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STRUCTURAL COMPETENCE IN ENGINEERING TECHNICAL ORAL PRESENTATIONS – A LINGUISTIC DIMENSION

Ena Bhattacharyya (a)*
*Corresponding author

(a) Management & Humanities Department, Universiti Teknologi PETRONAS, Bandar Seri Iskandar, Perak Darul Ridzuan, Malaysia, 605-3687752, ena_bhattacharyya@utp.edu.my

Abstract

To be a member of a Community of Practice, one needs not only grasp the required technical genre but be linguistically competent and more importantly, be understood by the professionals in the said realm. This study, as part of a bigger study, accentuates one of the essential communicative competence constructs, i.e. the structural competence as required in technical oral presentations, an everyday communicative event expected of engineers in workplace environment. In communicating effectively, graduates not only need to master the oral competency of technical genre but champion structural competence embodied within presentations to accelerate audience understanding who stem from diverse technical or non-technical background. The study which takes on a mixed method design approach uses SPSS to analyze 25 items within the structural content construct and qualitative feedback obtained from stakeholders (graduates, language lecturers, engineering lecturers and employers) involved in technical oral presentation. The quantitative data findings indicated the importance to be clear, precise, coherent during the elaboration of a content. The quantitative findings suggest that engineers equated higher importance to such structural features in a presentation. The qualitative analysis indicates the importance for speakers to utilize transition words and phrases, sectional referencing, syntax, structured explanation, simplified details and evidence, and methodological and holistic explanation to indicate the linguistic and syntactical features necessary for graduates to communicate competently during such workplace related oral communicative events. Pedagogical implications are discussed to enrich the teaching and learning of structural competence, genre and language use vital for effective professional workplace technical oral presentations.

Keywords: Education, language, technical oral presentations, communicative competence, structural competence. .

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1. Introduction

Communication skills imply particular workplace oral, non-verbal and listening communication skills in different context with different people. As communicative skills acquisition is included in all universities curricula, the undoubted fact is assumed that the majority of graduates are good at communication (Lavrysh, 2017). However, the opposite is in actual fact. Studies resonate graduates umpteenth communication challenges from university-to-workplace transition, where graduates face difficulties as they transition from a member of the academic community to that as a member of a professional Community of Practice (COP), vis-à-vis, as a member of the professional engineering community (Artemeva, 2009; Ashford et al., 2017; Wingate, 2015). COP encapsulates shared mutual interest and a common ground for members from different backgrounds (i.e. academic and professional community) to learn, communicate, practice and relate to engineering practices commonly acknowledged among the practitioners in the said community (Lave & Wenger, 1991, 1998). In this context, the shared knowledge held among the different COP is the mutual involvement in an everyday workplace related oral communicative event, i.e. technical oral presentations, which are a norm and part of the job description for engineers.

2. Problem Statement

Despite its crucial impotance as a fundamental soft skill, much discord prevails among prospective employers on graduates apparent lack of communication skills in workplace environments, there still exusts the gap on communicative ability of graduates in the workplace (Bhattacharyya, 2014; Garces& Black, 2015; Rahman, Omar, Mustafa, Jusoh, &Romaiha, 2016; Selvadurai, Choy, &Maros, 2012; Walther, Miller, &Sochacka, 2017). Why is such discord prevalent among employers when graduates have been exposed to communication skills in their English Language subjects since primary to secondary schiool education? Why are our graduates lacking in the said soft skill? What aspect of linguistic competence is actually missing in their communicative ability when required to communicate in any form of oral communicative event? Graven & Lerman (2003) expresses similar concerns over what cognitive processes (i.e. learning) that occurs when members are situated together since primary school days. The concern of communicative competence among learners in ESL classrooms is felt globally over the language repertoire is questionable (Friedrich & Matsuda, 2010; Khajavy, Ghonsooly, Hosseini Fatemi, & Choi, 2016; Williams, 2017). What then is the language repertoire necessary to enhance the graduates communicative ability to present, deliver and communicate effectively with confidence in varied professional and technical settings?

To attain an insight on the said dilemna, it is imperative to understand the notion of communication skills. Communication skills essentailly denotes an interplay of linguistic norms set in a communicative context. It indicates a speaker's ability to interact technical knowledge on a specialized field with people (Bagarić&Djigunović, 2007; Jarosz & Ilene J. Busch-Vishniac., 2006; Louhiala-Salminen&Kankaanranta, 2011; Wenger, McDermott, & Snyder, 2002). Learning to communicate effectively is not limited to the ability of delivering better reports and presentations, but learning how to communicate with people from different positions, disciplines, and even walks of life. It indicates one's ability to express oneself

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effectively, in written/oral reports and when working with different groups of people (Brunhaver, Korte, Barley, & Sheppard, 2017; Verderber, Verderber, &Sellnow, 2013). For effective communication to take place in any form of oral communicative events (such as technical oral presentations), adequate structures, discourse and rhetorical features are required to make meaning understood in a presentation (Fareen, 2017; Herman, Hall, Kuzawa, Wahlin, & Faure, 2017). However, despite the inclusion of communication skills in the curricula, studies indicate graduates still indicate the gap in linguistic repertoire necessary to present clearly and confidently to the audience (Lavrysh, 2017; Moore & Morton, 2017). The importance of communication skills as part of the national curricula is undoubted but the reality of graduates communicative competence warrants the need for a revisit to ensure continued sustenance of human capital necessary for national economic development plans (Eleventh Malaysian Plan 11MP, 2015). This study aims to investigate that gap on pertinent linguistic and structural features necessaryfor graduates to acquire the required communicative competence in the professional context.

