputs.

In this case study, the effect of trainees' performance in the English language course was measured and its impact on: Grade Point Average (GPA) of graduated trainees, trainees who delay in the training period from their graduation date and attrition rate of training at the Institute.

Many statistical tools such as the correlation coefficient, regression analysis, and the scatter diagram were used to illustrate ranges of effect of the low marks of trainees in English courses. Four random samples (132 trainees), (306 trainees), (1263 trainees), (446 trainees) were studied.

Using these statistical tools, the relationship between the trainees' marks in the English language course and the GPA of graduates was demonstrated. The higher marks in the English course guide to the higher GPA upon graduation. The relationship between the marks of the trainees in the English language course and the delay time at the institute was explained. The result was that the higher average marks in the English language, the less delay time in the Institute and faster to graduate.

The impact of the marks of trainees in the English language course on the attrition rates of trainees was evident as it was one of the major factor of increasing trainees’ attrition.
With the Institute's initiatives, the average marks of the failed trainees have increased from (19 marks) to (47.2 marks), to be near to the border line of success, this increase was about (148%). These results have led to improved trainees’ performance in English language courses. On the side they led to curriculum development, operational efficiency and cost reduction.

**Keywords:** English Language, GPA, Attrition Rates, Training Delay Time, Vocational Education.
1. Introduction

Technical institutes worked to fill the gap in the higher education systems, as one of the available options other than universities and colleges. In the Seventh Saudi Development Plan, expects 95 percent of new jobs for Saudi nationals to come from the private sector, which need qualified cadres (Calvert & Al-Shetaiwi, 2002). Those cadres needs an institutes to qualify them. These institutes are spread over specific geographical areas to meet the needs of the industrial sector of technical cadres, whether in public or private institutions. The government of Saudi Arabia has an emphasis on the Eighth and Ninth Development Plans on the need for reforms in all aspects of technical and vocational education to produce knowledge workers to meet the challenges of the knowledge-based economy (Baqadir, Patrick, & Burns, 2011). Developing human capital in line with the needs of the labor market, ensuring the harmonization of education outputs with the needs of the labor market, and expanding vocational training to provide the needs of the labor market were some of the objectives of Saudi Vision 2030. As per the Saudi Central Department of Statistics & Information, the expenditure per student with regard to the governmental and private vocational education sectors has attained 6073 USD in the academic year 2011/2012, that is, 25% excess from the previous academic year (Trabelsi & Bezzina, 2016).
The training system in the technical institutes is based on competency-based training which executed by training on specific skills with detailed tasks, the trainee has to perform to obtain the required skill. Competency-based training allows trainees to have a clear introduction to their role, an idea of a professional trajectory, and assistance in decreasing role ambiguity (BURY & MACON, 2019). The training period in technical institutes usually takes two years in which the trainee is qualified to work as a qualified technician in a specific field. This type of training has proven to be efficient as recommended by different employers. The training was developed in the latest year with technologies. These technologies are significantly transforming relationships, and they have contributed to collaborative work due to the ease of communicating in real time, blurring barriers of distance and locations (Granados & Jaramillo, 2019).

Jubail Industrial City will double the industrial footprint to 110 square kilometers. An area of Jubail 2 will be reserved for plastics complex to develop the next $20bn petrochemicals complex (Communications International, 2013). The current city contains many companies working in the field of petrochemicals and other industrial fields. The work at these companies requires obtaining a certain degree of skills which requires technical institutes to link their training courses and curricula to these jobs and their changing needs. On the other hand, there is an increasing need for qualified national cadres to work towards achieving the state's goals by focusing on jobs, such as Saudization program and creating new job opportunities. One of the requirements of working in these companies is the required level of English language in addition to technical skills.

One of the most important elements of the work in technical institutes is the efficiency of operation based on the provision of resources and legalization of expense. Where training on the latest equipment and devices requires the provision of large sums of money.
Graduating the largest number of qualified trainees to meet the market needs could consider the return on the investment of these funds and expenses. In addition to that, the provision of qualified trainers requires adequate budgets. The estimate of the cost of training, could include the number and qualifications of trainers, infrastructure, provided services, academic reputation (Suciati, 2018). Additional emphasis on the training cost comes from the need to improve the efficiency of allocated resource (Wu & Wang, 2018). Moreover, the biggest problem could lies in increasing the efficiency of operation by improving the methods of training, especially in the English language courses. Qualify trainees in English language well removed this obstacle, as the language of training in technical institutes is the English language, and the impact of the weakness of trainees in English language varies as shown in the subject of this research.

