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Foreword

The IEEE Professional Communication Society—Japan Chapter Annual Seminar 2008 (PCSJ 2008) was held at Waseda University, Ohkubo Campus, Tokyo, on November 16th, 2008. The event was sponsored by the IEEE Japan Council, and the Center for English Language Education, Faculty of Science and Engineering, Waseda University.

PCSJ 2008 was the second annual seminar to be organized by the IEEE Professional Communication Society—Japan Chapter, the first being held at the University of Aizu, Aizu-Wakamatsu, in 2007. In an attempt to build on the achievements of the first annual seminar, it was decided that this year's event would be accompanied by a peer-reviewed proceedings of the best papers from the seminar. This volume is the result of those efforts. We would like to take this opportunity to thank all the contributors, as well as the reviewers and program committee.

The first paper in these proceedings is based on the keynote speech at the seminar given by Dr. George Weir of the University of Strathclyde, UK. In his paper, Dr. Weir describes the *Posit text profiling toolset* and shows how it can be used to as part of software that enhances English language use, teaching, and learning.

The second paper is based on the talk given by Debopriyo Roy of the University of Aizu, Japan. In his paper, Dr. Roy investigates the preferences that readers of surgical patient education modules have in terms of text-graphic resources. He also looks at how readers explore task situations with varying sets of instructions and focus.

The third paper is based on the talk given by Yoshimasa A Ono and Kumiko Morimura of the University of Tokyo, Japan. In their paper, the authors describe a new graduate school English course for Japanese scientists and engineers that develops both writing and presentation skills.

The fourth paper is based on the talk given by William Rozycki of University of Aizu, Japan and Ulla Connor of the Indiana University-Purdue University Indianapolis, USA. In their paper, the authors describe a six-month training program for international postdoctoral researchers with the aim of developing their research report writing, conference presentation, social language, and pronunciation skills.

The fifth paper is based on the talk given by Thomas Orr and his group of students at the University of Aizu, Japan. In their paper, the authors describe a new undergraduate course catered specifically for students in computer science and engineering called *Writing for Publication*.

The sixth and final paper is these Proceedings is based on the talk given by Kazuaki Yamauchi of the University of Aizu, Japan. Here, the author provides an intriguing look at the communication skills of a successful Japanese university president.

We hope you will find this volume serves as a useful reference for future work on professional communication in Japan.

Laurence Anthony
Debopriyo Roy

ENHANCING STUDENT RESEARCH PROJECTS WITH TEXTUAL ANALYSIS TOOLS

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***Abstract*—The ready availability of user-friendly software tools for exploring textual content means that authors, readers, teachers and learners can all benefit from textual analysis. Tools such as AntConc [1], Wordsmith [2] and Posit [3] bring quantitative analysis of individual texts and collections of texts to a broad range of subject areas and lend themselves toward many different applications. The present paper briefly describes the Posit text profiling toolset and outlines its use in several projects. The projects described are implemented as software applications and employ features from textual analysis such as word frequency data, n-gram frequency data, synonym lists, and part-of-speech tagging.**

A feature shared by each project is their aim to enhance English language use, teaching and learning, either directly through feedback on specific linguistic expressions, or indirectly, through provision of clearer perception of language complexity. In addition, these examples serve to illustrate the breadth and variety of applications that stand to benefit directly from textual analysis. Through description of these projects, the potential of such applications of textual analysis toward improvements in communication, both in terms of written texts and language learning is also emphasised.

***Keywords*—communication, language learning, readability, software tools, textual analysis**

1. INTRODUCTION

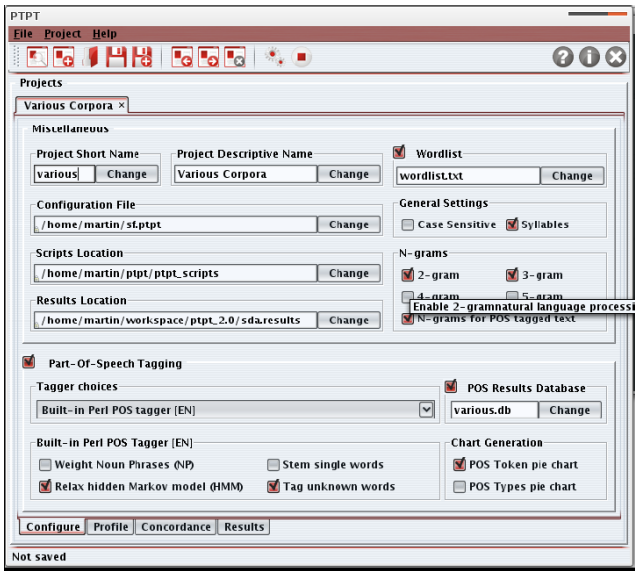
The increasing availability of efficient and readily usable textual analysis tools such as AntConc [1], Wordsmith [2] and Posit [3], means that corpus-oriented research projects become both practical and exciting. They become practical because the available tools remove the need for students to develop their own data extraction facilities before further work can be undertaken. The projects become exciting because the readily available data allows the work to commence at a more sophisticated level. As illustration of the use of corpus analysis and its results in the context of undergraduate final year projects in Computer Science, this paper details three examples that were undertaken by undergraduate computer science students as part of their final honours' year assessment. The projects were conducted over a six month period on a part-time basis, i.e., students attended normal classes and undertook course work and class exams concurrently with their project work.

Each of the student projects described here contained a significant degree of software design and implementation. While each developed a unique application that was Web-based in nature, they also shared the characteristic of addressing issues in communication and language use. This factor gave scope for the use of textual analysis data as ingredients in support of the intended functionality. The required data was generated using tools from the Posit Textual Analysis Toolset.

The Posit Text Profiling Toolset [3] comprises several software modules that work together to provide a comprehensive textual analysis facility. Built as an extensible set of Linux shell scripts and Perl programs, the system provides a means of generating frequency data, access to existing part-of-speech (POS) taggers and is able to accommodate large text corpora with ease. The toolset is available in two versions. The first is command line driven and its flexibility depends upon users gaining a good understanding of the component scripts and available command options. Output from the toolset takes the form of multiple files that store a wide variety of results from the textual analysis. The second version of the textual analysis toolset is operated through a graphical user interface. This enhances the usability of the tools, better integrates individual tool features, and also extends the functionality by addition of a concordance and results database. The configuration screen for the graphical version of the Posit Toolset is shown in Figure 1, below.

Fig.1. Posit Textual Analysis Toolset

2. PROJECTS



The relevant projects were (i) *English Text Checker*, using n-gram frequency data; (ii) *Simplifying Documents*, using word frequency data and synonym lists; (iii) *YaPOS*, using part-of-speech tagging. Each of these is detailed below with the intention of indicating the potential afforded by current corpus analysis facilities to underpin such research activities.

2.1 Creating an English Assistant: *English Text Checker*

English Text Checker is a software project that relies on the use of n-gram frequency data extracted from the British National Corpus [4]. By n-gram, we refer to sets of concurrent words where the value 'n' denotes the span of words in any sequence. Thereby, frequency data on 2-grams in the British National Corpus (BNC) would list the number of occurrences of each word pair (or ratio of occurrences to the total number of words) in the corpus. The required n-gram frequency data is extracted from the BNC using the Posit Toolset and used as reference data to guide the users of the *English Text Checker* tool.

The project's main objectives are to develop a Web-based interactive tool that would take English input text and offer advice to the writer on text construction. The basis for this utility is comparison of the n-grams present within the user's text with the n-gram data from the British National Corpus. The BNC data serves as a reference for 'acceptable' n-gram usage and, when compared with the user's English input, allowes the system to highlight word combinations that are absent from the reference list. Figures 2 and 3 illustrate the user interface to this tool and the result of checking a short sentence, respectively.

For text containing multiple n-gram errors the program deals with each error in turn; as the user corrects the earlier text. A side effect of using n-gram checking in this fashion is that most spelling errors will also be detected (as non-occurring n-gram sequences). Using relatively simple n-gram data, the program identifies word sequences that fail to match with the reference n-gram list. By responding with appropriate textual changes, the user is able to hone their text in a manner that fits to the reference data. In this fashion, the *English Text Checker* supports English learners in developing their compositional skills.