Technical oral presentations denote formal presentations presented to a varied audience comprising either experts, non-experts or a blend of both. What then are the communicative challenges from a linguistic perspective as faced by would-be presenters when presenting to a varied audience in a professional workplace environment? The perspective from various stakeholders' are shared to understand this linguistic phenomenon within an engineering realm. What are the structural competencies expected of graduates of the 21st century to communicate competently during critique sessions within technical oral presentations?

Being technically competent, does not solely imply one's mastery of technical jargon but the ability to structure sentences with the apt choice of selected words to reinforce, emphasize or create an impact of a certain point addressed to the audience. In fact, for presenters to be considered competent, presenters need to exhibit knowledge of the syntax and appropriate language use required in the context of a presentation integrated within socio-cultural boundaries. In other words, presenters need to exhibit both knowledge of presentation competence, mastery of presentation language exhibited with socio-cultural awareness of the audiences' needs. This notion of being linguistically competent as pointed out by Hymes (1972) is mirrored in Celce-Murcia's (2007) model of communicative competence which embeds linguistic, strategic and socio-cultural competence.

This implies that to be understood, one not only needs to integrate and exploit second language use through communicative strategies but possess the knowledge and skills on the use of grammatical competence in oral presentations. Thus, for graduates to be understood, linguistic knowledge and competence in the use of grammar, diction, use of language, discourse markers within the context are among some of the basic features for presentations professional success. In this respect, it is vital that graduates are not only equipped with the focused target academic language needs necessary for specific and professional practice (Hyland, 2006; Sheldon, 2004) but more importantly possess syntactic knowledge and skills and other dimensions of language as a system are then realistically treated within the context of social reality and not in isolation (Newby, 2017).

Structural competence, as a sub-set of communicative competence, is a syntactical construct which emphasizes structural layout, coherence and the ability of a speaker to focus on the core issue of a presentation (Celce-Murcia, 2007).Structural competence refers to thematic consistency, holistic markers, accuracy and clarity. Such structural features enable graduates to signal audience the different sections of

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discussion in a presentation. Structural markers like "the next point…", "this shows the… ", "I am going to explain about the…"and "…this brings the next point of discussion…" which cues the audience on the movement from one part of the presentation to another section (Koch, 2010). Such use of transitional words, phrases and sentences help achieve a coherent flow in the presentation.

Thus, in making meaning and conveying a message effectively in technical oral presentation, graduates must possess the knowledge, utilize the appropriate choice of words and structured in a coherent flow to align to audience's needs. Linguistic and structural competences as sub-sets of communicative competence are necessary conventions expected of graduates to be able to handle both written and oral language in academic or professional context (Oman, 2017). However, the challenge lies in the ability to identify the necessary structural features required in such professional context and setting. Studies accentuate the need for present day graduates require the necessary linguistic and structural features to be able to compete as a "global" specialist to eventually facilitate fruitful coherent communication and resolutions at the workplace (Carter-Thomas & Rowley-Jolivet, 2003; Lavrysh, 2017; Šipka, 2017). In such oral assessments, the study aims to understand if there are structural competencies that need to be enhanced and better understood by graduates as required in technical oral presentations.

3. Research Questions

As there is limited literature available on the structural competence devices necessary to facilitate successful presentations, this study (as part of a larger study) seeks to address the following research question:

- What are the structural competency features deemed necessary by stakeholders (i.e. graduates, engineers, language lecturers and engineering lecturers) to create an effective technical oral presentation?

4. Purpose of the Study

The purpose of the study is to investigate the perceptions of structural competence necessary to facilitate successful presentations as deemed by the stakeholders.

5. Research Methods

In order to examine the structural features necessary for effective technical oral presentations, the researcher employed a mixed method approach. A quantitative survey was first utilized among 240 graduates and 66 engineers involved in technical oral presentations to identify the necessary structural items required technical oral presentation. For the purpose of this study, the researcher will elaborate only on the content stage of a presentation. The content construct comprises of the introduction stage, the while presentation stage and the conclusion stage of the content construct. The use of questionnaire survey method permits an understanding of the overall picture through the collection of a large amount of data within a short time frame (Dillman, 2002). Subsequently, interviews via the snowballing technique was carried out among final year technical oral presentation graduates, final year engineering lecturers, language lecturers and engineers who were selected as external examiners for the said presentations. These external examiners

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were appointed by the university based on their experience in the industry. Interviews are conducted to clarify issues that require further explanation not available in a quantitative survey. Interviews explores the "range and different representations of an issue" which would not be possible in a quantitative survey (Bauer & Gaskell, 2000, p. 41). Interviews provide "actual words of people in the study, offer different perspectives and provide a complex picture of the situation" (Creswell, 2008, p. 552). Interviews were conducted until saturation point is achieved. The integration of both quantitative and qualitative data is a common feature in mixed method design (Creswell, 2008).

The questionnaire adapted several items from various established communicative competence instruments by (Morreale et al., 1991) and oral presentation rubric presentation criteria by (Bradney, 2000).The researcher applied Dillman's (2000) four stages of pre-testing the research instrument (questionnaire and interview question) prior to the actual study. The four stages advocated of pre-testing included review by content experts, interviews with non-research participants and incorporating comments provided, pilot test and a final check with the non-research participants. 25 items were finally itemized for the questionnaire using a 5 point Likert scale rubricstarting with "Strongly Disagree" to "Strongly Agree"to identify the linguistic and structural items in a technical oral presentation. The structural and linguistic contents were categorized in the content construct of the questionnaire. The questionnaire based 22 out of the 25 items from Bradney (2000) and 3 items from Morreale et al., (1991). The reliability and validity of the 25 items within the said content construct was within the acceptable range of 0.87 to 0.90.Alpha values recorded higher than 0.6 value can be noted as reliable items (Hair, Anderson, Tatham, & Black, 1998; Malhotra, 2004).

