# Has our engineering and technology focused university equipped its students with adequate communication skills? An exploratory study on interns' communicative abilities based on industrial internship experience 

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#### Abstract

: Communication skills, on top of specialized technology competency are a competency valued by employers. Universities are accountable in equipping adequate communication skills among graduates in preparing them to face the challenging and changing industry. This study investigates the communication skills (oral and written) of interns from a private engineering and technology focused university in Malaysia. A comprehensive perspective was obtained through two sets of questionnaires which are used to gather data from the interns and their respective industrial supervisors. Overall, the findings indicate that the interns possess high communicative abilities both in oral and written. Although the mean scores suggest that the interns had rated their communicative abilities higher than their industrial supervisors, $t$-test results show no significant difference between the two groups of respondents. Interestingly, there was no significant difference found among interns from different academic programmes. The findings of this study indicate that the university may have prepared and groomed its students adequately to meet the needs of the current industries. This paper will also discuss the findings in relation to the university's intake requirements, course syllabus, and university-industry collaborative initiatives.


Keywords: internship, industrial supervisors, communication skills, oral communication skills, written communication skills, Malaysia

## INTRODUCTION

The institutions of higher learning play a vital role in generating the necessary human capital needed to transform Malaysia into a developed nation. It is the aspiration of the Malaysian government to produce graduates who are good in both technical and nontechnical skills. The government has been very concerned with the problem of unemployed graduates which has been widely discussed in the recent times. Apparently, one of the major causes identified is the lack of non-technical or soft skills among the graduates and it is a global issue (Kamsah, 2004). These skills are a set of personal attributes which consist of communication skills, problem solving, team working, critical thinking, leadership, management skills, and lifelong learning ability. Hence, there are growing demands for graduates to be equipped with more than just technical skills.

With the Malaysia national curriculum underlining the programmes offered in universities, the mission
and vision of these universities, core curricula and syllabi are collaborative efforts by the government and universities to gear towards producing competent workforce. However, another approach is the industrial internship. The internship programme is an initiative by universities in collaboration with industries towards the development and grooming of the desired workforce.

All universities in Malaysia require undergraduates to undergo an internship programme that lasts several months, as one of the requirements for graduation. Undergraduates would gain a first-hand experience of working environment before they graduate. It is also hoped that they would apply the skills, which they have learned at the university, be it technical or nontechnical, in their working environment. And the industrial internship programme is an avenue which could assess undergraduates' soft skills

This paper reports on the findings of a study carried out to gauge the communication competency particularly oral and written skills of UTP
undergraduates undergoing an eight-month industrial internship. It will encompass the perceptions of the interns and their supervisors from the industry. The paper will also discuss recommendations and pedagogical implications of the findings.

## LITERATURE REVIEW

Several studies have shown that some Malaysian graduates are not unemployed because they are not intelligent but rather because most of them lack soft skills (Hii, 2007; Kamsah, 2004; Sibet, 2005). Employers value soft skills because research suggests that they are just as good indicator of job performances as traditional job qualifications or hard skills (Gewertz, 2007). Therefore, as Malaysia moves with the changing times, productivity needs to be improved by enhancing education and training which in turn will provide the industry with skilled workers of the highest calibre. One of the soft skills identified as essential at workplace is communication skills.

## Communication as essential workplace skill

Scholars have consistently identified communication as important workplace skill (Gewerts, 2007; Hariati, 2009; Raybould \& Sheedy, 2005; Shuman, 2005; Tadwalkar, 2009; Halabi \& Suziah, 2002). Among the elements which demonstrate that employees or interns have communication skills are listening and understanding, speaking clearly and directly, and writing to suit the needs of the audience (Curtin, 2004). One of the aspects of communication skills which are imperative for interns as suggested by Sweitzer and King (2004) is the ability to listen. One of the keys to being a good communicator is being a good listener (Gewertz, 2007). Listening skills are important in organizations where policies or chains of command are disseminated between colleagues and superiors. The ability to understand instructions and execute the instructions are warranted abilities required by supervisors.