2.2 *Simplifying Documents*

This project uses available BNC word frequency data [5] as a means of ranking the likely complexity of words in text input by the user. Depending upon whether the user considers themselves a beginner, intermediate or expert in English vocabulary, the system checks the level of words that they have used and seeks to assist with simplification. The aim is to assist the user in replacing complex words with simpler alternatives, where

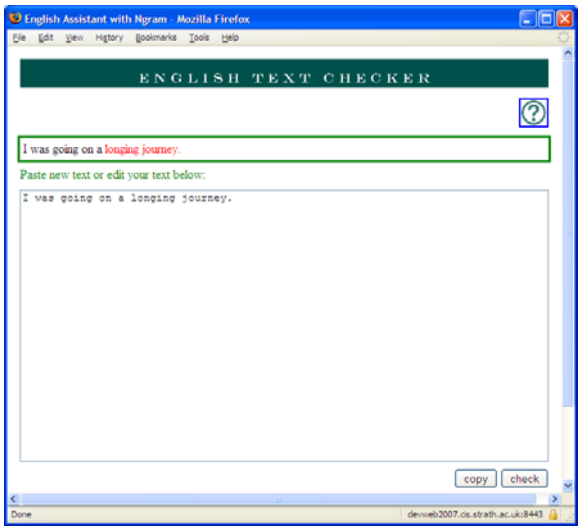


Fig.2. Processing sample input

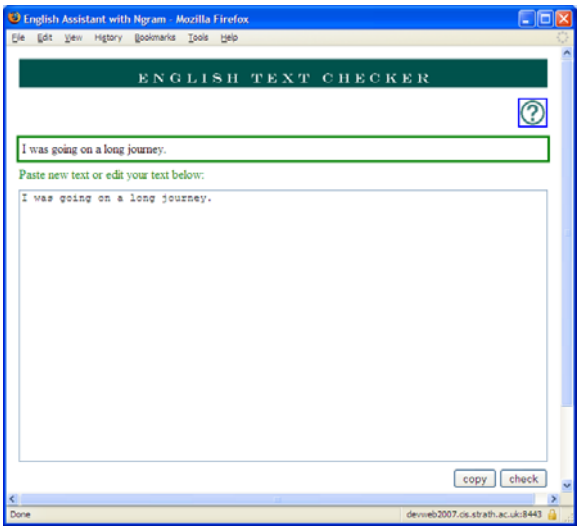


Fig.3. Corrected text

'simpler' is characterised in terms of word frequency thresholds relative to the BNC data. The most frequently occurring words are considered 'easy' and appropriate for all users, while words falling below the first frequency threshold are classed as 'intermediate' and suitable for more advanced English speakers. Finally, the next threshold of word frequency establishes a class of words that are only considered appropriate for the 'expert' English language user.

In this fashion, for a user considered a language beginner, each word in their input that falls in the expert or intermediate category is identified as a candidate for simplification. Furthermore, by reference to synonym data for each 'over complex' word, the system offers available alternatives that are considered 'simpler' (in terms of the word frequency categories described above). The resource used in this project for synonym data is the WordNet system [6].

Figure 4 shows the initial interface for the *Simplifying Documents* program. Figure 5 illustrates the response to example user input. Note that colour is used in the system feedback to indicate the status of each word in the user's text. Red signifies difficult words; yellow indicates intermediate words; green represents easy words. Words that do not appear in the reference word lists are coloured black.

Synonyms are only offered for red (difficult) words that are nouns, verbs, adjectives or adverbs. This classification of the user's text is achieved using a part-of-speech tagger integrated with the Simplifying Documents program. This project combines several ingredients from language processing: BNC frequency lists, part-of-speech tagging and WordNet-based synonyms, as a basis for simplifying the texts of English language learners. Although the system has proved very usable, its effectiveness is limited by two aspects of the synonym facility. Firstly, the available synonyms are largely drawn from American English. Secondly, the synonym data set is rather small and often proves unhelpful for the English learner. Despite these limitations, the project stands as a practical application of corpus analysis and its related data.

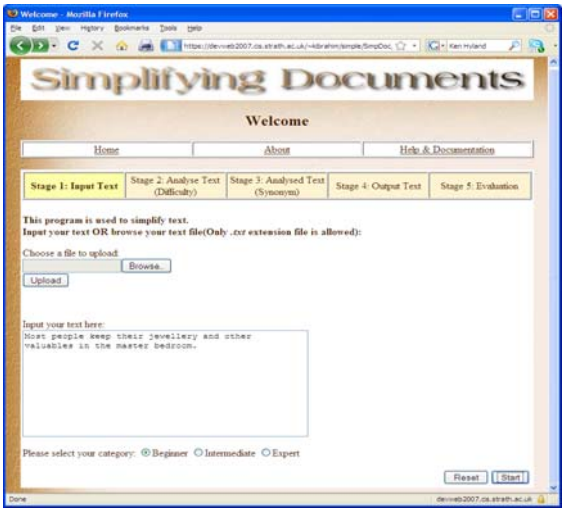


Fig.4. Simplifying Documents interface

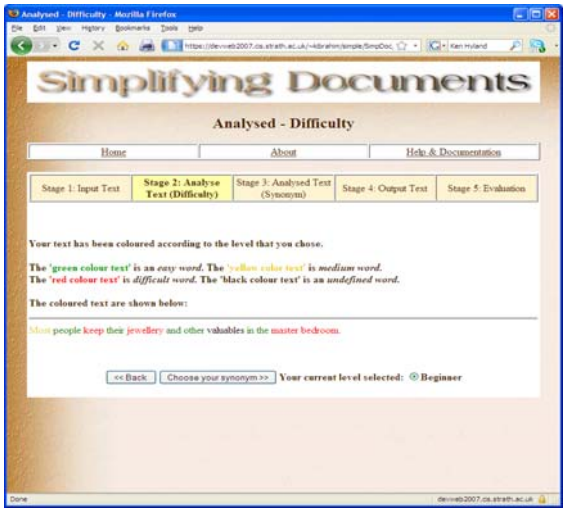


Fig.5. Analysing text difficulty

2.3 *YaPOS*

Our third project example (YaPOS) uses the part-of-speech (POS) tagging tool of the Posit Toolkit as a means of 'tuning' web searches. The adopted approach POS tags the set of search terms entered by the user and stores this for subsequent use in re-ordering the results from a conventional web search, based upon checks for the same POS usage in those results. The hope is that a closer match may be established between the intended search and returned pages. The Web-based interface is designed to take a user's search terms, perform the POS tagging behind the scenes and send the 'raw' search request to Yahoo. The top ten search results return from Yahoo and then the YaPOS program POS tags each of these results.

Having tagged the results, YaPOS then ranks them on the basis of matches to the original POS-tagged search expression (after removing stop words). A scoring system gives 5 points for an exact match to all POS tagged terms in order, 3 points for an exact match for all POS tagged terms in any other order, 1 point for at least one match with a POS-tagged search term, otherwise, no points are assigned. The allocated score then determines the ranking of the Yahoo results and

YaPOS returns the results to the user ordered according to the POS comparison process. Figure 6 shows the Web interface to the YaPOS system.

In order to compare the POS-tagging approach in terms of its changes to the ranking of search results, an evaluation interface was developed (Figure 7). This employed a blind test facility in which users could compare search results returned directly from Yahoo with the re-ordered results from YaPOS. Without knowing which set of results came from Yahoo or from YaPOS, users were asked to consider the relevance of the ordered results in each frame and were asked to indicate the set of results that they considered the better fit to their intended search. A small survey of student users indicated a strong preference for the search results ordered by the YaPOS facility and this was taken as evidence that the POS tagging introduced a greater degree of relevance in the result ordering.