The content construct adapted 7 structural items for the Introduction Stage (introduction or lead-in, title of project presentation, problem statement, relevance of presentation, research methodology, clear objectives and familiarity with topic through literature review). There were 10 items adapted for the While Presentation Stage (clear content, ensure coherence by smooth transition, visual aids effectively used, good verbal communication techniques, organisation of content, format, appropriate numbering, length appropriate, content appropriate and summary in one or two points). The Conclusion Stage comprised 5 adapted items (clear summary, purpose reiterated, importance repeated, inclusion of cost factor analysis, and closing statements). The remaining 3 items were chosen from Morreale et al., (1991) such as competency factor 1, 2 and 3 on topic, thesis statement and use of supporting details. The SPSS software was used to analyze the validity and reliability together with the mean, standard deviation and importance of each item.

The study also generated views from selected participants from the academic (26 graduates; 13 lecturers and 6 language lecturers) and professional engineering community (12 engineers). The participants were willing to volunteer and share their insight and experience in technical oral presentation. Participants were free to leave the study if they wished to do so. Each interview session lasted for about 40 minutes. The participants were asked to give their views on the essential linguistic and structural devices necessary to ensure effective delivery of technical oral presentations in a formal context

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6. Findings

The subsequent section elaborates the said groups' perceptions toward the content construct with focus on the structural competence items, a sub-set of communicative competence listed within technical oral presentations. Both quantitative and qualitative data are triangulated to validate the views of stakeholders involved in the study.

6.1. Quantitative Findings

The content construct with 25 specific descriptive items were adapted and itemized as likert scale statements. Statistical analysis was utilized to analyze the validity and reliability of items within each construct. Table 1 on "Cronbach Alpha Values of Content Construct by Graduates and Engineers" displays the graduates' and engineers' indication toward the communicative items listed within the content construct.

Table 01. Cronbach Alpha Values of Content Construct (Graduates and Engineers)

N Size	Content Construct		
	Introduction stage (7 items)	**While presentation stage (10 items)**	**Conclusion stage (5 items)**
Graduates (N=240)	0.87	0.87	0.79
Engineers (N=66)	0.87	0.90	0.90

Quantitative statistical findings in Table 1 reveal alpha values ranging from 0.87 to 0.90. Alpha values recorded higher than 0.6 value can be noted as reliable items (Hair et al., 1998; Malhotra, 2004). Table 1 on Cronbach Alpha Values of Content Construct (Graduates and Engineers) reveals the reliability scales recorded by the graduates and engineers. Reliability of a measure is an indication of the stability and consistency with which the instrument measures the concept and helps to assess the "goodness" of measure" (Sekaran, 2003, p. 203).

The overall statistical findings construct suggest that both graduates and engineers attest reliable alpha values to the listed items deemed essential in technical oral presentations. Both groups of graduates and engineers indicate reliability and validity of the communicative items listed within the said construct. Engineers have accorded a higher reliability and validity of the said items in the while and conclusion stage of the content construct in comparison to the graduates' response. The findings imply that professionals in comparison to graduates, accord high importance toward structural and linguistic coherence in an oral presentation.

Descriptive statistics test was also applied to determine the mean rank of each item listed in the five constructs. Inferential tests (Mann-Whitney U test) were used to indicate possible significant difference of each item when comparing graduates and engineers' response to each likert scale item. According to Mcknight & Najab(2010), the Mann Whitney U test also known as the Wilcoxon rank test, tests for differences between two groups on a single, ordinal variable with no specific distribution (Mann & Whitney, 1947; Wilcoxon, 1945). In contrast, the independent samples t-test, which is also a test for two

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groups, requires the single variable to be measured at the interval or ratio level, rather than at the ordinal level, and be normally distributed.

The Mann-Whitney U test is referred to as the nonparametric version of the parametric t-test. The parametric t-tests and non-parametric test differs on the assumed distribution. When the data is not normally distributed or do not meet the parametric assumptions of the t-test, the Mann-Whitney U tends to be more appropriate (McKnight & Najab, 2010).In this study, the distribution was skewed to the right and not a normal distribution. As such the Mann-Whitney U test was used instead of the parametric t-test (Palaniappan, 2009).The following subsections provide a statistical analysis of the likert scale item as listed in the content construct of both graduates and engineers. The analysis examined the mean value of content construct as deemed important by the graduates and engineers and possible significant difference of content construct between graduates and engineers.

As the researcher's objective was to identify the perceptions on notion of communicative competence of the two focal groups, only the means was reported as it is the intention of the researcher is to indicate the average and not rank of items between the graduates and employers' in the content construct (Palaniappan, 2007). As such the median and *p* value is not reported in the analysis. Instead, what is reported is the mean for each stage of the content construct and the significance of items within each construct. For the mean value accorded to the Introduction Stage Construct, the results indicate that engineers have accorded a higher reliability and validity of the said items (4.42) in comparison to the graduates' response (4.29). This means that certain items within each construct are more important to engineers then to graduates as indicated in Table 2 on Introduction Stage Construct.

Table 02. Mean for Content – Introduction Stage Construct

Introduction Stage Construct					
	N	**Mean**	**SD**	**Mann-Whitney U**	**Asymp. Sig. (2-tailed)**
Student	240	4.29	0.494	6549.000	0.029
Engineer	66	4.42	0.482		

However, within the said construct, 3 out of the 7 items such as "introduction or lead-in statement, identify problem statement and relevance in a presentation" provided important results (mean) by the graduates and engineers. As indicated in Table 3, the statistical analysisreveal that engineers accord higher importance (4.47)to "introduction/lead-in" in comparison to graduates (4.25). Both groups do concur the importance of incorporating an introduction or lead in a presentation, but engineers have placed higher importance on the said item.

