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Work-related English Language Needs Analysis of Engineers Working at the Foreign Companies of Ethiopia:
The Case of Hawassa Industrial Park

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Abstract

The main objective of this study was to identify the English language skills and the kinds of skills-based tasks engineers needed to carry out to function and communicate effectively with their foreign company employers and supervisors at Hawassa Industrial Park (HIP) since the working language was English. To achieve these objectives two main instruments of data collection were employed: survey questionnaire administered to 70 engineers and semi-structured interviews were conducted with 5 foreign employers/supervisors and 5 engineers at HIP. The results of the analysis of the data indicate that while all the four major English skills were important for the engineers workplace communication in general, the oral skills (listening and speaking in the order mentioned) were of a particular importance over the literacy skills (reading and writing). The most common and highly needed work-related tasks for engineers' workplace communication at HIP were: reading different manuals and guidelines, reading safety signs and rules, writing daily and periodic performance and other reports, writing emails, making technical conversations, talking on the phone, speaking in meetings/seminars, listening to their employers/supervisors' instructions and advice, and listening to meeting and seminar discussions. Implications for pedagogical and classroom use have been made.

Keywords: Work-related, Needs analysis, Foreign companies, Engineers

1. Introduction

The emergence of English for Specific Purposes (ESP) teaching movement resulted from the English language needs of the learners for specific purposes in accordance with their professions or job description (Dudley Evans & St John, 1998). Science and engineering are global disciplines, with English being the language of preference for top international conferences and scholarly publications as well as for communication among international employees in the workplace and on international project teams. Competence in the English of scientific and technical work is essential for success, not only for native speakers, but also for nonnative speakers, who comprise the vast majority of professionals in scientific and engineering fields (Orr, 2010). Kaewpet (2009) also points out that engineering profession significantly requires English as a means of communication. Multicultural work practices increasingly demand that engineers are equipped with enhanced soft-skill proficiency, specifically, foreign language ability, communication confidence and cross-cultural experience. The foreign language in use is predominantly English, as evidenced by the extensive volume of reports related to English.

Engineers, thus, all around the world would find themselves use English for some aspect of their jobs. English is used in most international organizations and publications in engineering field and most engineers whose native language is not English would find disadvantages in their professional terms (Orr, 2002). Beyond the difficult task of developing expertise in engineering, nonnative speakers must master English through continued English education. In this 21st century, engineering employers seek professional engineers who have excellent scientific knowledge and are able to demonstrate good communication and problem solving skills.

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With this focus on job demands, engineering education has been restructured, balancing the emphasis between scientific knowledge and soft skills (Mohammed, 2015). Moreover, Kim (2013) underscores the importance of English communication ability for engineers whose native language is not English that it has become as important as their major related abilities in this era of globalization.

Research has shown that while engineers may be equipped with the necessary technical skills to do their job, they generally lack non-technical or 'soft' skills such as communication, which has been identified as a highly important non-technical skill (OECD, 2018), and are often lacking (Cal et al., 2022). Such a gap between graduate capabilities and workplace requirements potentially leads to decreased employment opportunities (OECD, 2017). The importance of communication skills for an engineer may sometimes hold more weight than technical competences in employability (Cal et al., 2022).

Currently the Ethiopian government has placed a special emphasis on science and technology fields, particularly in engineering in the hope of transforming the country from an agriculture-led economy to an industrialized one. Consequently, the government is establishing quite several industrial parks and has opened a wider door to different foreign investors across the country and is inviting foreign investors to achieve its millennial developmental goals. As a result, many foreign investors are coming from all over the world such as China, Seri Lanka, Indonesia, India, Thailand, Turkey, Philippines, America and Europe and certain African countries investing in different economic sectors.

Among these industrial parks recently established in the country, Hawassa Industrial Park, which is situated at Hawssa city, is one of the largest in size and hosts several foreign companies. The park recently accommodates 23 different foreign companies engaged mainly in the manufacturing of different textiles and garments. These investors have recruited numerous engineers graduated from different Ethiopian universities in various engineering fields. Since most of the investors and the chief supervisors are foreigners, the major language for workplace communication among them and the Ethiopian engineers is English. Hence, besides the knowledge of the technical skills, the engineers need a good ability of English to communicate effectively with their foreign employers and supervisors to be successful in their career.

According to the information from the facilitation office of HIP, all of the 23 companies were owned by foreign investors from different countries and most of the chief engineers, production and technical head engineers and human resource officers were mostly foreigners. Since the means of communication between these foreign engineers and managers and the respective Ethiopian engineers was inevitably English, the need to communicate effectively in English is mandatory to earn a good pay and position by the Ethiopian engineers. In Ethiopia the provision of in-service trainings to the employees is not so common to the best of the researcher's knowledge so far with regard to the working language to enhance their workplace communication skills, which is English in this case, except giving training for their technical skills. As a result, the engineers have to rely on the English language skills they have acquired from their prior school and university education to meet their workplace communication demands. The major source they can acquire the necessary skills of workplace communication is their university education. However, from the researcher's long years of teaching experience as an English instructor at Dilla and Hawassa Universities, the English courses offered at universities were not as such targeted to preparing the graduates for their future workplace communication needs as general English courses were offered to all university students irrespective of their disciplinary differences (Biniam et al., 2015). In addition, since the establishment of industrial parks and invitation of foreign investors are only recent phenomena to Ethiopia, many of the employees including engineers are widely heard complaining about the communication challenges they were facing with their foreign employers and supervisors because of lack of exposure to foreign accents and their relatively weak English language abilities.