Fig.6. The YaPOS search interface

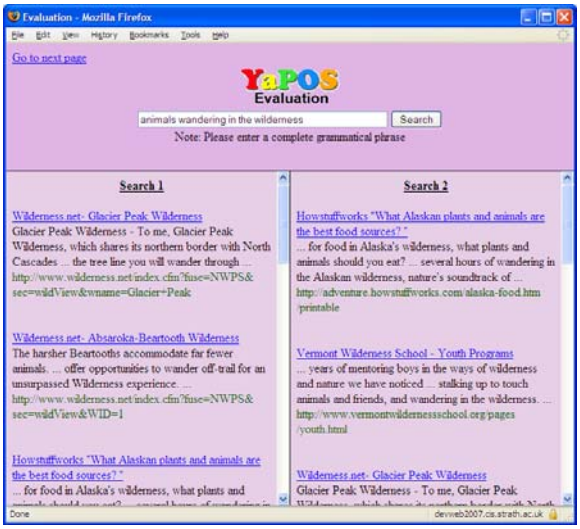


Fig.7. The YaPOS evaluation interface

3. CONCLUSION

The undergraduate computer science projects described in this paper relied upon tools, techniques or data from corpus analysis. Each application used the Posit Textual Analysis Toolset in order to generate reference data. Such data in the form of part-of-speech tagging and word and n-gram frequency lists, afford great potential as ingredients in such small-scale research activities and such ventures have three important benefits; Firstly, they serve to acquaint students with aspects of corpus analysis. Secondly, the textual analysis data enriches the scope and possible achievement of the developed systems. Thirdly, the focus on application development ensures that students grasp the wider significance of corpus-based research and, specifically, how such analytical techniques help address specific issues in the context of communication or language use.

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DESIGNING COMPLEX INSTRUCTIONAL ILLUSTRATIONS: A CASE STUDY WITH PATIENT EDUCATION MODULES

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***Abstract*—Designing technical illustrations and text for complex procedures like surgery throws up many unexpected challenges and technical writers, without proper guidelines and innovations might seldom be prepared to tackle such design situations. This study explores what readers of surgical patient education modules prefer in terms of text-graphic resources and how they prefer to explore task situations with varying sets of instructions and focus. The results in this study point towards interesting conclusions suggesting that readers have preference for both structural and functional information to identify and understand objects that matter and that they focus more on visualization techniques rather than independently banking on text analysis. Further, results also suggest that readers can mentally animate complex procedures and bridge the information gap in text-graphic resources when there are adequate visual cues available with supporting text.**

***Keywords*— mechanical reasoning, mental animation, procedures, surgical instructions, visuals**

1. INTRODUCTION

Designing procedural instructions has often thrown many extraordinary challenges for technical communicators and previous research has clearly suggested that this field needs to develop a broader scope for understanding how users perceive procedures, how they understand and adopt to the task conditions, and finally complete the task. Over-emphasis on document design techniques such as graphical cues, supporting text, page layout and configuration might improve instructional cases, but for more complex instructional situations, technical communicators would need to develop cognitive and behavioral systems that help technical communicators understand how readers might think and develop instructions based on such understanding of the task situation. Document design should be the second major step in the instructional articulation process and should follow thorough usability testing sessions, interviews with users, watching users perform a task repeatedly, and watching users perform similar tasks over a period of time.

For technical communicators and illustrators, the first challenge is to comprehend the existence of such instructional cases where the complexity is such that understanding users' cognitive patterns is a pre-condition for effective design. Designing surgical patient education might be one such complex instructional situation for technical communicators. Patient education modules (e.g., explaining surgical actions) might be an effective tool that can help patients visualize a complex process [1], [2]. Patient education modules are designed for common people to understand a medical process or a medical condition. These materials are written such that it is appropriate for anyone without any domain-specific knowledge.

In this context, it is important to understand that patient education has stepped into a new era, where technology is trying to ensure that communication between patients and caregivers flows seamlessly, thereby minimizing any risk for incomplete and flawed information in a mediated environment. This is more of a challenge when big hospitals are increasing their investment in remote doctor-patient communication; surgeries are being conducted with remote instructions (telemedicine). Caregivers in remote environments are being engaged in healthcare activities based on text messages on their mobile devices. Telehealth is increasingly gaining prominence worldwide and what this suggests is that complex instructional cases such as surgical patient education should be self-sufficient and should imitate doctor-patient communication and supplement pre and post-operative care in both hospital and non-hospital settings [3].

Patient education modules are increasingly being used in a mediated environment using text, animations, e-mail and chats. In this context, it is important to first understand the scope and range of telehealth technologies in order to understand the full scope of how surgical patient education modules might play a major role in replacing direct doctor-patient communication. Telehealth is the delivery of health-related services and information via telecommunications technologies. Telehealth delivery could be as simple as two health professionals discussing a case over the telephone, or as sophisticated as using videoconferencing between providers at facilities in two countries, or even as complex as robotic technology. Telehealth is an expansion of telemedicine, but unlike telemedicine (which more narrowly focuses on the curative aspect) it encompasses preventive, promotive and curative aspects. Originally used to describe administrative or educational functions related to telemedicine, today telehealth stresses a myriad of technology solutions. For example, physicians use email to communicate with patients, order drug prescriptions and provide other health services.

Having explained the scope of surgical patient education modules in a wider context, it is now important for technical communicators to judge how text and graphics design can be considered as an integral part of how readers might think about the process cognitively and react accordingly in as broad a context as telehealth. This article focuses on the design of dynamic text-graphic surgical instructions for patients. Importantly, this paper focuses on how to improve the design of instructions for very complicated and dynamic systems or task situations during surgery where multiple body and surgical components coordinate and change positions over time. For complex instructions involving surgery, the patient education modules should provide instructions that can stand and explain the process independently.

2. DYNAMIC INSTRUCTIONAL CONTEXT: A CHALLENGE?

Animations have done a great job of bridging the text and visual cues that exist in any complex instructions like surgery. Further, animations bridge the gap between major actions, activities and regular operations that are performed as part of any complex task. Readers can repeatedly see what is being done, exactly how the task is performed, identify the major actions, areas where those tasks are performed, exactly how the graphical components move positions, how these components coordinate between each other, how they act on specific zones of operation and so on. In such an instructional context, readers might often get a chance to have back-up supporting text and narrations. More importantly, readers can pick and choose their media and the way they like to learn about the task and subsequently comprehend and/or perform it. However, in a static context, these graphical cues might be completely missing. This is because in print medium publishers put restrictions on page, and layout and technical communicators have to follow a recent trend which suggests minimalist design practices. There is absolute logic behind that approach because products are increasingly internationalized and instructions should be task-based and not depend on individual's ability to understand specific languages or even when they understand the language, understand it well enough and correctly to perform the task. Thus, with increasingly disappearing text support, readers focus more and more on graphics but there is a limit to which graphics can illustrate every minor action in its way to depict a specific procedure. In that case, we will still need to have text support that can provide adequate cues in understanding the procedure correctly.

When texts with static graphics are used as in a traditional print-based user manual, only the starting or interim frame in the action sequence is provided. In other words, not all key frames are provided for any action sequence. This leads to over-dependence on text and dependence on the power of mechanical reasoning.

Major Research Question: How much specific instruction do readers need when they try to read through and comprehend complicated surgical instructions from patient education modules?

3. A BRIEF REVIEW OF THE LITERATURE

This section primarily explains how readers reason out a mechanical procedure, how they think through a procedure when performing the task, and how text and graphical aids can help readers perform such mechanical actions like surgery.

3.1 Mechanical reasoning

Mechanical Reasoning is a process of running a mental model of the machine [4], [5]. We potentially might deal with two forms of mental animation here;

(1) In a static condition which identifies an object in the graphic based on textual description.
(2) In a dynamic condition where the motion of the system has to be inferred.

This motion of the system might be a horizontal movement (across the display plane) or a movement into the display plane. Examples might be surgery processes, which show movement into as well across the display plane.

3.2 Power of spatial visualizations

Readers are often restricted in their ability to think through a complex system successfully. Of course, it is also possible that instruction might not provide adequate spatial cues for readers to think through. Ability to animate the system all at once might be a characteristic of expert reasoning [6]. Given the limited capacity of working memory, it is highly unlikely that novices can mentally animate all the components of the machine at once unless the machine is simple [7]. The alternative is the piecemeal hypothesis. Kinematics of the system is animated piecemeal.

Research by Hegarty & Sims [8] has discussed a piecemeal model of mental animation which actually states how readers coordinate text and graphics for a print manual, when the static graphic for the system it represents needs to move beyond a single screen but it does not.

- First, the subjects might read the sentence and form an internal representation of its meaning.
- Second, he/she might inspect the diagram and construct a spatial representation of the configuration of the pulley system.
- Third, the subject needs to form referential links between the text and the diagram; that is, it is necessary to identify the component in question in the diagram (e.g., identify which circle in the diagram corresponds to the upper left pulley).
- Fourth, the subject must infer the motion of the component described in the sentence.
- Fifth, he/she must compare this inferred motion with the motion described in the sentence – a step that involves converting the two sources of information to a common representational format. Finally, the subjects can make a response.