Table 03. Introduction/lead-in statement in a presentation

Introduction in a presentation			
	Mean	**SD**	**Sig Mann-Whitney U**
Student	4.25	0.619	0.012
Engineer	4.47	0.561	

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Items like "introduction" are more important to engineers in comparison to graduates as introductions or lead-in gives a synopsis of the expected presentation. This is clearly mirrors the engineers adherance to be brief, precise and focussed in a presentation (Marjorie, 2010). In addition for items like "identifying a problem statement" as indicated in Table 4, a higher level of imporatnce is indicated by engineers (4.59) incomparison to the graduates mean value of 4.37. It is important that a clear lead-in is established at the introduction stage of a presentation.

Table 04. Identifying problem statement in a presentation

Problem statement in a presentation			
	Mean	**SD**	**Sig Mann-Whitney U**
Student	4.37	0.600	0.008
Engineer	4.59	0.526	

To engineers, identifying the problem statement indicates ones' communicative competence in identifying the crux of the issue and the need for decision making and problem-solving ability to solve a problem (Venkatesan & Ravenell, 2011). Similarly, engineers accord 4.50 importance in comparison to graduates (4.30) mean value to "relevance in a presentation" as seen in Table 5. Graduates need to identify and state the problem statement clearly when presenting. For engineers, presentations are essentially problem-solution order type of presentations that is focused toward addressing a problem statement (Awang & Ramly, 2008; Newstetter, 2005).

Table 05. Indicate relevance in a presentation

Indicate relevance in a presentation			
	Mean	**SD**	**Sig Mann-Whitney U**
Student	4.30	0.614	0.010
Engineer	4.50	0.639	

The findings imply that although the mean difference is quite close, engineers in comparison to graduates consider the importance to "indicate the relevance in a presentation" as an important element in ensuring communicative competence in a technical oral presentation. Engineers indicate more significance to the said item as it marks an essential criterion in its real world application context (Marjorie, 2010; Padmanabhan & Katti, 2002; Schulz, 2008). It is important that the relevance and importance of the projects are stated in presentations to create that connection and significance of a project.

Graduates on the other hand, as shown in Table 6 indicate importance toward "clarifying literature review" as an important element in structural competence (4.07) as opposed to engineers (4.06). This finding is typical of graduates who place greater emphasis on detailed literature and scientific justification to validate a viewpoint in a presentation(Chiavaroli, 2017; Driver, Newton, & Osborne, 2000)

Table 06. Clarify literature review in a presentation

Clarify literature review in a presentation			
	Mean	**SD**	**Sig Mann-Whitney U**
Student	4.07	0.810	0.681
Engineer	4.06	0.721	

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This difference could be accorded to graduates need for greater stress on being thorough with the literature review which is reflective of the legitimate peripheral participation in the academic community (Waljee et al., 2012).One possible implication from the data findings is graduates' reliance on content and academic input on the subject matter. Even if graduates are accessible to all forms of literature, graduates input on introduction stage may be structured to content and data findings. This finding implies the theoretical underpinning of learning theory where participants' perceptions are a result of their participation within communities of practice (Lave & Wenger, 1991) .

As for the while-presentation stage, Table 7 indicates that graduates have indicated a higher important mean value to the said items in comparison to the engineers. The said construct although validated with higher reliability value (0.90) by engineers in Table 1, shows that for the mean value, graduates indicate slightly higher importance in comparison to engineers. This can possibly be attributed to the graduates' reliance and importance placed on ensuring clarity, coherence by smooth transition, effective use of visual aids, good verbal communication techniques, organization of content, format, appropriate numbering, length appropriate, content appropriate and summary during the while presentation stage. The "while presentation stage" denotes the crux of the project presentation. This segment deals with the main content of the presentation. Graduates place emphasis on delivering the content of the findings to their audience.

Table 07. Mean for Content – While Presentation Stage Construct

While Presentation Stage Construct					
	N	**Mean**	**SD**	**Mann-Whitney U**	**Asymp. Sig. (2-tailed)**
Student	240	4.13	0.494	7853.500	0.917
Engineer	66	4.09	0.565		

However, out of the total of 10 items listed in Table 7 of the "while presentation stage" construct, only 1 item provided important results (mean) while the remaining 9 items were considered as less important by the graduates and engineers. This means to say that although both graduates and engineers agree on the importance of the said items within the construct, statistical analysis reveal important differences on individual items between graduates and engineers. The single presentation item "ensure coherence within the points delivered in a presentation" as indicated in Table 8 is considered important by both graduates and engineers.

Table 8: Ensure coherence in a presentation

Coherence in a presentation			
	Mean	**SD**	**Sig Mann-Whitney U**
Student	4.14	0.604	0.032
Engineer	4.30	0.701	

Engineers indicate more importance to the said item (4.30) on the need to "ensure coherence in a presentation" compared to graduates (4.14). Engineers stress on the importance of coherence as this ensures audience understanding of the contents. Coherence enables listeners to render effective decision making when listening to a presentation (Freeley & Steinberg, 2009).

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In the Conclusion Stage Construct, inferential test indicate that engineers accord slightly higher importance to the 8 items within the said construct as evident in the analysis provided in Table 9.

Table 09. Mean for Content – Conclusion Stage Construct

Conclusion Stage Construct					
	N	**Mean**	**SD**	**Mann-Whitney U**	**Asymp. Sig. (2-tailed)**
Student	240	4.03	0.453	6777.000	0.071
Engineer	66	4.12	0.588		

The single presentation item within this construct that is considered as important to graduates and engineers include the graduates' ability to "include cost factor analysis in a presentation" as indicated in Table 10.The findings imply that although the mean difference is quite close, engineers in comparison to graduates consider the importance to "include cost factor analysis in a presentation" as an important element in ensuring communicative competence in a technical oral presentation.