2. Background

English is learnt in two different perspectives, i.e. General English and English for Specific Purpose (ESP). General English is commonly taught for mastering English. Besides, ESP is taught for mastering English for specific communication purposes such as English for engineers, doctors, lawyers (Kaharuddin, Hikmawati, & Burhanuddin Arafah, 2019). Training of English language in technical institutes is an essential because it’s the language of training in technical institutes.

Trainee who master the English language could understand other training courses easily and increase the effectiveness of communication to acquire the necessary training skills from the trainers or the training environment. English plays a major role in employability. Since the proficiency in English is one of the most important requirements of the labor market. Also, the proficiency in English make it easier for graduates to find a job. Generally, the first year English course has focused on reading and writing skills. Final examinations are based on only the student’s performance of these skills (Meenu Pandey & B. Vedant Pandey, 2017).
Some institutes also work to transfer or equate international English language certificates with the institute's English courses, thus enabling the trainee to reduce years of training and obtain the required qualification in the shortest possible period. Sometime there are several mismatches in terms of students’ perceptions and employers’ expectations of proficient English (Zainuddin, Pillai, Dumanig, & Phillip, 2019). The methods of training to master the English language skills vary in terms of listening, writing or reading. Learning through activities also plays a positive role in the improvement of academic achievement and interactive approach contributed a lot in developing the confidence of trainees (Naheed, 2015).

Using the latest scientific methods through projectors or recording devices that show lengthy dialogues that the trainee must practice on. In many cases, computers are used to enhance training and improve its methods. Computers also are used in evaluations and assessment to increase efficiency, especially when there are large numbers of trainees. Trainees gradually trained from their admission to the institute throughout two semesters. At the end of each semester there is assessment to measure the trainees’ performance. During the semester, there are varieties of different type of assessments. Moreover, these assessments cause an impact of English training program on English teachers’ classroom practice (Naheed, 2015).

The training assessment system at the institute is a task, effect on the GPA, which were built during the training study. Since the building vocational education program is represented by the learning outcomes and their results of assessment such as GPA (Sri Handoyo, Iriani, & Septiandini, 2019). The high rate of GPA reflects the strength of the training have gained from the trainee. Employers' perceptions of the GPA also motivate trainees to increase their GPA by acquiring all the skills they can acquire at the institute during training and by assisting their English language skills. However, in technical institutes, the percentage of graduates with high GPA is a small percentage due to many reasons.
The most important could be the poor performance of the trainees who admitted to technical institutes. This challenge requires the technical institutes to work effectively to produce the largest number of qualified trainees and a high level of training which is reflected in the graduation rates. The level of the trainee in the English language is one of the most important factors that could help to raise the academic performance. Generally, trainees with higher marks in the English language courses score higher GPA. And the Long-term analyses comparing earnings associated with the educational content of vocational education are rare (Golsteyn & Stenberg, 2017). The problem of the delay of trainees in technical institutes due to some percentage of them consumes the maximum training time caused a major challenge in terms of reducing operating expenses. Since many vocational courses consumes about three times as many language courses as do for students with lower scores (KREISMAN & STANGE, 2019).

However, the fewer trainees with the maximum duration of graduation from the Institute, the more efficient operation of the Institute, enabling the Institute to graduate large numbers in less time. The duration of training in technical institutes estimate by two years, which sometimes extended to a maximum of four years Because of the failures and postponement of study. The extent of stay in the institute also impact on the trainee himself, especially if he left his peers who graduated. This could cause a psychological pressure on him. On the other hand, the trainee may face other financial burdens for the extent of his stay in the Institute to the maximum allowed time.

The level of the trainee in English courses affects the trainee's stay in the institute and vice versa. This scenario will be clear if the trainee receives TOEFL or IELTS English language certificates, he can equalize these certificates and thus reduce his stay in the institute.
Most of the literature analyzing the role of vocational education on the institution to work transition and analyze the time spent by graduates from different vocational tracks to find a job and compare their wages (Aguilar, Corrales-Herrero, Díaz, García-Crespo, & Rodríguez-Prado, 2018). Also vocational education improves employability both in the short and medium run, whereas in countries with a school based vocational system, results are mixed, only in some cases, the effect of vocational studies is significantly positive (Brunetti & Corsini, 2019).