Kinematics of the system components might be inferred by making a chain of inferences beginning with common knowledge (Hegarty, 92). Here mental animation follows from one to the successive component in a linear pattern. This is the causal chain of events. Direction of inference might not follow a causal chain and might start from a different component altogether. Providing subjects with causal modes facilitates learning by increasing the ability to operate and solve problems about machines [9].

3.3 Spatial projections

It is important to explain the graphical projections so that we know how readers might want to visualize specific images and work situations. This will in turn explain how technical writers might want to design text for such work situations. In orthographic projections, three different two-dimensional representations of an object show the view of an object from the top, front and sides [10]. Technical writers can design text such that it could guide the reader towards the spatial visualization process by explaining how the diagram is to be seen and which, if any part, needs to be focused on specifically. In isometric projections, the view is from a plane making equal

angles with the top, front and side axes of the object [10]. Instructional text might be written such that it explains several features on multiple angles of viewing simultaneously, based on a single graphic frame. It is also important to point towards specific text-graphic situation that allows for greater coordination between resources when considering procedural instructions.

3.4 Text-graphic coordination

Greater text-graphic coordination is of the utmost importance to understand how readers should undergo the process of spatial visualization.

- Horton [11] identified that most of the textbooks on technical writing and the general practice for publications has been that graphics play a supporting role in explaining text.
- Beiger and Glock [12] showed that spatial information is processed faster with graphics while precision results from textual presentation.
- Ganier [13] suggested that processing of instructions, whether textual or pictorial relies essentially on a verbal recoding of the information based on separate and specialized cognitive resources for text and graphics. This research finding should imply that supporting graphics with text could improve the processing of procedural instructions by the user.
- Glenberg and Langston [14] concluded that in a sequential instruction, when the texts are accompanied by appropriate graphics, subjects tended to mentally represent the procedure. When the texts are presented alone or with graphics, illustrating the same step order as is presented in text, subjects tends to mentally represent the text. This research primarily attribute a supporting role to graphics saying that graphics help to build mental models of what the text is about.
- Text has to be the source of mental animation process [6].

It is now important to understand the type of visual complexities that readers of patient education modules might face. This is important to understand for readers of this article as it will eventually help them understand the results of the study described below.

4. INVESTIGATION OF DOCUMENTATION IN PATIENT EDUCATION MODULES

Textbook/Legacy graphics used in Hypermedia for surgical instructions as part of online patient education modules require mental animation to connect the interim frames for the surgery procedure not shown graphically, but only textually. Identified intricacies might be regarding:

1. Multiple external surgical instruments being used.
2. Multiple body parts being acted upon.
3. Coordinating mentally the two features above.
4. The complexity of any particular sub process into the display plane.
5. The complexity of any particular sub process across the display plane.

Figure 1 shows examples of some graphical complexities mentioned above.

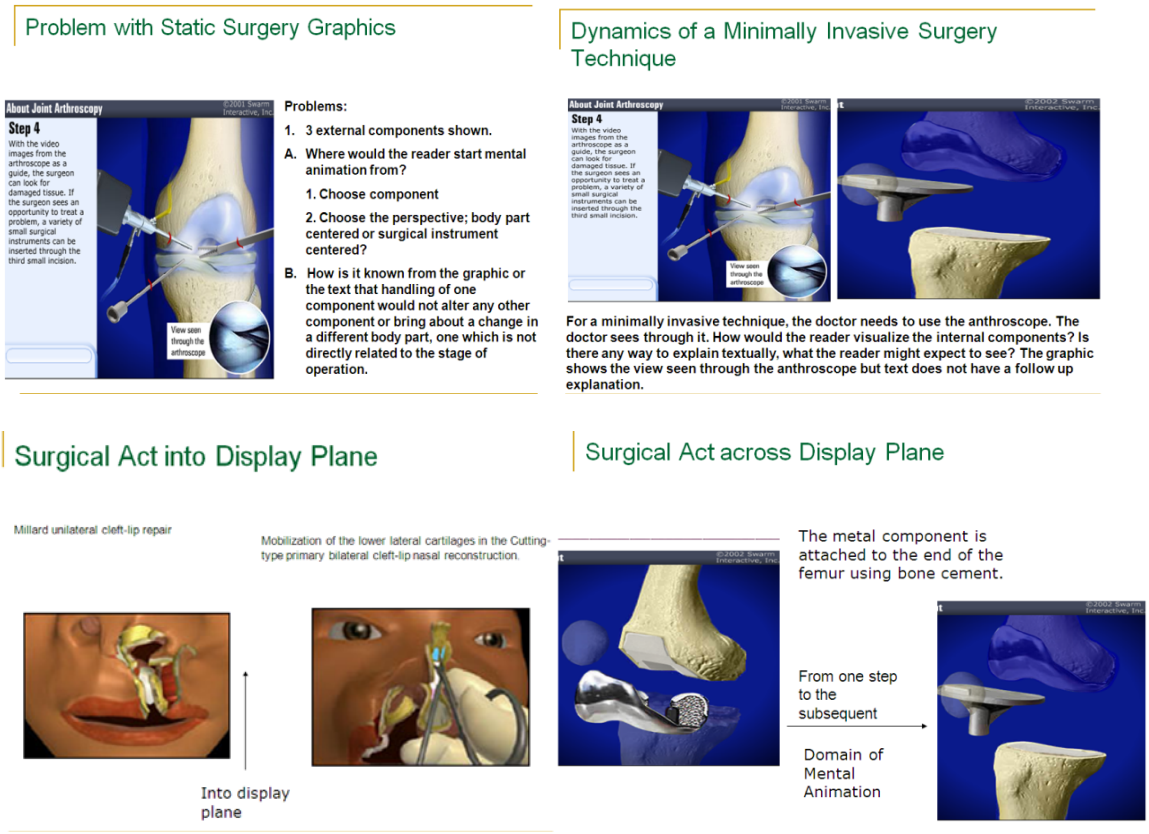

Figure 1. Examples of Graphical Complexities

Relevant questions that need to be addressed in the creation of effective patient education modules that exhibit multiple graphical complexities include the following:

- Can the exact location in the visual where the action is taking place be identified. Are the visual cues enough in identifying the specific location? Is there adequate text support explaining the location? Is the text information redundant or it supplements the information in the visual?
- Are there multiple locations in the visual where action is taking place? How do the visuals demonstrate such complexity? Is there a relation between the specific locations of action as it happens simultaneously? To what extent do the visual cues show such connections between locations of action successfully?
- How do the visuals show graphical actions into the display plane versus across display plane? Are there any special techniques used to isolate and show such actions exclusively?

4.1 Methods

In order to explore the design of static graphics (photographs, illustrations, screen shots from animations) in patient education modules for print and online demonstrations, 17 readers were asked to study a patient education module (text-graphics instruction) on a knee replacement surgical procedure shown over 7 steps as part of a pilot study. Following this, each reader was asked to complete a survey that revealed their preferences for different types of graphics used in the design and presentation of intricate surgical procedures. Knowledge of

the anatomy or any kind of surgical procedure was NOT a precondition for answering the survey. Also, participants did not have experience with medical procedures or background education in medicine. As the graphics tested are patient education modules, the target sample was justified.

4.2 Brief Summary of results

The results demonstrated of the above study revealed that readers do not have any general preference, but their text-graphic and visualization needs are very specific to the task condition. Further, depending on task complexity, their needs might change. In particular, the following observations could be made:

- Readers have some preference for very specific structural information regarding the body parts that are actively involved in the surgical process.
- In more situations than not, readers prefer functional information regarding the body parts that are actively involved with the surgical process.
- In most graphical situations (in this context) readers prefer to switch attention between text and graphics, but in no specific order.
- Readers prefer to study both text and graphics for a step and only then can they mentally animate that step.
- However, readers prefer to put more preference on graphical analysis first before turning their attention to text.
- Interestingly, readers have not much preference for photographs of surgery as it is undertaken, as part of surgical instructions. However, they have preference for screenshots from surgical animations.
- Readers have little preference for intermediate steps (graphical or textual) more than what has already been shown in the sequence for the surgical task. This is in contrast to the study on procedural instructions where Roy [15] showed that intermediate minute steps (showing sharp manipulations in graphical objects) are an important element in the design of procedural instructions.
- Importantly, most readers could well identify the purpose for each step and the action completed.