Therefore, the purpose of this study was to identify the work-related English language needs of engineers who were working at the foreign companies of Ethiopia with a particular reference to Hawassa Industrial Park in terms of the language skills and the tasks that they were required to carry out and then suggest a syllabus that would better address their needs.

1.1 Research questions

1. Which English language skills are particularly important for engineers' workplace communication at HIPDC?

2. What are the work-related English language needs of engineers working at HIP in terms of skills-based tasks?

2. Methods

2.1 Research design

It is apparent that the choice of a research design could be determined by the purpose of the study. Since the assessment of English language needs and difficulties of engineers requires the involvement of different stakeholders and obtaining of their opinions, perceptions and preferences, a *cross-sectional survey* research design was chosen for this research. Survey research is a research method involving the use of standardized questionnaires and/or interviews to collect data about people and their preferences, thoughts, and perceptions in a systematic manner (Cohen et al., 2007; Bhattacherjee, 2012).

For data gathering, the *convergent parallel mixed method* that included both quantitative and qualitative data collection techniques was employed to examine the research questions. This was a set of procedures that researchers use to concurrently collect both quantitative and qualitative data, analyze the two datasets separately, compare and/or synthesize the two sets of separate results, and make an overall interpretation as to the extent to which the separate results confirm and/or complement each other (Creswell, 2006, 2014; Plano Clark & Creswell, 2015).

2.2 Participants of the study

The participants of this study were the engineers who were working in the selected 10 companies of Hawassa Industrial Park and their foreign employers and supervisors from January to May, 2022.

2.3 Instruments of Data Collection

For this study two major instruments of data gathering were employed: survey questionnaire and semi-structured interviews. A sample of 100 engineers who were working at 10 different foreign companies of HIP were administered a questionnaire at their workplace on the basis of their willingness to participate in the study. However, from these 15 copies of questionnaire were not returned in time and from the returned 85 copies only 70 correctly filled copies were considered for the analysis of results. The purpose of employing the questionnaire was to obtain their views about the language skills important for their work and the level of need of carrying out different skills-based tasks for their workplace communication at HIP.

In addition, an in-depth semi-structured interview was carried out with 5 engineers and 5 employers of engineers to obtain information from the participants' perspective about the actual work-related English language needs of engineers at HIP in order to triangulate the results of the questionnaire.

2.4 Method of Data Analysis

The data obtained through the questionnaire were analyzed quantitatively using descriptive statistics such as frequency, percentage, mean and standard deviation with the help of SPSS software of Version 21. On the other hand, the interview data were organized around themes and analyzed using a modified grounded theory method, a process of classifying and categorizing text data segments into a set of codes (concepts), categories (constructs), and relationships (Bhattacherjee, 2012). The interpretations were grounded in (or based on) observed empirical data using the NVivo 10 software and then thematically analyzed qualitatively.

3. Results

3.1 Bio-data of Respondents

The sample engineers who participated in the study graduated from different Ethiopian public universities mainly from Hawassa University (28.7%), Bahir Dar University (20.0%), Jimma University (8.6%) and Adama Science and Technology University (7.1%), Wolaita University (7.1%), and Wolkite University (5.7%) which comprised 77.2% of all the respondents. The remaining 22.8% participants were graduates of Dilla University, Wachemo University, Addis Ababa University, Arba Minch University and Haramaya University in a descending order.

Regarding the specialization of the participant engineers at Hawssa Industrial Park (HIP), 25 (35.7%) of them were mechanical engineers, 12 (17.1%) were textile and garment engineers, 11 (15.7%) were electrical

and computer engineers, 6 (8.6%) were electromechanical, 6 (8.6%) were civil engineers, and the remaining were chemical, industrial and construction and technology management engineers in a descending order. With regard to the companies the sample engineers were taken from, 14 (20%) of them were from PVH Arrivind Manufacturing PLC, 13 (18.6%) from Zero Liquid Discharge Plant, 10 (14.3%) from KGG Garments PLC, 9 (12.9%) from Silver Spark Apparel, 6 (8.6%) from EPIC Apparel Group, and from Quadrant Apparel Group, Isabella Socks Manufacturing PlC, and Indochine Apparel each 5 (7.1%) and 3 (4.3%) from Hindramani Garment PLC.

Concerning their years of service at foreign companies, most of the respondents i.e. 53 (75.7%) of them had only 1 to 3 years of service followed by 16 (22.9%) having 4 to 6 years of work experience at foreign companies of Ethiopia and only 1(1.4%) had 10 years and more years of work experience in foreign companies. This suggests that most of the engineers who were working at HIP had fewer years of work experience at foreign companies and it could be noted that they had insufficient experience of using English for workplace communication with their foreign supervisors or heads.

3.2 English Language Skills important for Engineers' workplace communication

Table 1 shows that all the four major language skills were very important for engineers' work place communication at HIP. Based on their mean scores the listening skill stood out as the first most important with the highest mean score of 4.81, the reading skill as the second most important with the mean of 4.79 and the speaking and writing skills were the third important skills with the same mean score of 4.67 for engineers' workplace communication at HIP.