Employers recommend that employees should improve their oral communication skills, particularly in the use of vocabulary and self-expression. Employers also require for stronger writing skills, more professional uses of e-mail, the ability to express oneself more professionally, avoid the use of slang and proofreading abilities part. Other than that, students should enhance their skills in personal presentation, interviewing and business etiquette. (Stevens, 2005).

Communication skills have also been claimed as essential in determining factor that influences graduates' chances of being employed and enhance their work performance (Sarjit \& Lee, n.d.). According to The Graduate Outlook (2007), the most important selection criteria for recruiting graduates are their interpersonal and communication skills (written and oral) while the least desirable characteristic is the lack of interpersonal \& communication skills (written, oral, listening). Higgins (2008) found that a high percentage of graduates and employers gave low rating in graduates' abilities to communicate verbally with clients. However, it should improve as they are provided more experience in working directly with clients.

Continuous development in information technology, outsourcing, corporate downsizing, and globalization are among the changes that workers would have to accept and adapt. Thus, drawing relevant skills and experience are critical in the present day (Shuman, 2005 and Halabi \& Suziah, 2002). Graduates who master these relevant skills and who are able to innovate are considered valuable. Many studies have shown that employers are now emphasizing that success as workers required more than simply strong technical capabilities (Bolton, 1986; Crosbie, 2005; Megat et al, 2002; Shuman, 2005; Sibet, 2005).

The responsibility to keep graduates employed is not only on the shoulders of the government, this load renders industries and universities accountable. Industries prefer employees with good soft skills. These skills include interpersonal skills, leadership skills, teamwork, oral and written skills, numerical skills, innovative skills, problem-solving skills, research skills and computer skills (Quek, 2005). Communication has been identified is one of eight key skills that should be acquired by employees (Curtin, 2004). Consequently, universities are pressured to produce and supply competent workforce with such skills (Asma and Lim, 2000; Lee, 2000; Quek, 2000; Kanapathy, 2001, as cited in Quek, 2005).

Besides specialized training to address their lack in communication skills by conducting regular presentations like webinars, podcasts and others (Halabi \& Suziah, 2002 and Tadwalkar, 2009) a more comprehensive method which could address more than their lack in communication skills is through the introduction of the industrial internship course in the curriculum of universities, which most universities in Malaysia are undertaking.

The Industrial Internship programme of each undergraduate is monitored by specified lecturers in the various technical disciplines apart from the undergraduate being supervised by line superiors at the respective industry that they are attached to. The purpose of internship programmes is to provide undergraduates relevant experience on techniques of problem solving, conveying creative ideas, and practice through activities and challenges in the job market. On the other hand, it provides opportunities for industries to recognize the potential and capability of these undergraduates in addition to help shape them to become positive thinkers, innovative individuals, capable workers and excellent communicators.

This university-industry collaboration is believed to have significantly improved undergraduates' hard and soft skills. It has been found that soft skills are best gained through this collaboration and strategic partnership (Halabi \& Suziah, 2002). Thus, internship programme provides a unique opportunity for undergraduates to learn about the roles and tasks of engineers. (Rompelman \& de Vries 2002). The same could be said about technology undergraduates.

## THE RESEARCH SETTING

One of Malaysia's private universities that is actively involved in shaping and supplying human resources is Universiti Teknologi PETRONAS (UTP). UTP provides opportunities for the pursuit of knowledge and expertise as well as for the advancement of engineering, science and technology. It is aligned to PETRONAS' objective to produce well-rounded graduates who are creative and innovative with the potential to become leaders of the industry and nation. Towards this end, the university aims to nurture creativity and innovativeness by expanding the frontiers of technology and education for the betterment of the society. UTP is focusing on the areas that the country and industry are facing, that is, a critical shortage in the fields of science, engineering and technology, paying particular attention to producing highly competent technical personnel who have the added "soft" or "social" competencies that will make them effective in the business or job environment.