One of the most important problems of technical training is the problem of trainees attrition, which is generally measured by the number of trainees admitted at the beginning of the program and the number of those who left the program (other than the remaining and graduated) from the same program in a specified period of time. Attrition rates are usually measured at the end of the year or at the end of the training program.

On the other hand, Australian contract completion rates for apprentices and trainees commencing in 2012; Contract completion rates were 55.2% for all occupations (National Centre for Vocational Education Research, 2016). The lower the attrition rates of trainees for the program, the more efficient program and it could rise the quality of the program and vice versa. High attrition rates draw attention to look for the reasons to address them, otherwise the future of this training program would end.

The funding bodies are followed up the indicators of the attrition rates of the trainees to ensure the efficiency of the operation and increase the return on the investment of their funds, whether these bodies are government or private sector. On the other hand, the problem of the trainees’ attrition puts pressure on the trainees themselves, due to the loss of training that qualifies them to obtain a training certificate and then to get a job or continue in higher education.

In the Arabic Gulf Stats, the level of the trainees in English language could be one of the most important factors that increase the rate of trainees’ attrition, when the level of trainee in English decrease, the probability of attrition are increases in the institute.
3. Jubail Technical Institute

Jubail Technical Institute (JTI) is one of the pioneer training institutes in the Kingdom of Saudi Arabia. It is supported by the Royal Commission for Jubail and Yanbu through the colleges and institutes sector. Jubail Institute seeks to fulfill its mission in training the national workforce in technical fields to meet the needs of the industrial sector of skilled technicians for the modern industrial technology. The Institute has highly qualified employees and training staff to achieve its vision of being the benchmark of excellence in technical training and Small and medium-sized enterprises (SMEs) across the Gulf States.

JTI has obtained the institutional accreditation as one of the first technical institutes to obtain this accreditation. This was from the Education & Training Evaluation Commission, which evaluate, measure and approve qualifications in education and training in the public and private sectors in the Kingdom. The Institute has a range of different skills such as industrial electricity skills, Industrial Instrumentation & Control Skills, Industrial Electronics Skills, industrial Millwright Skills, Industrial Welding Skills, Industrial Machining Skills, Industrial CADD Skills, Industrial Pipefitting Skills, Crane and Forklift Operation Skills, Process Operation Skills, Network Administration Skills and PC Support Skills.

The training in the institute extends to two and a half years, the first year for Basic skills including the English language. After the trainee has completed the basic skills year, the trainee moves to one of the specializations to be trained for a full year. Finally, the last half year, trainee move to public and private companies to expend the coop period for three month. The trainees are admitted to the institute at a rate of (1200) trainees in the academic year. The institute offers a wide range of services for trainees such as housing, health services and others.

JTI trains English courses over a period of two semesters. Trainees assess at the end of each semester. The institute has provided a lot of teaching aids in the field of English Language.
In addition to the needed room and laboratories, this was reflected in the minimum number of trainees per class, and guide to the best training environment. On the other hand, the Institute has provided highly qualified faculty members from the best international universities and from different nationalities and the English is their mother tongue to improve the transfer of English language proficiency. All this support resulted in the excellence of the trainees in the English courses and their performance to achieve the objectives of the Institute, whether educational or operational. This is evident in this case study in terms of the development of the average marks of the failed students across the various batches during the years.

The institute has many local and international accreditation and testing centers for all the different skills under the basic skills department, electrical and electronic skills department, mechanical skills department, chemical skills department and computer and information technology department. It offers many different training services such as special training programs designed for companies, short training programs, assessment of company’s technician and other services (JTI, 2019) (JTI, JTI website, 2017).

4. Research Objectives

The aim of this case study was to identify the impact of English language on GPA, training delay time, and attrition rate in the technical institutes. It also aims to investigate the reasons of increasing the GPA, the delay of trainees in the institute and to provide some solutions that reduce the rate of trainees’ attrition to increase the efficiency of operation and reduce costs. These aims were reached by answering the following questions; Are the performance of trainees in the English language courses directly affects the GPA? , Are the duration of trainees' stay in the institute affected by their obtained English marks? , Are there any impact of English marks on the attrition rate of trainees?
5. Research Methodology

The final marks of the trainees were collected as a random sample representing (2007 trainees) in the final course of the English language. Considering that, the trainee took at least one full year of English language training, which is reflecting the trainee's level of English. Data were collected for six batches of trainees over three years. Admission to the institute takes place twice a year, reflecting the diversity of data and the ability to measure the impact of decisions.