Table 10. Include Cost factor analysis in a presentation

Cost factor analysis in a presentation			
	Mean	**SD**	**Sig Mann-Whitney U**
Student	3.63	0.914	0.042
Engineer	3.86	0.910	

Engineers indicate more importance to the said item "include cost factor analysis in a presentation" in comparison to graduates. Cost factor analysis delivered in technical oral presentations is more important to engineers in comparison to the graduates (Clay, 2016). What can be envisaged from the findings is that both engineers and graduates acknowledge the importance of the content dimension in presentations. However, generally, the findings emphasize that the professional community accord higher importance when compared to graduates. Both groups realize the importance of the said items that accelerate communicative competence for presenters when presenting technical oral presentation. Such items are deemed necessary to accelerate speaker competency and audience understanding during such oral communicative settings. The statistical analysis of the content construct is also reflected by some of the qualitative findings on the importance of structural competence in technical oral presentations by the stakeholders.

6.2. Qualitative Findings

The quantitative findings are corroborated by qualitative findings in the interviews with the said stakeholders.

6.2.1. Use of Transition Words and Phrases

Lecturers and engineers concurred on the importance of transition words and phrases to ensure coherence in a presentation. Both lecturers and engineers agreed to the practice of this feature to ensure structural competence. This view was upheld by Lecturer A, who stressed on the need for ease of transition, coherence and the importance of flow in the content construct. The Lecturer stated,

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"... please pay attention to reasoning when linking points or from slide to slide…".

Engineering lecturers concur on the importance of transition while presenting as the lecturer B remarked,

"…Need to remove flow chart in conclusion part. Many findings, but a poorly presented discussion, unable to see the continuity and conclusion".

The importance on the use of transition markers is necessary to indicate the synchronization of ideas and the chain of thought processes. The importance is similarly echoed in Celce-Murcia's model of communicative competence in the form of discourse competence (Celce-Murcia, 2007). Transition cues are essential as this linguistic feature signals the graduates' intended purpose and direction of a presentation. Transition words allow the audience to keep track of the smooth linking in and between slides (Anthony, Orr, & Yamazaki, 2007).

The qualitative finding indicates the importance to show connection of ideas between paragraphs and points. Lack of such connectors creates confusion in audience understanding of presentation. Engineers also concurred and expressed importance on the inclusion of transition words and phrases. Graduates should exhibit use of transitional phrases to ensure such linkage. Both groups of stakeholders stressed the importance of providing transition words and phrases in written comments. This finding concurs with the generalized finding as provided in Table 8 which also restates the importance of linking devices between paragraphs to ensure the coherence of a message while communicating. Thus, structural coherence is a necessary linguistic dimension for engineers to comprehend when they wish to relay their message to an audience. Engineers need to grasp the concept of sequencing their thoughts structurally when conveying a message.

6.2.2. Structured Explanation

As for the structural explanation construct, lecturers indicated the need for the said construct. This sentiment is indicated by the statement by a Lecturer C who mentioned

"…very disorganized presentation…"

This statement indicates the importance of organization in relation to the while presentation stage of the presentation. This finding is also in support of findings obtained in Table 8. ESL learners must be made aware of the importance of organization of ideas in a presentation.

Presenters need to be structured when delivering to the said community of practice. Both lecturers and engineers stress the importance of connection between paragraphs. Lecturer D stated,

"…I don't know which one is your data, which one correlate, which one to fulfill your objective, so your result should be to meet your objective this is your data and so on. So in terms of presentation not very clear not very well arranged ya... and hanging without conclusion; you should have one graph for the conclusion...".

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6 lecturers expressed the need for structured explanation to familiarize audience with unfamiliar technical terminology. This is indicated in the excerpt by lecturer E who stated,

"…with less engineering details in certain sections makes people question the validity of the work. When you suddenly see no details and you see some results, I would ask, "…How did you arrive at that stage? What are the steps?" I mean because as an engineer will have to fulfill what are the steps, how did you arrive at these details?..."

9 graduates also indicated the importance of sectional referencing which concurs with the importance of oral communication guidelines which stresses on "three-part talk structure" made up of "opening or introduction, body or main section, and conclusion or closing" (Eunson, 2008, p. 357). This exemplifies the engineers' feedback on the importance of introduction or "lead-in" in the introduction stage of the presentation (Table 3).It is evident that coherence is an integral element of structural competence which should be depicted through structural explanation in technical oral presentations (Riccomini, 2010). Thus, for graduates to be considered communicatively competent, it is important that graduates utilize the exact connectors when delivering a presentation to ensure audience understanding of a presentation.

6.2.3. Technical Jargon Clarification

Lecturers and engineers also indicated the need to provide Technical Jargon Clarification in presentations. Both lecturers and engineers stressed the need to provide a detailed and precise presentation. This sentiment is expressed by lecturers in the following excerpt where Lecturer F asks,

"…What is the difference between Langmuir and Freundlich? What do you understand by these two isotherms?..."

Lecturers stressed on precise explanation of technical terms. This form of questioning tests graduates' knowledge of related key terms and concepts. Lecturers are keen to ensure that graduates' are familiar with the technical key terms and possess a basic understanding of the key terms. Graduates must possess a wide repertoire of technical jargon and be able to utilize such terms appropriately when delivering a presentation.