UTP was established with the objective of producing well-rounded graduates who possess technical competence, lifelong learning capacity, critical thinking, communication and behavioral skills,
business acumen, practical aptitude and solution synthesis ability. In order to achieve this objective, the university is aware that its undergraduate students must not only learn the theoretical knowledge from class but must also undergo practical work in terms of industrial internship, prior to the completion of their studies at the university.

The Industrial Internship Program has been part of the curriculum for courses offered by UTP. Students are to undergo thirty two (32) weeks of industrial internship training during third year second semester for Engineering students and third year first semester for Technology students. They are to be attached at an identified business organization to gain exposure to work culture and industrial practices. In addition, they are also expected to integrate their theoretical technical and business knowledge with practice while undergoing the said internship program. The Industrial Internship Program of each student is monitored by identified lecturers in the various technical disciplines apart from the students being supervised by line superiors at the respective business organizations that they are attached to.

## OBJECTIVES OF THE STUDY

Much has been studied on identifying the skills undergraduates lack in and the role of industrial internship programmes in addressing this deficiency. However, after the implementation of the industrial internship programme, there is a need to determine if the expectations of both industry and undergraduates are met. This study aims to address this issue. Specifically, two research objectives (RO) are developed as follows:

1) To examine the interns' communication skills from the perspectives of both the interns and their industrial supervisors (RO1),
2) To find out whether the interns and their industrial supervisors have the same perception on the interns' communication skills (RO2).

## METHODOLOGY

## Research instrument

A survey questionnaire was used as the main method for data collection. Two sets of questionnaires were developed for the study: one set for the supervisors
(supervisor survey form) and the other for the students (student survey form). Generally, both sets of questionnaires were similar in terms of core contents. However, there were differences designed to elicit answers from the perspectives of the supervisors and students respectively.

Generally both sets of questionnaires were similar in terms of dimensions that were examined. Demographic information elicited from the interns and the supervisors however differed. Both questionnaires also contained a section for the respondents' comments. Five-point Likert scales from ' 1 ' meaning very low, to ' 5 ' meaning very high, were used to indicate the level of knowledge and ability the intern possess in the area specified by each statement.

## Data collection and the respondents of the study

The data collection for the study was conducted from June - July 2008. A total of 105 questionnaires were self administered by the team members during their internship visits to the various companies located in Selangor, Terengganu, Perak, Kuala Lumpur, Negeri Sembilan, Sabah and Sarawak. The Student Survey Form was distributed to the interns while the Supervisor Survey Form was disseminated to the industry supervisor. By examining views from both perspectives (interns and supervisors), the study provides a comprehensive deliberation on the issues studied. The interns were assessed on the knowledge and abilities gained during their industrial internship.

A total of 96 questionnaires were returned indicating a $91.4 \%$ response rate. Of the 96 questionnaires returned 48 were from supervisors while the balance, 48 were collected from the interns. Of 48 interns, $64.4 \%$ were male while $35.4 \%$ were female. The majority of them were Malays (79.2 \%), $8.3 \%$ Chinese, $4.2 \%$ Indians and $8.3 \%$ belonged to other ethnic groups. The interns were from Electrical and Electronics Engineering program (35.4 \%), Mechanical Engineering program (27.1 \%), Business Information Systems (18.8 \%) and Information Communication Technology program (18.8 \%).

The supervisors' sample consisted of 48 supervisors who mainly held technical-based positions in local, foreign and multinational companies. The fact that the majority of the interns were attached in technicalbased departments was rather expected considering the nature of UTP as a technical and technology based university. Of the 48 supervisors, $66.7 \%$ were male while $33.3 \%$ were female. The 48 supervisors
represented 46 companies in Selangor, Terengganu, Perak, Kuala Lumpur, Negeri Sembilan, Sabah and Sarawak. Two companies had more than one UTP interns thus data from two supervisors were collected from them.