Figure 2 provides a numerical understanding of the reader preferences.

5. DISCUSSION

Interestingly and expectedly, readers have shown preference for both structural and functional information. However, understandably, since the design under consideration is patient education modules, they do not seem much interested to explore or know about the surgical instruments or how they act on the human body specifically. However, data suggests that they are very interested to know about the anatomical details and artificial body parts. This suggests that patients would want to know only about what will happen to their body if the surgery is undertaken. So, technical communicators can safely ignore features of the surgical instruments or other information that do not directly connect to the human body. Results also indicate an interesting observation. Readers prefer to start with graphics only and study the text more as a back-up plan and to be sure that instructions point towards the same action. However, for proper mental animation with complex processes, their dependence on text should not be underestimated. However, readers want to have the choice where they will first start the process of comprehension based on graphical information.

1. What kind of information would you consider as necessary for patients to understand the surgical process as mentioned above?							
	Always	Most of the Time	Sometimes	Hardly Ever	Never	Rating Average	Response Count
I need structural information regarding all relevant body parts (the anatomical details)	11.8% (2)	23.5% (4)	**47.1% (8)**	17.6% (3)	0.0% (0)	2.71	17
I need very specific structural information regarding the body parts that are actively involved in the surgical process.	23.5% (4)	11.8% (2)	**35.3% (6)**	29.4% (5)	0.0% (0)	2.71	17
I need structural information regarding the most commonly used surgical instruments for any surgery.	5.9% (1)	29.4% (5)	11.8% (2)	**35.3% (6)**	17.6% (3)	3.29	17
I need structural information regarding surgical instruments that are used during this surgery (explaining different parts of the surgical instruments)	17.6% (3)	11.8% (2)	5.9% (1)	17.6% (3)	**47.1% (8)**	3.65	17
I need functional information regarding all relevant body parts that are important for this surgery (explaining patterns of movements in the body parts during surgery)	17.6% (3)	11.8% (2)	17.6% (3)	**47.1% (8)**	5.9% (1)	3.12	17
I need functional information regarding the body parts that are actively involved with the surgical process	**23.5% (4)**	**23.5% (4)**	17.6% (3)	**23.5% (4)**	11.8% (2)	2.76	17

Figure 2. Reader Preferences for structural and functional information: Self Report

Figure 3 provides an example of how readers attended text and graphics while trying to comprehend the surgical steps as was provided to them, with some of the most important results shown numerically.

2. How did you attend text and graphics in the surgical steps mentioned above? (Please rank order the extent to which you will adopt each strategy)							
	Always	Most of the Time	Sometimes	Hardly Ever	Never	Rating Average	Response Count
Read the text first for individual steps and then switched attention to the graphic	23.5% (4)	**29.4% (5)**	11.8% (2)	17.6% (3)	17.6% (3)	2.76	17
Tried to see all the graphics first in a series and then switched attention to the text in individual steps.	17.6% (3)	**29.4% (5)**	23.5% (4)	17.6% (3)	11.8% (2)	2.76	17
Tried to read all the text first in a series and then switched attention to the graphics in individual steps.	11.8% (2)	11.8% (2)	5.9% (1)	29.4% (5)	**41.2% (7)**	3.76	17
Studied the graphic first for individual steps and then switched attention to the corresponding text.	17.6% (3)	11.8% (2)	**41.2% (7)**	23.5% (4)	5.9% (1)	2.88	17
					answered question		**17**

Figure 3. Reader Preferences for attending text and graphics: Self Report

6. DESIGN RECOMMENDATIONS

The current study points towards several design recommendations that technical communicators can follow for complex design scenarios.

- It is very important to find out and settle on the most important balance of text and graphics.
- Comprehensive and iterative usability testing sessions should be conducted to understand the preference for graphical information in each situation.
- Eye-tracking usability studies might be conducted to see the extent to which minimalism is preferred; in other words, the extent to which text is read and used for comprehending instructions.
- If supporting text is necessary; there should be a difference between information on the surface and more imagery-invoking text.
- More graphical affordances should be used (arrows, captions, colors, shadows, highlighting, viewpoints, step configuration, zoomed out structures etc) `systematically and optimally.
- Technical writers would need to judge when and whether redundant information in text and graphics for specific graphical frames is justified. If interim frames are graphically supported, would readers need to have that mentioned in the supporting text?
- Research in dual coding and multimedia theories should be considered so that it is easier to understand the extent to which information becomes an unnecessary load or is in a position to supplement the design process.
- Technical writers should test task situations where it is more and strictly appropriate to place visuals showing movement into the display plane versus visuals showing movement across display plane.

7. CONCLUSION

The above-mentioned study has pointed towards some interesting conclusions. It has emphasized the importance of both structural and functional information but depending on the graphical content and what readers prefer to see for specific task situations. Interestingly, readers prefer to switch attention between text and graphics, avail of both text and graphical resources, but there is yet no indication that they will compulsorily read the associated text, irrespective of the task situation. The design recommendations will help technical writers develop instructions in a systematic way and will also help to have a system in place where different types of instructions and task situations can be categorized in different ways, with different kinds of usability testing, and instructions development.

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DEVELOPING ENGLISH COMMUNICATION EXPERTISE FOR ENGINEERING GRADUATE STUDENTS IN THE GLOBAL AGE

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***Abstract*—This paper discusses contents and results of a new graduate course "English for Engineers and Scientist A, B" given at the School of Engineering, The University of Tokyo. This course is a new attempt to develop English communication expertise for engineering graduate students: how to write scientific and engineering (technical) papers in English and how to make technical presentations in English that will be easily understood by native speakers of English. The course consists of eight weeks of lectures (A) on technical writing and technical presentations in English, and seven weeks of technical presentation practice sessions (B). Grades for the lecture session (1 credit) are based on two-page term papers on the students' research topics including the title, abstract, and introduction. All papers are corrected regarding English-writing style and paper-format style, and returned to students. Grades for the practice session (1 credit) are carried out by English native speaker instructors based on platform presence, presentation techniques, phonology, discussion techniques, and contents of slides. These grading points are given to students in the class verbally as well as in presentation evaluation reports. Results from the course indicate that the combined lecture and practice sessions are very effective in training students to write better and make better technical presentations in English.**

***Keywords*—direct translation, English, Japanese, introduction-body-conclusion, ki-sho-ten-ketsu, presentation**

1. INTRODUCTION OF NEW TECHNICAL WRITING AND PRESENTATION COURSE

Writing technical papers [1-3] and making technical presentations [4-6] in English are essential activities for engineers and scientists in the 21st century owing to the rapid globalization of science and technology and growing international interests. Even though these are considered as important as conducting research and development, there are few teaching or training programs offered to Japanese engineering students at the graduate level.

In 2003, the School of Engineering of The University of Tokyo set up a graduate course lecture "English for Engineers and Scientists A, B" to teach technical writing and technical presentation in English (A) and to train technical presentation skills through practice (B). In planning this course, we realized the following challenges needed to be overcome:

(1) Very few English teachers in the School could teach technical writing and presentations in English.
(2) No English teachers in the School had science and engineering backgrounds.
(3) The English proficiency among the 900 incoming engineering graduate students was scattered.
(4) The School had insufficient lecture and practice time for the introduction of a new English course.
(5) Assessing students' accomplishments would be difficult

We solved these by the following measures and set up the course accordingly:

(1) A new lecture-practice scheme was developed: Lectures in a large lecture room (250 students) and 10 concurrent practice sessions in small meeting rooms (10 students each).
(2) Lecture would be conducted by a Japanese teacher with experience in teaching technical English at an industry R&D division, and presentation practice sessions run by English native-speaker instructors with teaching experience in industry.
(3) A new presentation practice scheme was developed, including making presentations twice on the same topic after review and instructors' intensive instructions.
(4) Lectures would be held in the fifth period (4:30 pm – 6:10 pm) on Wednesdays both in spring and fall semesters when students would have more available time.
(5) For assessment, the students' technical papers would be evaluated and corrected during the lecture, and presentations would be evaluated using report scores for practice sessions. Students' evaluations for the course would be assessed through questionnaires.