6.2.4. Holistic Explanation with Literature Review

Engineers emphasized the importance to conceptualize data findings. Graduates need to provide a holistic explanation for audience understanding. This is also indicated in the following excerpt where Engineer G stated,

"…Give comprehensive literature review… what other people have done… what are the advancements…"

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This finding concurs with the quantitative analysis in Table 6 which states the importance of stating relevant literature related to the context in discussion. It is essential that graduates not only validate their study but also be abreast and relevant in their search to ensure there is coherence when presenting their content. This revalidates the finding in Table 5. Engineers stressed on current research practices in the field of specialization. In other words, graduates must keep abreast with current research and attempt to address possible gaps in the discipline or field of research (Mikic & Grasso, 2002; Tenopir& King, 2004). More importantly, graduates must be able to provide holistic explanation of conceptual knowledge (theories, principles) for audience understanding of the study (Warin, Kolski, &Sagar, 2011). Graduates must be competent in providing relevant explanation in line with the literature chosen. This denotes the rationale which must be orally stated as expected in a professional setting.

6.2.5. Syntax

3 language lecturers concur on the importance of syntax in ensuring the structural competence in presentations. Language lecturers stressed the need to use the right syntax and sentence structure. As mentioned by Language lecturer H,

"…the focus must not only be on engineering content but on the mechanics of the language, so if they would also see the importance of having graduates writing in good English with correct syntax, structure…"

This is in line with other presentation studies that accord similar importance to syntax and sentence structure (Kalpana, 2017). This corroborates with the quantitative finding in Table 8. A level of proficiency on a good command and knowledge in stringing sentences coherently is necessary for graduates to indicate their communicative competence in such professional settings (Wolf et al., 2008).

6.2.6. Lead In, Relevance and Evidence

A lead in with relevant clarification and supported by scientific evidence is necessary. Lack of such data creates gaps and leads to a barrage of questions by lecturers who are critical of details.4 engineers also held a similar viewpoint. Evidence and detailed clarification is required to attain structural competence. This is exemplified in the following excerpt by Engineer I,

"…I am more on looking at methodology; how the graduates solve the problem; how the graduates understand the problems and mention the problem statement clearly; how the graduates offer the solutions and explain the results; if the results are not right, they can explain why…"

The importance of relevance is also expressed by engineers who mention of the need to familiarize audience with unfamiliar technical terminology. This is indicated in the excerpt by Engineer J,

"…with less engineering details in certain sections makes people question the validity of the work. When you suddenly see no details and you see some results, I would ask, "…How did you arrive at that stage? What are the steps?" I mean because as an engineer will have to fulfill what are the steps, how did you arrive at these details?..."

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Relevant lead in and detailed evidence of a finding indicates the credibility of assumptions. Lack of such data creates gaps and leads to a barrage of questions by lecturers who are critical of details. 4 engineers also held a similar viewpoint. Evidence and detailed clarification is required to attain structural competence. Graduates are expected to provide concise explanation for any problem statement. Even if answers are incorrect, engineers are interested to see the details that contribute to justification of a problem statement. In other words, engineers imply the need for strategic competence during a technical oral presentation (Celce-Murcia, 2007).

7. Conclusion

In order for graduates to accentuate communicative competence during oral communicative events, it is necessary that graduates possess a wide repertoire of linguistic and structural feature which needs to be applied within the professional context and befitting to the society. Graduates are required to accentuate detailed and methodological explanation and justification validated by scientific and rationale evidence in order to communicate a viewpoint or message in a presentation. Findings and excerpts from both quantitative and qualitative research tool reinstate the importance of structural and linguistic competence in technical oral presentations. One factor that differentiates the engineer's input from members of the academic community is the stress on cost factor analysis. The issue of cost savings is of high priority in the professional and business oriented environment. Thus, it is important for graduates to be cost transparent in presentations. Graduates need to accentuate methodological and sequential structured explanations in order to be understood in a presentation. Such measures must be verbalized and more importantly, be embedded in the teaching and learning of technical presentation in the classrooms. Presentations must also factor in the need for explanation of technical terminology with relevant literature. In addition, details are required to validate the assumptions or conclusions of findings. To engineers, the lack of which warrants further questioning and clarification. It is envisaged that when such structural competency features are applied in the content construct of a technical oral presentation, better understanding is achieved by members of a technical or non-technical audience in a professional context. In conclusion, graduates need to verbalize such structural and linguistic competence in order to be considered as being communicatively competent during such professional context.

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References

Anthony, Laurence, Orr, Thomas, & Yamazaki, Atsuko K. (2007). Signaling transitions in oral presentations: Language and strategies. Paper presented at the *Professional Communication Conference, 2007. IPCC 2007.* IEEE International Seattle, WA

Artemeva, Natasha. (2009). Stories of becoming: A study of novice engineers learning genres of their profession. *Genre in a changing world*, pp.158-178.

Ashford, Theresa, Archer-Lean, Clare, Ashford, Graham, Taylor, Jane, Keys, Noni, Thomsen, Dana, . . . Baldwin, Claudia. (2017). Sustainability Focused CoP: enabling transformative education Implementing Communities of Practice in Higher Education (pp. 281-302): Springer.

Awang, Halizah, &Ramly, Ishak. (2008). Creative thinking skill approach through problem-based learning: Pedagogy and practice in the engineering classroom. *International journal of human and social sciences, 3(1),* pp. 18-23.

Bagarić, Vesna, &Djigunović, JelenaMihaljević. (2007). Defining communicative competence. *Metodika, 8(1),* pp. 94-103.

Bauer, Martin W., & Gaskell, George (2000). Qualitative researching with text, image and sound. A practical handbook. London: Sage Publications.

Bhattacharyya, E. (2014). A case study of stakeholder perceptions on communicative competence in engineering technical oral presentation. University Malaya.