In this direction, a second random sample (132 trainees) was taken from the trainees of Industrial Instrumentation and control skills to measure the degree of impact of the final English course marks on their GPA average after graduated from the specialized skills year and the institute. The correlation coefficient between the English trainees’ marks and their graduation rates was calculated and then the data were further analyzed using regression analysis. The relationship between the final trainees’ marks and their final cumulative grades after graduation was illustrated through the graph.

Another sample (306 trainees) was taken from the graduated batch number 352, which admitted on second half of 2015 to measure the degree of the effect of the English final marks of trainees on the average delay time of the trainees at the institute in the unit of the semester. Regression analysis was used to describe this relationship in detailed also. Finally, data were collected from a sample of about (1263 trainees) to determine the attrition rate of trainees due the failure in the English language course and to measure the effect of the English marks of trainees who leaving the institute. Data were analyzed descriptively. The data of the trainees who left the institute due to the failure in the English language course (446 trainees) were collected in six batches according to the date of admission to the institute and then the average marks of each batch of trainees who failed in the English language course were taken to see the progress and improvement achieved a batch by batch.
6. Research Data Analysis and Findings

In this case study, the effect of trainees' marks in the last English course before moving into the year of specialization was measured on the following approaches:

- Final GPA of the graduates
- Number of delay trainees who stayed more than the expected time of graduation
- Attrition rates of trainees

6.1 Impact of trainees’ English marks on GPA:

The correlation coefficient of the marks of the trainees in the English language and the cumulative GPA was (54%).

The results of regression analysis and analysis of variance (ANOVA) as in table no. (1) showed the p-value less than 0.05 which guide to the strong relationship between the English marks and the graduates’ GPA. In the figure no. (1) The relationship between the English marks of trainees and the GPA were described through the straight line and the equation

\[(y = 0.0302x + 0.6362)\] ..........................(1).

It is clear that the higher the trainees who have higher marks in the English course, the higher their GPA upon graduation.

\[ f(x, y) = \frac{\sum(x - \bar{x})(y - \bar{y})}{\sqrt{\sum(x - \bar{x})^2 \sum(y - \bar{y})^2}} \]

Where \((x, y)\) are the sample means Average (English marks) and Average (GPA).

Correlation Coefficient = 0.544400114
### Table 1: Regression Analysis and ANOVA of English Marks & GPA

<table>
<thead>
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<th>df</th>
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<th>MS</th>
<th>F</th>
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<td>7.169</td>
<td>55.178</td>
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<tr>
<td>Residual</td>
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<td>17.021</td>
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<td>Total</td>
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<td>24.190</td>
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<table>
<thead>
<tr>
<th>Coefficients</th>
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<th>t Stat</th>
<th>P-value</th>
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<tr>
<td>Intercept</td>
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<td>1.883</td>
<td>0.062</td>
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<tr>
<td>E.MARK</td>
<td>0.030</td>
<td>7.428</td>
<td>0.000</td>
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#### Figure 1: Scatter Diagram of English Marks & GPA

6.2 *Impact of English marks on time of study and delay from graduation:*

In this part, the correlation coefficient was calculated between the mark of trainees in the English language course and the average time of delay from the graduation time, including the trainees who graduated on time with the previous formula of Correlation Coefficient.
It was showed strong relationship as follow:

\[
\text{Correlation Coefficient} = -0.966422979
\]

The relationship between the English marks and the average delay of trainees who staying at the institute as in figure (2) was drawn and described through the straight line and the equation

\[
y = -0.0182x + 1.6798
\] (2).

\[\text{Figure 2: Scatter Diagram of English Marks & the batch avg. delay of trainees in semester}\]

6.3 Impact of English marks on attrition and trainees who leave the institute:

In the table (2) the descriptive analysis of the English marks of the failed trainees is shown, where the average marks of the trainees failed (30.75) and the maximum marks (59) and the minimum marks (0) from the random sample (446 trainees out of 1263 trainees had left the institute). The figure no. (3) Also shows the development of the average marks of the trainees who failed from (19 marks) to (47.2 marks) approaching the threshold of success (60 marks) and showed an increase of (148%) over six batches of trainees during three years.
Table 2: Descriptive Analysis of the English marks of the failed trainees