This fifteen-week course (one 100-minute lecture or presentation exercise per week) was offered both in the spring and fall semesters, mainly for the first year Japanese graduate students.

2. LECTURE A "ENGLISH FOR ENGINEERS AND SCIENTISTS A"

The first eight weeks of the course are for lectures on technical writing in English (four weeks) and technical presentations in English (four weeks) with one credit (Lectures A). The lecture contents are listed in Fig. 1a (technical writing) and Fig. 1b (technical presentation).

These materials are compiled by one of the authors (Y.A. Ono) from experience of teaching and training research engineers at Hitachi's research laboratories and published in [3] and [6]. Lecture notes are made from these materials in PowerPoint form and lectures are conducted in the slide-show style. (Updated lecture notes on technical writing are now published as a book [7].)

1. Definition of "Technical Writing in English"
2. Problems in "Japanese English" and Their Remedial Measures
3. Writing Technical Papers in English Way of Thinking: Follow the Leggett's Tree Style
4. Flow Chart of Technical Writing in English
5. Structure of Technical Papers and How to Write Each Section
6. Techniques for Writing Clear and Accurate Technical Papers
7. Grammatical Tips in Writing in English
8. Check Lists and References

Fig. 1a. Contents of lectures on technical writing

1. Key Points of Technical Presentation in English
2. Preparation for Technical Presentation in English
3. Slides: How to Make Them and How to Use Them
4. Good English Structures for Technical Presentation
5. Easy-to-Understand Speaking Techniques
6. Manuscript and Notes: To Read or Not to Read Them
7. Manners and Techniques for Technical Presentation
8. Set Phrases for Technical Presentation in English
9. Questions and Answers (Q&A) Sessions
10. Poster Sessions
11. Presentation Practice Sessions: Focusing Points and Appraisal Points

Fig. 1b. Contents of lectures on technical presentation

2.1 How to write technical papers in English

In the lecture, the following three rules are stressed for improving technical writing in English [3], [7-11]:

(1) State your conclusions first, then state causes or give explanations.

(2) Follow the English writing style of introduction, body, and conclusion. (Do not follow the Japanese writing style of "ki-sho-ten-ketsu.")

(3) Translate from Japanese to Japanese first and then translate it into English.

These rules remedy the problems of Japanese engineers and engineering students in writing English technical papers by directly translating from Japanese in a word-for-word fashion. When they follow the above rules, their papers in English will be easily understood and appreciated by native speakers of English. Furthermore, their papers will more easily pass the refereeing processes and get published. Detail discussions on these points are given in the paper by Ono and Morimura in Proceedings of IPCC 2007 [12].

2.2 How to make proper technical presentations in English

First, we discuss differences of presentation styles. Figure 2a shows the typical behavior of Japanese engineering students in making presentations and Fig. 2b shows recommended behavior in technical presentation in English [13].

1. Try to explain what they have achieved by pointing at figures and tables on the slides.
2. Read explanations and statements written in full sentences on the slides.
3. Look at the screen most of the time without eye contact with the audience.
4. Memorize their talks and try to recite them.

Fig. 2a. Typical behavior of Japanese engineering students in making presentations

1. Use eye contact
2. Develop a positive attitude and relaxed style
3. Don't read your paper
4. Don't memorize your paper
5. Don't look at the screen while you are talking
6. Be enthusiastic about the topic
7. Don't hide behind a tangled web of technical terms

Fig. 2b. IEEE-recommended behavior in technical presentations in English

The behavior described in Fig. 2a is typical of Japanese engineers and scientists at domestic conferences; it is very difficult for them to change their style even at the international conferences where they have to make presentations in English. It takes a lot of practice to make effective presentations in English. For that purpose, the practice session in the latter part of the course is effective.

Other important points to follow are manners and techniques for technical presentations in English shown in Fig. 3.

1. Thank the chair after introduction
2. Do not say "I am Dr. So-and-So just introduced."
3. Include only one main idea per sentence
4. Speak in shorter sentences – no more than 20 words per sentence
5. Look at the audience once in ten seconds, if you have to read your notes – Eye contact is very important.
6. Prepare for the Q & A Session, because it is considered more important than the presentation.

Fig. 3. Manners and techniques for technical presentation in English

Detail discussions on these points are given in the paper by Ono and Morimura in the Proceedings of IPCC 2008 [14].

2.3 Evaluation Method

The evaluation of students' achievement is based on a 2-3 page term report on their own research projects: only title, abstract, and introduction should be included. Grade evaluation points are as follows: proper English-writing style for technical papers discussed in the lecture and proper paper-format style in addition to English itself. For example, in the abstract students should write only what they have achieved with no background information. In the introduction, they should include the following items: background (50%), purpose of the paper (20%), materials and methods (10%), results (10%), and conclusion (10%). Reports are corrected with comments and returned to students. Examples of these corrections are given in Fig. 4. Approximately 20-30% of the students have A grade.

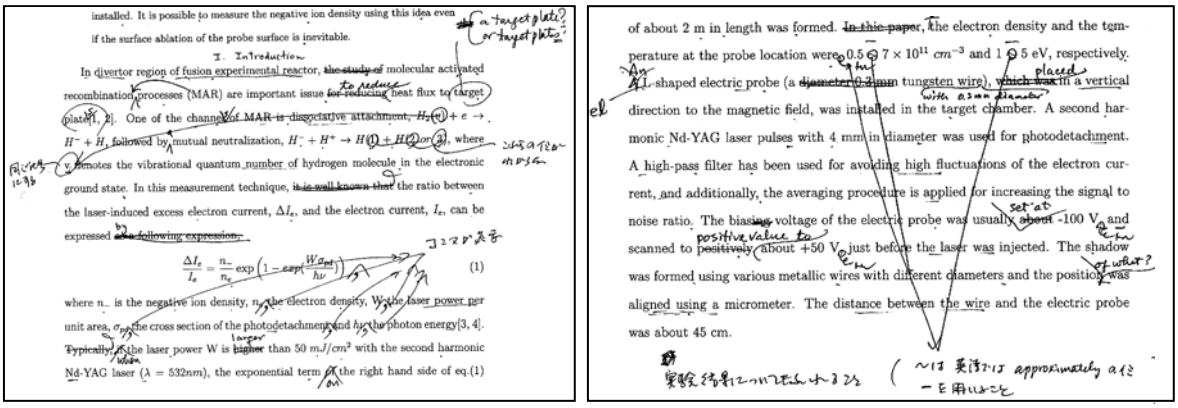

Fig. 4. Examples of corrected term reports

3. PRESENTATION PRACTICE B

The remaining seven weeks are devoted to practicing students' skills of technical presentation (with one credit) in 10 small classes in the spring semester (5 small classes in the fall semester) with 10 students in each class. We select 100 students in the spring semester and 50 students in the fall semester based on the English proficiency tests (very similar in style and format to the TOEIC test) conducted in the fifth week. Each class is composed of students with similar majoring fields.

3.1 Class Operation

Under the supervision of faculty members, these classes are instructed by native speakers of English from private English schools who are experienced in training engineers to make presentations in English. In these practice sessions, 30 minutes are allotted to each student for making presentation and its evaluation. They have to make 10-minute presentations twice during the practice session in front of fellow students (audience). After the presentation and questions and answers (Q&A), they receive comments from the audience on good points and bad points of the presentation as described in Figs. 2a and 2b. After this, the native-speaker instructors give guidance and instructions based on the presentation evaluation report shown Fig. 5a. Details of the evaluation points are given in Fig. 5b. After the verbal instructions, the instructors give a copy of the report to the presenter.