Table 1 Engineers' response about the level of importance of English skills for workplace communication (N=70)

English Skills	Level of importance (%)					Mean	SD
	1	2	3	4	5		
Reading	-	1.4	1.4	14.3	82.9	4.79	0.54
Writing	-	1.4	2.9	22.9	72.9	4.67	0.61
Speaking	-	2.9	2.9	18.6	75.7	4.67	0.61
Listening	-	1.4	1.4	11.4	85.7	4.81	0.52

***Scale**: 1=Not important 2=Of little importance 3= Of medium importance 4= Important 5= Very important*

For the question which language skills were most important for engineers' workplace communication, the results of the semi-structured interviews showed that the oral skills (listening and speaking) were more important than the literacy skills (reading and writing) because most of their daily communications involved the oral skills, with the listening skill being the most needed followed by the speaking skill. The listening skill stood out first since most of their work was related with listening to what their employers or supervisors required them to do like taking their instructions, advice or suggestions with regard to the services they were required to provide. The second most important skill was the speaking skill because they were often required to carry out mostly technical conversations with their supervisors or production managers. In the third place, they put the writing skill since they were required to write performance reports, write different business letters, and write order sheets, and at last they placed the reading skill probably because they were not required to read different documents as frequently in comparison with the other skills. Here are some of the responses in the participant engineers' actual words:

> *I think it depends on the work area. Here in my work area from my experience in Hawassa IPDC, I meet different foreigners most of the time. So I am very much required to listen and speak with them than write and report. Most of the time, I am engaged with them to communicate verbally [orally]. I am also required to write and report, but that does not happen many times. The first skill should be the listening part. First, you need to understand what they want to say. Second, the speaking part comes after you understand what they want to say. So even if you don't speak to him, if you listen what he said you can give him what he wants. The first thing is the listening part, and then comes the speaking part. After that reading and writing skills follow. (EE2)*

3.3 Work-related tasks that engineers are required to carry out for their workplace communication

Below were discussed the tasks for engineers' workplace communication in each language skill based on the responses from the samples of engineers working at HIP.

3.3.1 Work-related Reading Tasks

According to Table 2, reading product descriptions and manuals, reading safety signs and notices, reading training manuals (e.g. of sewing machines, maintenance, etc.), reading internet resources and reading project reports stood out as highly needed reading tasks for engineers' workplace communication with their mean scores of respectively 4.61, 4.49, 4.40, 4.23 and 4.20.

Table 2 Engineers' response about the level of need of carrying out work-related reading tasks (N=70)

Work-related reading tasks	Level of need %					Mean	SD
	1	2	3	4	5		
1. Product descriptions or manuals	-	1.4	5.7	22.9	70.0	4.61	0.67
2. Feasibility study reports	-	7.1	18.6	31.4	42.9	4.10	0.95
3. Safety signs, rules and notices	1.4	1.4	12.9	15.7	68.6	4.49	0.88
4. Research journals	5.8	20.3	17.4	42.0	14.5	3.39	1.14
5. Abstracts of projects	6.0	9.0	23.9	31.3	29.9	3.70	1.17
6. Project documents	5.7	7.1	18.6	28.6	40.0	3.90	1.18
7. Professional texts	2.9	2.9	18.8	42.0	33.3	4.0	0.96
8. Office documents	1.5	6.0	25.4	31.3	35.8	3.94	1.0
9. Internet resources	2.9	7.1	8.6	27.1	54.3	4.23	1.07
10. Design reports	3.0	3.0	13.4	32.8	47.8	4.19	1.0
11. Project reports	2.9	2.9	11.4	37.1	45.7	4.20	0.96
12. Design codes	4.4	8.8	16.2	27.9	42.6	3.96	1.17
13. Training manuals	1.4	1.4	7.1	35.7	54.3	4.40	0.81

***Scale**: 1=No need 2= Little need 3= Moderate need 4= High need 5= Very high need*

On the other hand, the interview results show that the reading tasks the participant engineers needed to carry out for their workplace communication were generally different from company to company and highly depended on the kind of work they were required to do in their respective foreign companies. Firstly, as the engineers' work often involved different activities such as installation, maintenance, construction, safety, modification, production, and so on, the reading of different manuals appeared to be the most common work-related reading task for the engineers working at HIP. However, the kinds of manuals that engineers were required to read varied according to the kind of work they were required to execute and the position at which they were serving in the foreign companies. For instance, the reading of manuals which a maintenance engineer was required to carry out was different from that of a construction engineer. That is, a maintenance engineer was mostly required to read different installation manuals, maintenance guidelines, modification guidelines and security guidelines among other things, whereas a construction engineer was required to read different construction manuals or codes. The following responses evidence for these points:

> *Mainly we will have to read guidelines, maintenance guidelines and modification guidelines, maintenance manuals and installation manuals. So, all of these documents are in English. So we should read these kinds of documents. For example, whenever an investor asks us for a modification, we should know each and every guideline. For example, there are structural guidelines, safety guidelines and manual alarm controls, security guidelines. There are also electrical and mechanical parts of manuals that we have to read. We have to read these materials and update ourselves. (EE3)*
>
> *Then after, there should be preventative maintenances and annual maintenances. There are entire parameters for those kinds of maintenance. They should understand those parameters which are written mainly in English, which are not common in Amharic actually. They need to understand what it means, how to maintain, what the next part is, what routines a machine needs for maintenance. Another is an engineering-related international signs are there like safety and compliance signs. So the engineers have to read and understand these signs because the working area is very dangerous. (EE1*)

On the other hand, an engineer working in the production section was required to read different production manuals as the main products of the companies at Hawassa IPDC were different textiles, clothing and garments. Hence, the engineers under the production section needed to read different manuals related to the sewing and production equipment as each manufacturing machine provides instruction manuals and catalogues for identifying fabric, measuring, cutting, sewing, layering and packing. The responses of EE1 and EEmp1 attest this point:

Somebody should be able to read and understand those materials before selecting and ordering the machines for the factory. Then after, the manuals of the machines are there to be read. There are different manuals: operation manuals, maintenance manuals, and product manuals also there. An engineer should have the capability of reading of those manuals and only then will they have the proper knowledge about the machines which are landing here. (EE1)

I think most of the manuals for the [production] engineer are related to the sewing and production equipment. There is the provision of a lot of manuals. Each manufacturing machine provides instruction manuals, catalogues and etc. So, there they can get familiar if they are good in English. Of course, most of those manuals are in English. (EEmp1)

In general, engineers can work at different companies sometimes outside of their specialty areas, and hence they are required to read and understand different manuals carefully to execute their jobs efficiently and safely to avoid any possible dangers that could occur otherwise.