## RESULTS AND DISCUSSION

This section presents results of the analyses and discussion of findings. The results of the study will be discussed from the perspectives of the interns as well as the industrial internship supervisors. In line with the three research objectives posed, descriptive statistics (mean scores and standard deviations), and independent sample t-tests were computed.

## Reliability of the scales

Before the analyses were carried out, Cronbach's alpha reliability tests were computed to measure the reliability of the scales used. For communication skill (in general), all the 8 items were grouped together to form a scale for each group of respondent. In addition, the items were also divided into oral communication skill (4 items) and written communication skill (4 items) to measure reliability of the sub-scales. Table 1 shows the results of the analyses.

Table 1: Alpha values

| SKILLS | Written <br> communica <br> tion skills <br> (4 items) | Oral <br> communica <br> tion skills <br> (4 items) | Communicat <br> ion skill <br> (verbal and <br> written) <br> (8 items) |
| :--- | :---: | :---: | :---: |
| Interns | 0.88 | 0.81 | 0.92 |
| Supervisors | 0.85 | 0.70 | 0.87 |

As shown in table 1, with alpha coefficients ranging from 0.70 to 0.92 for both groups of respondents, the internal consistency among the items representing the scales can be considered moderately high to high, and therefore sufficient to indicate that scales are reliable. This provides evidence that the scales can form as composite measures of scales representing communication skill (in general), written communication skill and oral communication skill.

## Interns' communication skills from interns' and supervisor's perspectives

This section presents results of the data analyses concerning interns' communication skills (oral and written) from both the interns' and their industrial
supervisors' perspectives. Descriptive statistics for the items and scale were computed to answer RO1 and $t$-test for independent samples was used to address RO2. Table 2 in Appendix A shows items representing the scale and results of the tests carried out.

Based on the results, several interesting findings were observed. First, as shown in Table 2, responses from both groups consistently skewed towards the positive ends of the scale (mean 3.74 to 4.06 ). This suggests that overall; both the interns and their supervisors rated communication skills of the interns as considerably high. Second, in comparing the scale mean responses between the two samples, t-test results indicated that the differences between interns and supervisors in both oral and written communication were not statistically significant $(\mathrm{t}=1.57, \quad \mathrm{df}=94, \quad \mathrm{~ns}$ and $\mathrm{t}=1.32 . \mathrm{df}=94, \mathrm{~ns}$, respectively). This suggests that the expectations of the supervisors are met. This is contrary to feedback obtained from various employers in Malaysia who feel that undergraduates do not meet the needs of the workplace (Asma and Lim, 2000; Lee, 2000; Quek 2000; and Kanapathy, 2001 as cited in Quek, 2005). The interns had probably learnt enough soft skills to meet the needs of employers. It could be implied that they were able to apply what they have learnt in their classroom to their place of internship. Third, looking at the items individually, it appeared that the two items rated highest by both groups of respondents were 'write in a clear and concise manner' and 'listening skills'. These results provide an indication that these two areas are the observed strengths of UTP interns.

Possible justifications for the findings are discussed in relation to the communication courses that the interns had taken before they went for industrial training. In this university, the students are required to enrol in two communication courses which are Technical and Professional Writing and also Professional Communication Skills.

Technical and Professional Writing is a writing course which is compulsory for all students. The aim of this course is to introduce students to professional and technical writing and to guide them to write different kinds of technical documents effectively. The underlying rationale is that the students need to learn specific ways to write for example memorandums, various types of reports and proposals. This course trains students to document design and officious usage through considering the audience and its purpose that determine the structure
of the text, the use of tone, as well as the choice of content and style. Students were introduced to writing used on the job and emphasis was given to the skills and standards necessary to produce good and clear writing. They were taught how to analyze readers because in technical writing writers write for readers. It is therefore believed that the this course could have provided the interns with the necessary writing skills expected by their supervisors.