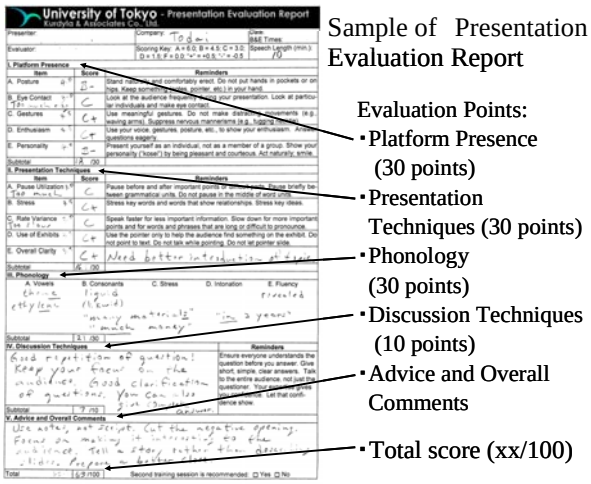

Fig. 5a. Sample of presentation evaluation report

1. Platform Presence (30 points)
   Posture, Eye Contact, Gestures, Enthusiasm, Personality
2. Presentation Techniques (30 points)
   Pause Utilization, Stress, Rate Variance, Use of Exhibits, Overall Clarity
3. Phonology (30 points)
   Pronunciation, Syllable Stress, Vowel Suppression, Intonation, Fluency
4. Discussion Techniques (10 points)
5. Advice and Overall Comments

Fig. 5b. Evaluation points of presentation evaluation report

These students can also learn a lot from presentations of other students. After all the students make their first presentations, they revise their presentation materials following the advice and suggestions of the native speaker instructors and make a second presentation. This time, their presentations are usually much improved after learning what they should do in technical presentations in English. Typical examples of native speaker instructors' advice on platform presence and presentation techniques are given in Fig. 6a and those on discussion techniques are given in Fig. 6b for first and second presentations. These comments are taken from the reports of 56 students. This means the numbers (xx) on the right columns should be read as xx/56.

	Platform presence & Presentation techniques	First Presentation	Second Presentation
1	Talk to audience. Do not talk to screen. Focus on the audience, not to screen.	34	12
2	Tell a "story." Don't simply describe slides. Try to tell story rather than simply describe slides.	27	8
3	Clarify the purpose of work. Need better introduction (opening).	15	2
4	Need to point more effectively. No need to point at words or video.	12	12
5	Don't read slides. Try not to read so much.	11	9
6	Stop talking while pointing.	13	8
7	Make eye contact.	5	5
8	Good clarification	4	6
9	Nice pointing	1	3
10	Nice opening	0	15
11	Good storytelling	0	2

Other comments on second presentations: Good job:10; Nice improvement:4; Well done:4

Fig. 6a. Native speaker instructors' advice on platform presence and presentation techniques

	How to answer questions	First Presentation	Second Presentation
1	Talk to the whole audience, not to the questioner. Speak to everyone when giving answer.	25	19
2	Talk to the audience, not to slides Talk to the audience, not to the screen	8	6
3	Keep answer short and simple.	12	4
	What to do before answering	First Presentation	Second Presentation
1	Repeat the question or give complete answer.	12	5
2	Make sure the whole audience knows the question.	10	9
3	Rephrase questions to help audience understands the question	6	1
4	Make sure you understand the question. Don't answer question unless you understand it.	1	1
5	Good repetition	4	14
6	Nice rephrasing	1	3
7	Good complete answer	0	10

Other comments on second presentations: Good job:11; Well done:3

Fig. 6b. Native speaker instructors' advice on discussion techniques

These data indicate that most of the students could not make presentations in their first try as indicated in the instructions (rules) discussed in the lecture as well as in Fig. 2b, and they had to learn these rules the hard way in the presentation practice sessions through guidance of native-speaker instructors. In their second try, however, their presentations are much improved as indicated in difference in numbers in Fig. 6a and 6b.

3.2. Evaluation Method

The evaluation of students' achievement is based on the scores of the presentation evaluation reports shown in Fig. 5a, in particular improvement points and average points are considered: when the improvement points (second score – first score) is more than 10 points they get A. Thanks to careful and thorough instructions and comments by instructors, approximately 70-80% of the students have A grades.

4. RESULTS OF INTRODUCTION OF NEW COURSE

4.1 Lecture A

Figure 7a shows the number of credited students for "Lecture A" from spring semester of 2003 to fall semester of 2008.

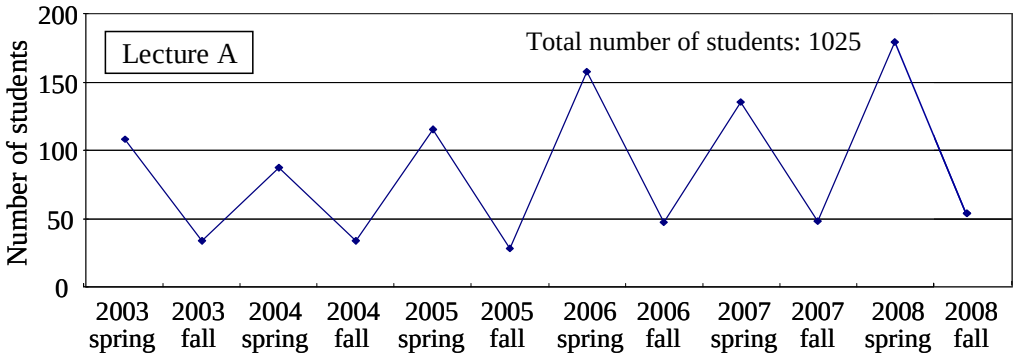

Fig. 7a. Number of credited students of Lecture A

This figure indicates that the number of students in the spring session is increasing and about 20% of incoming graduate students in the School of Engineering are now taking this course for credit.

4.2 Presentation Practice B

Figure 7b shows the number of credited students for "Presentation Practice B" from spring semester of 2003 to fall semester of 2008.

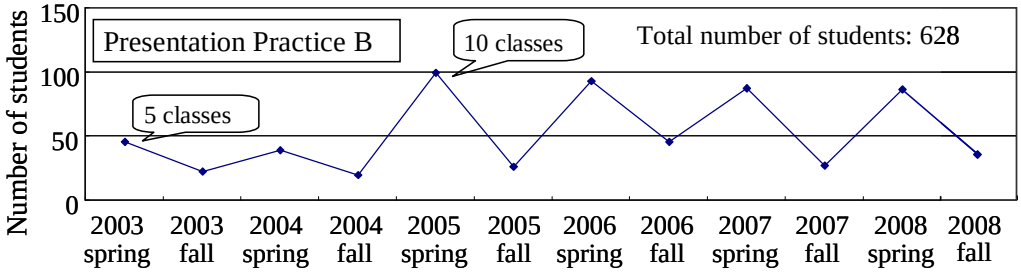

Fig. 7b. Number of credited students of Presentation Practice B

After increasing the number of classes to from 5 to 10 in the spring semester of 2005, about 10% of the incoming graduate students in the School of Engineering are now taking this course for credit.

5. CONCLUSION

A new graduate course for technical writing and technical presentation in English combining lectures and practice sessions was successful in improving students' ability to make understandable technical presentations in English. From this experience, we believe that the combined course in technical presentations in English will be effective in training engineering students who are not native speakers of English.

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TRAINING POSTDOCTORAL RESEARCHERS: A MODEL FOR PROFESSIONAL DEVELOPMENT

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***Abstract*—A six month training program for international (non-native English-speaking) postdoctoral researchers at a research university in the United States is described. The program, offered through the university's well-established English for Specific Purposes center, is based on a thorough needs analysis survey with a 53 % response rate from network-selected postdoctoral researchers on the campus. The training program offers not only language skills (research report writing, conference presentation, social language, and pronunciation) but also presents social strategies in the context of the research laboratory, provides training in research ethics and safety, and promotes career development skills such as conference networking and the effective design and content of cover letters and CVs for research job applications. The program has a further unique feature, taking into account the relation between institutional needs and career advancement: a module addressing research grant writing.**

The pilot program trained nine international postdoctoral researchers who at the end of the training rated the course satisfactory or highly satisfactory. In two instances of later follow-up, trainees directly linked the training course to achievements in their careers. The course was developed in an English as a Second Language (ESL) research environment, but certain aspects can be usefully applied as a model for English as a Foreign Language (EFL) environments, especially the teaching of strategies for the long-term career development of researchers.