3.3.2 Work-related Writing Tasks

Table 3 shows that the responses of engineers working at HIP were generally dispersed in their prioritization of the work-related writing tasks. They replied that the highly required work-related writing tasks for them were the writing of daily or periodic performance reports, writing e-mails, writing job applications, writing product manuals or descriptions and writing problem investigation reports with their mean scores of respectively 4.30, 4.13, 4.06, 4.06 and 4.00. In addition, the total mean score was 3.87 for the respondents of engineers. This seems to imply that lesser level of need was placed to carrying out writing tasks by the respondents in comparison to the other skills-based tasks.

Table 3 Engineers' response about their level of need of carrying out work-related writing tasks (N=70)

Work-related writing tasks	Level of need (%)					Mean	SD
	1	2	3	4	5		
1. Daily or periodic performance reports	2.9	4.3	8.6	28.6	55.7	4.30	1.00
2. Product manuals/descriptions	1.4	7.1	15.7	35.7	40.0	4.06	0.99
3. Feasibility study reports	1.4	12.9	15.7	40.0	30.0	3.84	1.04
4. Project proposals	4.3	10.1	13.0	44.9	27.5	3.81	1.09
5. Project progress and/or completion reports	5.8	8.7	11.6	40.6	33.3	3.87	1.15
6. Problem investigation reports	4.3	2.9	21.4	32.9	38.6	3.99	1.06
7. Job applications	2.9	2.9	20.0	34.3	40.0	4.06	0.99
8. Business letters	7.1	8.6	28.6	32.9	22.9	3.56	1.15
9. E-mails	-	8.7	18.8	23.2	49.3	4.13	1.01
10. Minutes of meetings	1.4	13.0	21.7	30.4	33.3	3.81	1.09
11. Contractual agreements	10.0	12.9	24.3	24.3	28.6	3.49	1.31
12. Abstracts of projects	8.7	7.2	15.9	46.4	21.7	3.65	1.16
13. Presentation slides	2.9	10.1	23.2	31.9	31.9	3.80	1.09

***Scale**: 1=No need, 2= Little need, 3= Moderate need, 4= High need, 5= Very high need*

Similarly, the semi-structured interview results also confirmed that the writing tasks engineers needed to carry out for their workplace communications generally depended on the company or the department they were working at. The work-related writing tasks for the engineers' workplace communication at HIP appeared to be limited and repetitive especially for those working as operators or general engineers. The following were identified as the most common writing tasks for engineers working at HIP:

i. Writing performance reports

First, keeping the record and reporting of their own and/ or other employees' daily, weekly, monthly or yearly performance and efficiency reports appeared to be the most common and most frequent work-related writing task almost for all engineers working at the foreign companies in HIP. In addition, depending on the department and positions they were working at, the engineers were also required to keep the records or checklists of the performance capacities of gas and water consumption reports of different boilers, generators, and machineries. In general, these sorts of writing tasks were mostly repetitive or routine and less demanding for the engineers to carry out. For instance, one participant engineer responded like this:

As an engineering department in our company there are a lot of things that we have to write every day, including daily reports of like boiler running report. We have a huge boiler and also a generator. Every generator checklist is there, boiler checklist is there, logging sheet is there. Even for every electric-related panel, there is preventive maintenance checklist that needs to be filled every day. Somebody should be capable to fill those. Finally, there are different ways of reporting our project reports like making gun chart to display the completion of tasks and so on to show the progress of our projects to our management. (EE1)

ii. Writing business letters

The writing of different kinds of business letters accounted for the second major work-related writing task particularly for engineers who were working as heads or supervisors in the foreign companies in HIP. The correspondents whom the engineers wrote their business letters to included international calibration companies, HIP facilitation office and Ethiopian IPDC, different government offices like Ethiopian Electric Utility, business clients and consultants. In addition, the engineers also needed to write different annual leave or permission letters to request their permission. The responses of participants EE1 and EEmp2 attest this need as follows:

We have lots of communications especially with the foreign companies to sustain our world class standard. For calibration of our machines we will have to fill and send the company for mark and we are sending our request letters for calibration companies. When we start a project we have requisition letter from the entire company management plus industrial park management. They should have to certify us to start one project. So, based on that, they will give us their approval after our formal requisition (letter) to them. Specifically with government offices in our country, we write formal letters for example, like Ethiopian Electric utility, industrial parks corporations for whatever we require from them and whatever they require from us. There is also permission request letters when employees want their permission. (EE1)

Sometimes I would like our staff to write English (business) letters to our clients to build our image to our consultants and it seems for the importance of the English is mandatory…. And also for the writing we communicate with our clients and our consultants, so we use it the official way which is we have to write letters. So the letter is very important. Also the English writing is the criteria how to separate the person from the others how his English skills are. (EEmp2)

iii. *Writing emails*

Thirdly, the engineers who were working on supervisory positions or management also had e-mail accounts and were required to write emails to their seniors or management teams. In addition, the other engineers had 'what's up' groups and communicate through this application.

He has an email account where most of the other engineers don't. So he would collect all the information and send the management. (EEmp1)

So, to fulfill that, we should have direct communication with 'What's up' kinds of things. We interact with 'What's up' and we will have a brief communication with the software company to update our status of the year. We also have mail id for internal communication and other customers. (EE1)

iv. *Writing project and purchase proposals*

Fourthly, the engineers who were working on a management levels were also required to write project and purchase proposals they needed to execute for their departments for the upcoming period of time.