Bradney, David D. (2000). Organizing and managing successful technical presentations. *Journal of Industrial Technology, 16(4),* pp. 1-7.

Brunhaver, Samantha R, Korte, Russell F, Barley, Stephen R, & Sheppard, Sheri D. (2017). Bridging the gaps between engineering education and practice US engineering in the global economy: University of Chicago Press.

Carter-Thomas, Shirley, & Rowley-Jolivet, Elizabeth. (2003). Analysing the scientific conference presentation (CP), A methodological overview of a multimodal genre. *ASp. la revue du GERAS(39-40),* pp. 59-72.

Celce-Murcia, Marianne. (2007). Rethinking the role of communicative competence in language teaching. In Eva AlcónSoler& Maria Pilar SafontJordà (Eds.), *Intercultural Language Use and Language Learning* (pp. 41-57). Dordrecht, The Netherlands: Springer.

Chiavaroli, Neville. (2017). Knowing how we know: an epistemological rationale for the medical humanities. *Medical education, 51(1),* pp. 13-21.

Clay, Jenifer. (2016). Design thinking and performance improvement intervention selection and design: Theory in action. Capella University.

Creswell, John W. (2008). Educational Research: Planning,conducting and evaluating quantitative and qualitative research (3rd ed.). Upper Saddle River, New Jersey: Pearson Prentice Hall.

Dillman, Don A. (2000). Mail and Internet surveys: The tailored design method. New York: John Wiley & Sons.

Dillman, Don A. (2002). Draft of navigating the rapids of change: Some observations on survey methodology in the early 21st Century (Draft of Presidential Address to American Association for Public Opinion Research annual meeting). from American Association for Public Opinion Research http://www.sesrc.wsu.edu/dillman/papers/AAPOR%20Presidential%20Address.pdf

Driver, Rosalind, Newton, Paul, & Osborne, Jonathan. (2000). Establishing the norms of scientific argumentation in classrooms. *Science education, 84(3),* pp. 287-312.

Eleventh Malaysian Plan 11MP, 2016–2020 (2015). Anchoring Growth on People. Kuala Lumpur

Eunson, Baden. (2008). C21 Communicating in the 21st century (2nd ed.). Milton,Queensland, Australia: John Wiley & Sons Australia, Ltd.

Fareen, Jabbar Al Muzzamil. (2017). English for Placement Purposes: Developing a Needs Based Course for Meeting the Employment Demands of IT Industries. *Eurasian Journal of Applied Linguistics, 3(1),* pp. 49-66.

Freeley, Austin J., & Steinberg, David L. (2009). Argumentation and debate: Critical thinking for reasoned decision making (12th ed.). Belmont, California, USA: Wadsworth.

Friedrich, Patricia, & Matsuda, Aya. (2010). When five words are not enough: A conceptual and terminological discussion of English as a lingua franca. *International Multilingual Research Journal, 4(1),* pp. 20-30.

Garces, Helen, & Black, Esther P. (2015). Corporate communication strategies are applicable for teaching non-science communication skills to pharmaceutical sciences PhD students. *Currents in Pharmacy Teaching and Learning, 7(2),* pp. 265-272.

Graven, Mellony, &Lerman, Stephen. (2003). Wenger, E.(1998). Communities of practice: Learning, meaning and identity. *Journal of Mathematics Teacher Education, 6(2),* 185-194.

Hair, J.F., Anderson, R.E., Tatham, R.L. ,& Black, W.C. (1998). Multivariate data analysis (5th ed.). New Jersey: Prentice Hall.

Herman, Jennifer L, Hall, Lynn, Kuzawa, Deborah, Wahlin, Leah, & Faure, Mary. (2017). Writing as Knowing: Creative Knowing Through Multiple Messaging Modes in an Engineering Technical Communications Course Creative Ways of Knowing in Engineering (pp. 99-120): Springer.

Hyland, Ken. (2006). English for academic purposes: An advanced resource book: Routledge.

Hymes, Dell. (1972). On communicative competence (J.B.Pride& J. Holmes Eds.). Harmondsworth, Middlesex, England: Penguin Books.

Jarosz, Jeffrey P., & Ilene J. Busch-Vishniac. (2006). A Topical Analysis of Mechanical Engineering Curricula. *Journal of Engineering Education, 95(3),* pp. 241-248.

Kalpana, R. (2017). Asian Research Consortium. *Asian Journal of Research in Social Sciences and Humanities, 7(1),* pp. 1059-1066.

Khajavy, Gholam Hassan, Ghonsooly, Behzad, Hosseini Fatemi, Azar, & Choi, Charles W. (2016). Willingness to communicate in English: A microsystem model in the Iranian EFL classroom context. *Tesol Quarterly, 50(1),* pp. 154-180.

Koch, Arthur. (2010). Speaking with a purpose (8th ed.). Boston: Allyn& Bacon.

Lave, Jean, & Wenger, Etienne. (1991). Situated learning: Legitimate peripheral participation: Cambridge university press.

Lave, Jean, & Wenger, Etienne. (1998). Communities of practice. Retrieved June, 9, 2008.

Lavrysh, Yuliana. (2017). SOFT SKILLS ACQUISITION THROUGH ESP CLASSES AT TECHNICAL UNIVERSITY. *Journal of Teaching English for Specific and Academic Purposes, 4(3),* pp. 517-525.

Louhiala-Salminen, Leena, &Kankaanranta, Anne. (2011). Professional communication in a global business context: The notion of global communicative competence. *IEEE Transactions on professional communication, 54(3),* pp. 244-262.

Malhotra, N. K. (2004). Marketing research: An applied orientation (4th ed.). New Jersey: Prentice Hall.

Mann, Henry B, & Whitney, Donald R. (1947). On a test of whether one of two random variables is stochastically larger than the other. The annals of mathematical statistics, 50-60.