In addition to Technical and Professional Writing, the students also have to enrol in an oral communication course, Professional Communication Skills. This course emphasizes on the theory and practice of professional communication at interpersonal level, in teams and to a large group. The course serves to build upon the students' academic and professional knowledge acquired through other core courses and enable them to be highly effective in expressing themselves and in imparting their professional and technological expertise in a variety of jobs, business and professional settings. This course is delivered through a series of simulated and activity-based situations whilst the instructional materials will also be incorporated into the activities to help students overcome the language-based barriers to effective communication and interaction in a variety of professional and business settings. Hence, when they went for internship training, they have already learned and practised how to communicate effectively.

For listening skills, Professional Communication Skills (PCS) is a course offered to all students before they embark on their internship programme. PCS is designed to provide students with relevant skills, particularly in the art of speaking, listening and thinking, to communicate confidently, accurately and fluently in a variety of professional and business settings. Students are taught that barriers exist and they have to overcome them to ensure that the right message is received. The importance of audience analysis is stressed in this course. Audience analysis is required to ascertain the suitability of topics, language and knowledge level audience, among others. All presentations are followed by a question and answer session. This gives the presenters the opportunity to practise listening to questions posed by the audience and to respond accurately and in an appropriate manner. Therefore, their listening skills are put to practise to fulfil all these purposes.

The knowledge that the interns gained from the two compulsory courses, Technical and Professional Writing and Professional Communication Skills,
could have contributed to them producing good written documents and oral communication as required during the internship training, and thus rated their ability to written and oral communication rather high. There is also a possibility that the written document that these interns produced and oral communication ability have fulfilled the requirements of the supervisors, and thus justify the high rating given by them.

Another possible reason for the interns' high rating for oral communication ability could be due to the intake requirement of the university. The application to this university is done via online and those who are short listed are required to attend an interview. The interview session is to assess the candidates' ability in critical and analytical thinking, oral communication and social interaction. The students who possess the required level of these abilities are selected. As such, the students of this university upon their entry level have already possessed certain level of communication ability. This may be the reason for the high rating by the students and the supervisors.

## PEDAGOGICAL IMPLICATIONS

From the findings of this study, two pedagogical implications have been suggested, which are (1) to expose students to professional communication course before the go for industrial internship program, and (2) to expose students to technical writing course before they go for internship program.

## Professional communication course

Oral communication is crucial in any organization. In today's work place, graduates must have good communication skills. Good communication skills are essential to someone's job performance. Communication is what allows them to build bridges with co-workers, persuade others to adopt their ideas and express their needs (Gewertz, 2007). Competency is often determined by the ability to speak or respond. The previously mentioned course, PCS at this university, stresses on the importance of oral communication through various activity-based situations and simulations which are set in a professional setting. The course includes poster presentations, conducting a business meeting, presenting an informative and a persuasive presentation. Students are assessed on their ability to attract the attention of the audience, provide a preview of the topic, use language accurately,
organize points or sub-topics and maintain eye contact.

The oratorical skills provided through PCS help students prepare for major presentations during their internship such as during progress meetings, feasibility of equipment and the oral presentation of the industrial internship programme. Therefore, the authors would like to suggest that students should be required to enrol in an oral communication course like PCS before the undergo the industrial internship to equip them with the communication skills that are relevant in a working environment so that they would be able to communicate effectively with workers at all levels.

## Technical writing course

Technical communication plays an important role in professional work today; therefore, professional technical persons are frequently expected to write different types of technical reports, manuals, and so on. Because of its importance in the professional discourse community, technical writing becomes an important component in higher learning institutions, where students are prepared for their future work environment.

Technical writing course at UTP is designed based on the assumption that what is taught in this course will help the students to function effectively in their future writing tasks and in their future workplace. The students have to learn special ways to write for example memo, proposals, reports and to ensure that learners become familiar with the format and genre norms of that technical, professional and business discipline (Grabe and Kaplan, 1997).