The other writing task is like we are asked to produce sometimes proposals, to propose something like projects and purchasing proposals. There are some materials that we have to purchase. In that case we have to know how to write such kinds of proposals. (EE3)

3.3.3 Work-related Speaking Tasks

Table 4 presents the responses of engineers about the level of need of carrying out carrying out engineers' work-related speaking tasks. According to the respondents of engineers who were actually working at different foreign companies at HIP the top five highly required speaking tasks for their workplace communication were introducing themselves and others in a variety of situations to their foreign supervisors and co-workers, talking on the phone, participating and contributing to meetings with foreigners, giving job and other interviews, talking about everyday activities and duties with their foreign supervisors or seniors

with their mean scores of respectively 4.47, 4.41, 4.39, 4.34 and 4.33. In addition, the total mean score for the respondents of engineers was 4.24 implying that the need to carrying out work-related speaking tasks was quite high.

Table 4 Engineers' response about the level of need of carrying out work-related speaking tasks (N=70)

Work-related speaking tasks	Level of need (%)					Mean	SD
	1	2	3	4	5		
1. Introducing themselves and others	1.4	-	7.1	32.9	58.6	4.47	0.76
2. Making business negotiations with foreign investors or agents	8.6	12.9	18.6	30.0	30.0	3.60	1.28
3. Talking on the phone with foreigners	-	7.1	7.7	22.9	62.9	4.41	0.91
4. Participating and contributing to meetings/seminars	-	2.9	12.9	27.1	57.1	4.39	0.82
5. Talking about everyday tasks and duties	-	-	14.3	38.6	47.1	4.33	0.72
6. Delivering oral presentations (e.g. seminars, project reports)	1.4	4.3	12.9	37.1	44.3	4.19	0.92
7. Making an oral report of a project or field visit to a senior	-	2.9	17.6	33.8	45.6	4.22	0.84
8. Giving an interview	-	-	11.4	42.9	45.7	4.34	0.68

***Scale**: 1=No need, 2= Little need, 3= Moderate need, 4= High need, 5= Very high need*

Similarly, based on the participant engineers and their employers' interview results, the need to carry out different speaking tasks for their workplace communication was very high. However, this depended highly on the position they assumed and the nature of work they were doing. For instance, the engineers working for HIP under the general facilitation office had the role of providing maintenance, installation, modification, safety and other services to all of the companies in the whole industrial park and they met different kinds of investors or customers from many countries; therefore, their level of need of carrying out different speaking tasks was very high. On the other hand, those engineers who were working for a particular company just as an operator or general engineer had relatively limited demand to carry out different speaking tasks and those engineers who were working for a particular company but at a supervisory or managerial level, for instance, like as a head of production or utility team, their level of need of carrying out different speaking tasks was very high because they were required to meet and talk to various foreign people to run their business effectively. Hence, the following were some of the most common and frequent speaking tasks for the engineers' workplace communication at HIPDC.

i. *Making technical conversation*

Carrying out daily or periodic technical conversations appeared to be the most frequent and most common kind of speaking task for the engineers' workplace communication at HIPDC. As the engineers worked with the foreign investors or supervisors from different countries, they needed to talk technically before or during providing the necessary services of maintenance, installation, or any other. That is, they might communicate using technical terms common to engineering in general or specific to their fields of study if they were all engineers, and if not in a way they could be understood for those who were not from engineering background. As the main products of Hawassa IPDC were various garments and clothing, these technical conversations were usually related with technical terminologies from textile and garment engineering, for instance different parts and kinds of sewing machines, fabrics, measuring, cutting, layering, cataloguing, and packing. In addition, it involved technical terms connected to electrical and mechanical engineering for maintenance, installation, safety and security services and somehow terms of chemical and industrial engineering for running different chemical processes. A few of the participants' responses evidence the importance of these sorts of conversation takes place almost regularly between the Ethiopian engineers and their foreign employers or supervisors:

> *We communicate with the managers and also with skilled personnel to understand what they need. If there is some trouble or if there is anything to maintain or rectified, we just need to communicate on the technical issues. So, technical conversation is needed. So we need to have a good speaking skill to understand each other better. (EE2)*

But for foreigners' communication there are lots of engineers coming from different countries here. For everyday communication our engineers are interacting and communicating with them. They may not interact through the phone or emails. But physically they communicate personally face to face and share their knowledge and attend seminars as well. (EE1)

ii. Making Oral Reports or Presentations

The other speaking task that engineers were required to carry out for their workplace communication was making oral reports of their own and other employees' work performance and related issues to their foreign supervisors, employers or management body to whom they were accountable for privately in their offices or publicly for an audience. Apart from the formal written report they produced and submitted, particularly those engineers who were in charge of certain sections or team also needed to give oral reports quite frequently to the concerned managerial bodies explaining how they were executing their responsibilities or what challenges they are facing. The following are some of evidences from the participants' responses.

The production departments are our customers. Whatever they require we have to provide them. We have a deep (detailed) reporting to the management. Whatever problems happen here we have to explain to our management in the way they can understand. Actually most of our management members are not engineers, so we have to explain in an understandable way in English. We are reporting to our engineering head office to get whatever support we need and to give whatever support they need. (EE1)

We express our ideas, share with other people that is using English. And sometimes we just have presentations, for example, for higher government officials. We just report how the construction project is progressing to the government or to the clients in English. (EEmp2)

iii. Participating in Meetings

According to the respondents, the engineers were also required to attend and discuss their day to day encounters in a meeting on a regular basis in their specific work unit or department or at a company level in solving problems and improving their own and others' performance and productivity. In addition, those engineers who were facilitators under HIP, supervisors or heads of different departments and sections were sometimes required to participate in meetings at national or international levels and discuss issues related to industrial parks development and management. Consequently, the engineers were selected to participate in such national and international meetings and seminars based on their abilities of expressing themselves and contributing in English language.