Marjorie, T. Davis. (2010). Assessing technical communication within engineering contexts. *IEEE Transactions on Professional Communication, 53(1),* pp. 33-45.

McKnight, P. E, &Najab, J. (2010). Mann-Whitney U Test. CorsiniEncyclopedia of Psychology.

Mikic, Borjana, & Grasso, Domenico. (2002). Socially-Relevant Design: The TOYtech Project at Smith College. Journal of Engineering Education, 91(3), pp. 319-326.

Moore, Tim, & Morton, Janne. (2017). The myth of job readiness? Written communication, employability, and the 'skills gap'in higher education. Studies in Higher Education, 42(3), pp. 591-609.

Morreale, S.P., Awtrey, Conrad C., Johnson, Ruth Hulbert, Morley, Donald D., Moore, Micheal R., Tatum, Donna Surges, & Taylor, K Phillip. (1991). The competent speaker: A short course on assessing public speaking competence. Paper presented at the Annual Meeting of the Speech Communication Association, Atlanta, Georgia, USA.

Newby, David. (2017). Competence and performance in learning and teaching: *theories and practices. Selected papers on theoretical and applied linguistics, 19, pp.* 15-32.

Newstetter, Wendy C. (2005). Designing cognitive apprenticeships for biomedical engineering. *Journal of Engineering Education, 94(2), p*p. 207-213.

Oman, Hajibah. (2017). GENRE-BASED lNSTRUCTION FOR ESP. The English Teacher, 17.

Padmanabhan, G, &Katti, Dinesh. (2002). Using community-based projects in civil engineering capstone courses. *Journal of Professional Issues in Engineering Education and Practice, 128(1),* pp. 12-18.

Palaniappan, Ananda Kumar. (2007). SPSS untukpenyelidikanpendidikan. Puchong, Selangor, Malaysia: Scholar Press (M) Sdn. Bhd.

Palaniappan, Ananda Kumar. (2009). Penyelidikandan SPSS (PASW). Selangor, Malaysia: Prentice Hall.

Rahman, NurHayatiAbd, Omar, Hapiza, Mustafa, Tismazammi, Jusoh, Zuraini, &Romaiha, Noor Rafhati. (2016). Graduate Employability: What Went Wrong? Paper presented at the Regional Conference on Science, Technology and Social Sciences (RCSTSS 2014).

Riccomini, Donald R. (2010). Technical Communication: English Skills for Engineers: JSTOR.

Schulz, Bernd. (2008). The importance of soft skills: Education beyond academic knowledge. Nawa: Journal of Language & Communication, 2(1).

Sekaran, Uma. (2003). Research methods for business: A skill-building approach (Fourth ed.). New York: John Wiley & Sons, Inc.

Selvadurai, Sivapalan, Choy, Er Ah, &Maros, Marlyna. (2012). Generic skills of prospective graduates from the employers' perspectives. *Asian Social Science, 8(12),* pp. 295.

Sheldon, Leslie Elmer. (2004). Directions for the Future: Issues in English for Academic Purposes: Peter Lang.

Šipka, Danko. (2017). Bosnian/Croatian/Serbian Heritage Speakers in Four Major US Metropolitan Areas: Resources for the Attainment of Full Professional Linguistic Proficiency. East/West: *Journal of Ukrainian Studies, 4(1),* pp. 33-61.

Tenopir, Carol, & King, Donald W. (2004). Communication patterns of engineers: John Wiley & Sons.

Venkatesan, P., &Ravenell, R. (2011). What is the most important skill/quality in the engineering workplace? *[The way I see it] Potentials, IEEE Xplore, 30(3*), 6-8.

Verderber, Kathleen S, Verderber, Rudolph F, &Sellnow, Deanna D. (2013). Communicate! : Cengage Learning.

Waljee, Jennifer F., Larson, Bradley P., Chang, Kate Wan-Chu, Ono, Shimpei, Holland, Amy L., Haase, Steven C., & Chung, Kevin C. (2012). Developing the Art of Scientific Presentation. *The Journal of Hand Surgery, 37(12),* 2580-2588.e2582. doi: http://dx.doi.org/10.1016/j.jhsa.2012.09.018

Walther, Joachim, Miller, Shari E, &Sochacka, Nicola W. (2017). A model of empathy in engineering as a core skill, practice orientation, and professional way of being. *Journal of Engineering Education, 106(1),* pp. 123-148.

Warin, Bruno, Kolski, Christophe, &Sagar, Mouldi. (2011). Framework for the evolution of acquiring knowledge modules to integrate the acquisition of high-level cognitive skills and professional competencies: *Principles and case studies. Computers & Education, 57(2),* pp. 1595-1614.

Wenger, Etienne, McDermott, Richard Arnold, & Snyder, William. (2002). Cultivating communities of practice: A guide to managing knowledge: Harvard Business Press.

Wilcoxon, Frank. (1945). Individual comparisons by ranking methods. *Biometrics bulletin, 1(6),* 80-83.

Williams, Clay H. (2017). English Outside of the Classroom Teaching English in East Asia (pp. 167-184): Springer.

Wingate, Ursula. (2015). Academic literacy and student diversity: The case for inclusive practice (Vol. 42): Multilingual Matters.

Wolf, Mikyung Kim, Kao, Jenny, Griffin, Noelle, Herman, Joan L, Bachman, Patina L, Chang, Sandy M, & Farnsworth, Tim. (2008). Issues in Assessing English Language Learners: English Language Proficiency Measures and Accommodation Uses. Practice Review (Part 2 of 3). CRESST Report 732. National Center for Research on Evaluation, Standards, and Student Testing (CRESST).