The main objective of this course is to help learners to write the different kinds of technical writing in their future writing task. With this in mind, the learners are exposed to good models of many types of technical writing as materials. In general, learners are taught various types of technical writing, for example how to write memo, proposals, progress report, and instructions.

With this knowledge, they would be able to produce the required written communication at the training more effectively.

## CONCLUSION

This study was carried out to determine the interns' and their industrial supervisor's perception on the interns' communication skills and if their perceptions do coincide. It was found that the interns perceived that their communication skills is high while their supervisors perceived that it is moderately high, this disparity, however, is statistically insignificant which suggests that they are both in agreement. Uncovered also is the positive correlation between oral and written communication skills of the interns.

Curtin (2004) describes communication as one of the key generic employability skills that should be acquired by individuals. She discusses the Employability Skills Framework which was developed from the opinions of small, medium and large enterprises. Among the eight skills mentioned, one of them is communication. Employers believe that communication "contributes to productive and harmonious relations between employees and customers" (page 46). Among the elements which demonstrate that an employee or intern has communication skill would be: listening and understanding, speaking clearly and directly, writing to suit the needs of the audience and others.

The internship programme can be an enjoyable avenue when students are equipped with appropriate written, listening and oral communication skills such as those offered through Technical and Professional Writing and Professional Communication Skills. The exposure and opportunities provided during internship often help these students secure viable positions within the organization. It is hoped that the findings could shed some lights to the types of workplace discourse which are useful for students to know and thus, that can be taught at the university. This is to address the government and public's concern on the lack of communication skills among graduates which lead to unemployment.

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## APPENDIX

Appendix A
Table 2: Mean scores, standard deviations and T-values for intern's communication skills from interns' and supervisor's perspectives

| ITEM | $\begin{gathered} \hline \text { INTERN } \\ (\mathrm{n}=48) \\ \hline \end{gathered}$ |  | $\begin{gathered} \text { SUPERVISOR } \\ (\mathrm{n}=48) \end{gathered}$ |  | t | df | p |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \mathbf{M} \\ \text { ea } \\ \mathbf{n} \end{gathered}$ | SD | Mean | SD |  |  |  |
| Listening skills | 4.21 | 0.87 | 3.90 | 0.86 | 1.77 | 94 | 0.08 ns |
| Give formal presentations confidently and productively | 3.90 | 1.06 | 3.87 | 1.31 | 0.86 | 94 | 0.93 ns |
| Speak in a clear, concise and organised manner | 3.94 | 0.93 | 3.83 | 1.10 | 0.50 | 94 | 0.62 ns |
| Participate in meetings | 4.21 | 0.97 | 3.63 | 1.27 | 2.54 | 94 | 0.01* |
| Oral communication skill scale | 4.06 | 0.77 | 3.81 | 0.83 | 1.57 | 94 | 0.12 ns |
| Write in a clear and concise manner | 4.23 | 0.90 | 3.96 | 0.74 | 1.60 | 94 | 0.11 ns |
| Communicate ideas in writing | 3.94 | 0.98 | 3.83 | 0.86 | 0.56 | 94 | 0.58 ns |
| Write technical matters to suit specific audience (e.g. non-technical and technical audience) | 3.67 | 1.23 | 3.54 | 1.32 | 0.48 | 94 | 0.63 ns |
| Write using appropriate tone to different levels of audience (e.g. to superior or colleagues) | 4.06 | 0.93 | 3.63 | 1.18 | 2.02 | 94 | 0.046 * |
| Written communication skill scale | 3.97 | 0.88 | 3.74 | 0.87 | 1.32 | 94 | 0.19 ns |

Note: Scale $1-5$, ranging from (1) very low to (5) very high

The higher the score, the higher is the skill

* $\mathrm{p}<0.05, * * \mathrm{p}<0.01$, ns - not significant