Every morning we usually have a meeting before we start our daily work. We discuss any issues or problems that we are encountering or our department is facing. Then the group members suggest their ideas or solutions to solve the problem. So, we have to listen to that to improve work efficiency. (EE3)

And sometimes we are also required to attend meetings. Not long ago I was in Addis Ababa participating in a meeting with personnel from different international companies. Actually, my speaking skill and my language skills benefitted me a lot. If you have a good speaking skill, it helps you a lot in the engineering works. (EE2)

iv. Participating and/or Giving Seminars and Trainings

The other type of speaking task that the engineers were required to carry out is participating at national and international seminars and trainings especially for those engineers who were working under HIPDC and other engineers who were working at a supervisory positions or senior levels of different companies on how to manage industrial parks. In addition, they were also regularly needed to prepare and give trainings to those who were working at operation, safety and compliance sections on firefighting, first aid and so on by expert engineers from HIPDC or their own experts from each company.

For example, in the last two years we participated in two seminars abroad. That means, in China. Actually, the entire seminar was given in English. It is about industrial parks management and from the engineering perspective we take some examples from China. … So, all the training was given in English on how they developed their industrial parks. There was also a discussion. It was both seminar and training. And also we give them some kinds of training. …For example, sometimes we prepare training, so it should be delivered in English. So, English speaking skill is very important. We give the training to the safety compliance of the investors for each company. (EE3)

There are different ways of attendances like compliance related presentations on safety training. This is a safety working area of a company which works for the social comfort of the company. These are mainly on the safety related issues like firefighting, first aid, and feel safety. Everybody should comply with the standard requirements set by the buyers of our products. There are some basic standards that we need to fulfill. (EE1)

iv. Telephone Conversations

Based on the participants' response, the engineers particularly those who were in charge of facilitating the whole HIPDC or managing certain sections of a particular company were required to make or receive a lot of telephone calls almost constantly. Participants EEmp3 and EE1stressed the need to talk on the phone is very high and this will follow you wherever you are, and sometimes even at home at midnight as follows:

> *Yes, every time. This is a big plant so the maintenance and the equipment are very tough. So we are communicating and explaining the problems every time when we are in the office or outside. They call and report every problem to us. If it is possible, we try to solve from here. If it is not and if they don't understand, we go to the plant and solve the problem or guide them. (EEmp3)*
>
> *That (our work) needs telephone communication. You may be required to answer their phone calls and explain something to them when they faced any problem in your department. Once upon time they called me and asked me to come to the park at midnight because they couldn't understand the operator on duty as I am the head of the department. We also communicate with our main company heads that are found in Hong Kong office in English actually. (EE1)*

This was also confirmed by the researcher during his data collection period in the park while he was conducting interviews with the engineers that they were forced to pause their interviews a number of times to respond to the telephone calls. In addition, when he was contacting different engineers and administering questionnaires in at least ten of the companies in the park, he noticed that many of them had to apologize the researcher for interrupting the talk with him to answer the telephone conversation. In fact, most of the telephone conversations he observed were made in English. This indicates that the need of making telephone conversations by the engineers was very high.

3.3.4 Work-related Listening Tasks

Based on the data from Table 5 it is possible to see that listening to spoken instructions or advice from supervisors or seniors stood out as the foremost highly needed listening task for engineers' workplace communication at foreign companies for the respondents with the highest mean score of 4.51 for engineers working at HIP. Following this, for the respondents of engineers at work listening to trainings/seminars and listening to meeting discussions appeared to stand out the second and third highly required listening tasks for engineers' workplace communication with the mean scores of respectively 4.47 and 4.24 for engineers at work.

Table 5 Engineers' response about the level of need of carrying out work-related listening tasks for engineers' workplace communication (N=70)

Work-related listening tasks	Level of need (%)					Mean	SD
	1	2	3	4	5		
1. Receiving spoken instructions/ advice from supervisors/seniors	-	1.4	4.3	35.7	58.6	4.51	0.65
2. Listening to meeting discussions	-	2.9	14.3	32.9	48.6	4.24	0.91
3. Listening to trainings/ seminars	-	1.4	5.7	37.1	55.7	4.47	0.68

***Scale**: 1=No need, 2= Little need, 3= Moderate need, 4= High need, 5= Very high need*

In addition, the total mean scores of the listening tasks for the respondents was 4.41, for engineers, implying that the work-related listening tasks were highly valued by the respondents of engineers at work in the foreign companies. In general, this seems to indicate that all the three listening tasks proved to be of high requirement for engineers' workplace communication.