<table>
<thead>
<tr>
<th>Avg. of Trainees’ English marks</th>
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<tr>
<td>Mean</td>
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<tr>
<td>Standard Error</td>
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<td>Median</td>
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<td>Standard Deviation</td>
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<td>Range</td>
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<td>Minimum</td>
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<td>Maximum</td>
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<tr>
<td>Sum</td>
</tr>
<tr>
<td>Number of left trainees</td>
</tr>
</tbody>
</table>

Figure 3: Improvement of the average marks of the trainees who failed in English language
7. Conclusion and Recommendations

It is clear from the previous study that the performance of trainees in the English language courses directly affects the GPA. An example of that, and from the straight line equation number (1), it can be said that the trainee who has score (95 marks) in the English language course as an average, has high probability of obtaining a GPA of (3.5 out of 4). Vice versa, the trainee who has score (60 marks) in the English language course as an average, has high probability of obtaining a GPA of (<2.5 out of 4), which effect on the employment after graduation due to reduces of opportunities for acquiring skills in specializations and thus graduating cadres with poor qualification skills. The duration of trainees' stay in the institute is also affected by their obtained English marks, as an example of that, and from the straight line equation number (2), if the trainee acquired (60 marks) in the English language, the possibility of his delay time increase to near to one semester.

Compared to the trainees whose English language courses have been transferred or their certificate of TOEFL or IELTS have been approved, they can graduate in less than two and a half years. On the other hand, the impact of English marks on the attrition rate of trainees who left the institute for many reasons was reflected in the percentage of trainees who failed and left the institute due to the English language, since (35.3%) of the total attrition were due to the failure in English language courses. Comparing the above results with previous studies in this field which were not that specific as in this case study, in general, higher marks in English language courses help to solve many problems related to technical institutes. Contrary to the low marks of trainees in the English language courses and their affects, which need to be studied on a case by case basis, depending on different training environments. One of the most important results of this research was the increase in the average marks of failed trainees by (148%) as it’s appears in figure 3.
This improvement was a result of hard work and set of undertaking initiatives of the Institute periodically for example:

• English language courses and books were modified by studying the best suitable books for technical education to provide springboards to a wealth of activities that are designed to develop all of the four language skills, including the interactive lessons focusing on all the four macro skills of communication. They are adequately supported and supplemented by in-house made enrichment activities. The contents have specific levels classified into four levels “Complete Beginner”, “Beginner level”, “Intermediate” and “Intermediate+” level.

• Rules and regulations of the training processes were developed to include the conditions for joining the trainee to the specialized skills after passing the English language (1) and English (2) courses, and obtaining a minimum grade of (C) in one of them, or get (D+) as the least in each. Therefore, the trainee gets a DN grade if his absence in the English language course exceeds 31 hours in the semester. In addition to that, the trainee will be dismissed from the institute if he fails in the English language course (1) or the English language course (2) in two consecutive semesters.

• Training periods’ system was changed to the semester system, the direct result of that, the four English courses (BSEL103, BSEL204, BSEL305, and BSEL406) have been combined into two courses (BSEL2407, BSEL 2408) so that the contact hours become as 20 hours per week. These 20 hours were divided into 18 hours as theoretical lectures and two hours in English language laboratories during the week.

• The English courses were redesigned to prepare the students to achieve language proficiency and communicative competencies measurable on a descriptive scale (JTI ELBS) of 16 reference points (1 – 16) and benchmarked against the IELTS.
Third party English test were conducted to find out (JTI, 2019) the real level of the trainees as a result of that (86%) of JTI trainees acquired above grade (4) in International English Language Testing System (IELTS) scale.

• The paper tests were developed into computerized electronic tests. A hundred percent practical Computer Aided Language Learning (CALL), consisting of audio, video lessons, covers a wide range of topics and supplements the language skills that the trainees learn in the classroom environment.

• The classroom density were minimize, since, the class environment is connected with the trainees’ performance and achievement. Trainers from private companies were hired for this purpose. The results were only 19% of the classes exceed the number of 30 trainees per class.

These initiatives have improved trainees’ performance in English language courses, curriculum development, operational efficiency and cost reduction. This study can be developed to include other aspects such as the impact of the training systems on the attrition rates and the absence of trainees to enhance improvement in English language and graduate more qualified cadres to meet the needs of the industrial sector.

8. Acknowledgements

In conclusion, we thank Allah for health and wish success to this case study. We also extend our sincere thanks to the Royal Commission for Jubail and Yanbu for their continued support and encouragement of scientific research projects.
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