Moreover, based on in the interview results the level of need of carrying out the listening tasks in foreign companies was quite very high, even more important than performing the speaking tasks for the engineers' workplace communication. Since the engineers were mostly facilitators and service providers as a

mechanic or work as production engineers for their foreign investors or employers, they were more required to listen to them than to talk in their day to day work experiences. As the foreign employers or supervisors had different English language backgrounds or accents, the engineers reported that they often faced problems in understanding what their customers wanted them to do. Next, the more common and more highly needed listening tasks for the engineers' workplace communication have been presented.

i. Listening to instructions or advice

The participants reported that listening to their supervisors or seniors' instructions or advice stood out as the most common and most frequent listening task for engineers' workplace communication. Since the engineers were facilitators or service providers to their foreign customers or employers in the park or in a particular company, they were often required to take instructions, requests or advice to execute their responsibilities effectively. The foreign company owners wanted or required the engineers to carry out different activities for them through listening to their instructions first. In addition, in order to carry out their duties and tasks effectively, they needed to have a good listening ability as their foreign employers came from different countries and had different English accents which were sometimes difficult for them to understand. In this regard, all the participant engineers and their employers emphasized the need of engineers to execute this task:

> *As I told you the most basic positions are held by the foreigners, so we have to listen to them. We have to understand what they actually need. If there is no a good listening skill, there will be a miscommunication. That means there is no work anyhow. As we are a supporting team, maybe someone has got some electric problem, they explain the problem to the electrical engineer what is happening. The electrical engineer should understand the problem by listening and then give a solution. Most of the key positions are handled by foreigners. Requests come from them and we have to understand them. (EE1)*
>
> *For the routine work normally we just do communications because we sometimes give instructions to our local employees and also communication is the most important. Once we give instructions to our local staff, they have to listen it. They have to fully understand it. So, if their listening is not good, maybe it is difficult to understand what our foreign company gives them to do. So listening is important. (EEmp1)*

ii. Listening to Meeting Discussions

The other very common and very frequent listening task for the engineers' workplace communication, mainly for those in charge of supervisor or facilitator positions was listening to meeting discussions. The respondents stressed the need to listen to meetings as they were required to attend meetings almost every morning for evaluating their daily performances and making improvements with their foreign employers and supervisors. That is, every morning before they started their daily work, they were required to sit down in a meeting room to discuss their daily encounters with the team members who were working together in one department or management meetings at a company level. In this regard, the responses of EE1, EE3 and EE2 testify for this need:

> *We have a deep reporting to the management (in a meeting). Whatever problems happen here we have to explain to our management in the way they can understand. Actually most of our management members are not engineers, so we have to explain in an understandable way in English. We are reporting to our engineering head office to get whatever support we need and to give whatever support they need. (EE1)*
>
> *Every morning we usually have a meeting before we start our daily work. We discuss any issues or problems that we are encountering or our department is facing. Then the group members suggest their ideas or solutions to solve the problem. So, we have to listen to that to improve work efficiency. (EE3)*
>
> *And sometimes we are also required to attend meetings. Not long ago I was in Addis Ababa participating in a meeting with personnel from different international companies. (EE2*)

iii. Listening to Trainings and Seminars

In addition, the engineers were also required to attend and listen to different trainings and seminars related with safety compliance, installation, maintenance and other related issues on how to manage industrial parks inside the park or outside at national or international levels. These trainings and seminars were usually

arranged and given by foreigners or Ethiopian engineers in English. Therefore, the engineers needed a good listening ability to listen to such important trainings and seminars locally and internationally.

> *There are different ways of attendance like compliance related presentations (trainings). This is a safety working area of a company which works for the social comfort of the company. These are mainly on the safety related issues like firefighting, first aid, and feel safety. Everybody should comply with the standard requirements set by the buyers of our products. There are some basic standards that we need to fulfill. (EE1)*
>
> *For example, in the last two years we participated in two seminars abroad. That means, in China. Actually, the entire seminar was given in English. It is about industrial parks management and from the engineering perspective we take some examples from China. … So, all the training was given in English on how they developed their industrial parks. There was also a discussion. It was both seminar and training. (EE3)*

iv. Listening to Compact Discs (CDs)

In addition to the above major listening tasks, the engineers are sometimes required to listen to different compact discs or videos that are attached and sent with the products such as sewing machines, generators or boilers on how to operate them properly apart from the written manuals.

There are also CDs (compact discs) coming with the machines for somebody to listen and understand. So, these are the ways they are delivering the services with the machines. (EE1)

4. Discussion

4.1 Important Language Skills for Engineers' Workplace communication

Based on the results of the quantitative results, the respondent engineers at HIP placed the highest level of importance to the listening skill and followed by the reading skill, and then speaking and writing skills. This appears to show that the receptive skills were more important than the productive skills in the foreign company work situations. However, the interview results from the participant engineers and their employers at HIP indicated that for engineers working at foreign companies like theirs, the oral skills were by far more important than the literacy skills because most of their daily communications involved the oral skills, with the listening skill being the most needed followed by speaking skill. The listening skill stood first since most of their daily work activities were related with listening to what their employers or supervisors required them to do for them like taking their instructions or advice. Next to listening skill comes the speaking skill because they are often required to carry out mostly technical conversations with their supervisors or production managers about their daily tasks and duties.

The engineers put the writing and reading skills in the third and fourth place of importance as they were required to write performance and other reports and order sheets and read product manuals and safety signs and not as frequently as the oral skills. On the other hand, Kaewpet's (2009) study about communication needs of engineers at different Thai companies in Thailand found reading and writing were of particular importance for engineers' workplace communication. A similar finding was also reported in Spence and Liu's (2013) study at a Semiconductor Manufacturing Company in Taiwan that the literacy skills were more needed than the oral skills for the workplace communication of engineers. However, different from their findings, in this study in the foreign companies of HIP the oral skills (listening and speaking) were of a particular importance over the literacy skills (reading and writing). This was probably because English was the only medium of communication among the Ethiopian engineers and their foreign company employers and supervisors.

4.2 Tasks for Engineers' Workplace Communication at HIP

4.2.1 Work-related Reading Tasks

According to the quantitative results, the very frequent and highly needed reading tasks for engineers' workplace communication included reading product descriptions and manuals, reading safety signs and notices, reading training manuals, reading project documents and reading project reports.

In addition, based on the qualitative results, the most common and most frequent work-related reading tasks for engineers involved the reading of different manuals (e.g. maintenance manuals, construction manuals, production manuals and so on) which varied from company to company depending on the kind of

work they were doing. Moreover, some of the engineers particularly those working on the supervisory positions were also required to read office documents such as official business letters, contract documents, project reports and emails.

Merging together the quantitative and qualitative results, the more common reading tasks for engineers' workplace communication were reading product descriptions and manuals, reading safety signs and notices, reading training manuals, reading project documents and reports, and reading business letters and e-mails. This implies that since the reading tasks engineers were required to read for their workplace communication were diverse and were sometimes different from their specialty areas. Similar kinds of findings were also reported in Çal, Admiraal & Mearns' (2022) and Chew's (2006) studies in which reading manuals and instructions was the most frequent reading task in the workplace for engineers.

4.2.2 Work-related writing tasks

Based on the quantitative results, the more common and highly required work-related writing tasks for engineers' workplace communication according to the respondents of engineering students and engineering instructors at HU were writing project proposals, writing project progress or completion reports, writing abstracts of projects, writing problem investigation reports, writing job applications and writing daily or periodic performance reports. On the other hand, according to the respondents of engineers at HIP the highly required writing tasks for their workplace communication were writing daily or periodic performance reports, writing e-mails, writing job applications, writing product descriptions and writing problem investigation reports. Based on the qualitative results the most common and most frequent writing task for engineers' workplace communication at HIP was the writing of daily or periodic performance and other reports. In addition, depending on the positions and the company the engineers are working for, some of them are also required to write formal business letters and emails to different local and global organizations.

Putting together both the quantitative and qualitative results, it is possible to identify that the more common writing tasks for engineers' workplace communication were writing daily or periodic performance reports, writing e-mails, writing job applications, writing product descriptions, writing project proposals, writing project progress or completion reports, and writing problem investigation reports. While Kassim and Ali (2010) identified report and proposal-writing as the most important writing task for engineers' workplace communication which is similar to our findings. Çal et al. (2022) found that writing presentation slides followed by writing emails and reports and Evans (2010) also mentioned writing e-mail messages as being the most important writing task.

4.2.3 Work-related Speaking Tasks

The quantitative results show that for engineers who were working at different foreign companies at HIP the top five highly required speaking tasks for engineers' workplace communication are introducing themselves and others in a variety of situations to their foreign supervisors and co-workers, talking on the phone, participating and contributing to meetings with foreigners, giving job and other interviews, talking about everyday activities and duties with their foreign supervisors or seniors.

On the other hand, based on the qualitative results, the more common and highly needed speaking tasks for engineers' workplace communication at HIP were making technical conversations with foreign supervisors or employers for providing different services, making oral reports or presentations about the company performances and related issues, participating and contributing to meetings, participating and/or giving seminars and trainings and talking on the phone with their foreign supervisors and customers.

In general, putting both quantitative and qualitative results together, it is possible to note that the more common and highly required speaking tasks for engineers' workplace communication were making technical conversations with foreign supervisors or employers while providing different services, making oral reports or presentations about the company performances and related issues, participating and contributing to meetings, participating and/or giving seminars and trainings, talking on the phone with their foreign supervisors and customers and introducing themselves and others in a variety of situations. Similar findings have also been reported in Spence and Liu's (2013) study at a semiconductor manufacturing company in Taiwan where process integration engineers commonly needed oral events that include meetings, teleconferences, and presentations.

4.2.4 Work-related Listening tasks

According to the quantitative results the most highly required listening task for engineers' workplace communication at foreign companies was listening to instructions or advice from their supervisors or seniors. The other highly needed work-related listening tasks were listening to trainings/seminars and listening to meeting discussions.

Similarly, the qualitative results also confirmed that listening to their supervisors or seniors' instructions or advice stood out as the very highly and very frequently required listening task for engineers' workplace communication. Since the foreign supervisors and seniors had different English language backgrounds sometimes with hard accents, understanding their instructions or advice is essential for the engineers even for retaining their jobs. In addition, they were also required to listen to meeting discussions regularly and to attend and listen to trainings and seminars in relation to their for their workplace communication at HIP. With a slight difference, a similar finding was reported in Çal, Admiraal & Mearns' (2022) study in which the most frequently practiced listening tasks were listening to presentations and meeting discussion.

5. Conclusion and Implications

Based on the findings regarding the skills important for engineers' workplace communication at the foreign companies of HIP the oral skills (listening and speaking) were more required than the literacy skills (reading and writing) to function effectively and for their career advancement. However, as the participant engineers underscored the English courses at university did not give due emphasis to the oral skills. Rather, they gave more priority for reading and grammar parts. Therefore, English courses for engineering education at university ought to give proper attention for the oral skills to equip the engineers for workplace communication requirements.

Regarding the second research question, the most common and highly needed tasks for engineers' workplace communication tasks at HIP were: reading different manuals and guidelines, reading emails, writing daily and periodic performance and other reports, writing emails, making technical conversations, talking on the phone, speaking in meetings/seminars, listening to their employers/supervisors' instructions and advice, and listening to meeting and seminar discussion. Thus, English courses for engineering programs should also focus on incorporating these work-related tasks to equip future engineers for the workplace communication requirements. In addition, the Industrial Parks Development Corporation (IPDC) can also organize short term in-service trainings for engineers working at foreign companies to enhance their communication capacities in collaboration with universities.

The findings of this research could be significant for engineering education programs. First of all, in order for engineers to be able to meet the communicative requirements of the workplace, they need high proficiency in general and workplace English, which will help them in job interviews during employment and career advancement.

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