***Keywords*— career development, postdoctoral researcher, English as a Foreign Language, English as a Second Language, research grant**

1. INTRODUCTION

1.1 Postdoctoral researchers

Postdoctoral researchers can be found in all fields of scholarship, but their presence in science, engineering, and technical fields is particularly notable. The number of postdoctoral researchers (hereafter simply postdocs) in the United States has been estimated at 50,000 [1]. The postdoc has a status that is rare in the modern world: that of

apprentice. Thus, the postdoc is neither student nor full-fledged professional, and as such, the postdoc unfortunately lacks a firm connection to the research organization where temporarily employed. As a result, these highly-educated individuals tend to lack job stability, pension plans, and general employment rights [2]. Moreover, for postdocs in the sciences, the theoretical reason for their apprenticeship, namely to serve with a master researcher in order to become independent researchers, is sometimes jeopardized by the uneven quality of mentoring received from laboratory directors or principle investigators.

While there are no firm figures for the number of non-native speakers of English among postdocs in the US, most estimates place the number at 50% or more [3]. Moreover, in the sciences, this percentage is estimated much higher [4]. These individuals whose native language is not English endure not only the problems faced by all postdocs in regard to career security and professional development, but also face daily linguistic and cultural challenges. This paper reports on an approach at one US research university, from needs analysis through curriculum development to training implementation, aimed at supporting postdocs whose native language is not English. The purpose of this report is to present an English as a Second Language (ESL) training model that can then be appropriately modified and transferred from the English-only context of a US research university to the English as a Foreign Language (EFL) environment of universities and research laboratories in which most instruction takes place in the native language. The ultimate purpose is to inform comprehensive training of future and current scientists and engineers.

1.2 Training setting

Indiana University-Purdue University Indianapolis (IUPUI) is a Midwestern research university with an urban campus that includes schools of medicine, dentistry, nursing, engineering, science, and informatics. At any given time there are 300 or more postdocs working in laboratories or other research facilities throughout the campus. Of these, roughly half are classified by the university as ‘international’ based on visa status. Hiring of postdocs is facilitated by the university, but both the hiring decision and the funding for postdoc appointments come from individual laboratory directors or principal investigators drawing on their funds from research project grants.

In 2001, the vice-president for research at IUPUI became concerned about a pattern of violations of research safety and ethical standards in laboratories. In recurring cases, the violations were linked to international postdocs who appeared to be ill equipped to understand, culturally or linguistically, the regulations they were violating. To address the issue, the vice-president turned to the resources of the Indiana Center for Intercultural Communication, an English for Specific Purposes training and discourse research center located within the English department on campus.

1.3 Needs analysis

The center first undertook a comprehensive needs analysis [5]–[8], using network selection [9] to identify potential respondents to a survey questionnaire drawn up by the center. The questionnaire, containing 51 questions, covered the areas of 1) background and demographic information, 2) the work context, 3) tasks engaged in, and 4) self-assessed English language proficiency. A response rate of above 50% was reached, as there were 16 responses to an initial mailing to 30 international postdocs on the campus. Of those responding, 14 were non-native speakers of English.

Based on the survey answers, findings indicated that tasks varied widely among postdocs, but some of the tasks were highly interactional: training students and technicians, responding and discussing in seminars and laboratory meetings, and presenting research. Such uses not only demand English language at a high level of proficiency, but involve knowledge and application of socio-specific codes adopted by respective disciplinary communities.

In terms of postdoc training in their laboratories, a significant portion of survey respondents (37.5%) reported they did not receive any explicit objectives regarding their assignments at the start of their postdoc positions. The same percentage reported they had not received any training in research ethics. In regard to available assistance in performing postdoctoral research tasks, 56.3 % responded that assistance was available, while 37.5% indicated that assistance was not available. Those who responded that assistance was available were then asked to illustrate examples of assistance they had received. Answers varied, with examples including 'lab tools and procedures,' 'help with language,' and 'help on solving problems.' None indicated a comprehensive source of assistance to address all issues of postdoctoral development. A more detailed description of the survey results has previously appeared in print [10].

2. TRAINING PROGRAM

2.1 Pedagogic approach

After analyzing the results of the survey and taking into account the institution's needs, the center formulated a proposal for postdoctoral training. The vision for the course extended beyond strictly language training to include a socio-cultural approach to disciplinary training. In other words, the course design envisioned success in research disciplines as depending not only on language skills, but on acculturation to the system, values, and customs of the research context. The concept and indeed the challenge of such acculturation has been labeled by Gee as 'Big D Discourse' and described by him as

> "acting interacting-thinking-valuing-talking (sometimes writing-reading) in the 'appropriate way' with the 'appropriate'' props at the 'appropriate times' in the 'appropriate' places" [11]

The idea of disciplinary culture has also been described by Swales, who explicitly links the concept to professional disciplines as

> "…institutional attitudes and expectations … the belief-systems, initiation ceremonies, rites of passage, rituals, taboos, value judgments of excellence or otherwise, codes of practice, etc. of doctors, lawyers, navigators, geologists, and so on…" [12]

Based on this concept, a comprehensive innovative training curriculum for the course, aimed at producing postdocs linguistically and culturally proficient for their respective research careers, was drawn up and presented to the campus authorities.

2.2 Program curriculum

The university agreed to subsidize a pilot training program based on the concept of disciplinary training. In 2004, a 45-hour course was offered, with the four modules and their content areas as summarized in Table 1. Postdocs who registered for the course came from the fields of microbiology, pathology, dentistry, molecular biochemistry, neurology, anatomy, nursing, and hematology. Native languages of the postdocs in the course were Chinese, Korean, Persian, and Arabic. The program was delivered once weekly, in late afternoon, for 90 minutes per class, extending over six months. This scheduling was designed to fit the laboratory shift schedules of the postdocs and to allow them to take the course without missing regular laboratory meetings or research presentations.

The modules and content outlined in Table 1 were designed to meet the language, social, and career needs of postdocs, and to address the institutional need for researchers cognizant of research ethics and safety expectations. While some of the instructional content (e.g., pronunciation awareness, presentation practice, and moves analysis of research texts) address language needs in a standard fashion, other content addresses larger, extra-linguistic disciplinary or institutional needs. Examples are the research safety and ethics module (for which guest speakers were drawn from the campus, with the center giving language preparation, post-presentation backup, and coaching to guest speakers to attain the greatest effect) and the module on career development, in which an emphasis on networking strategies was enhanced by guest lectures from successful lab directors who themselves were former international postdocs.

Table 1. Descriptive summary of training modules for postdoc course

Module 1: Oral Communication (14 hrs) A. Assessment Individual interview Recorded speech profile B. Pronunciation strategies Individual sounds & syllables Intonation and word stress Pauses, linking, & thought groups Regional & non-standard accents C. Daily interaction Social phrases Informality/formality D. Conference presentation Individual practice Group discussion Audience awareness	Module 3: Research Writing (14 hrs) A. Assessment Michigan standard test Individual writing sample B. Purpose, audience, genre Cultural differences in discourse C. Research reports Move analysis & awareness Sentence-level purpose D. Research grant proposal writing Funding sources & application Peer review process Rhetorical strategies Meta-textual transitions & sign-posting
Module 2: Research Safety & Ethics (6 hrs) Laboratory protocols Safety language & warnings Lab animal treatment Intellectual property & plagiarism	Module 4: Career Development (10 hrs) Mentoring relationship Networking strategies CV & cover letter strategies Job interview (mock session)

2.3 Achievements

Of the nine postdocs who took the pilot training program, all evaluated the course as either highly satisfying or satisfying. Particularly gratifying to the center's instructors were cases in which the course helped postdocs attain near-term goals: one postdoc used the training in Module 3 to extensively revise a research grant proposal she was writing to more effectively address audience expectations. Shortly after the course finished, she received word that her proposal had been accepted for funding. Another postdoc whose current work contract was expiring almost simultaneously with the end of the training program learned strategies for addressing cultural expectations of audience in writing cover letters. The postdoc put this to practical use by revising a CV cover letter for an announced new research position, and successfully landed a personal interview and then the new position.

3. IMPLICATIONS FOR EFL

It would be unwise to assume that a successfully designed and implemented program in an ESL environment in the United States can be transferred wholesale to an EFL environment such as that in universities or graduate schools in Japan, Korea, or China. Nevertheless, the model presented above has three features that can be transferred to enhance the success of efforts in disciplinary/professional training anywhere. The first of these is attention in a curriculum to extra-linguistic features of professional/disciplinary development, including long-term career development and associated skills such as CV and cover letter design and network-building at research conferences. The second is the drawing of guest speakers from the research community to model success and to give explicit advice on networking, interviewing, publishing, and other strategies to attain success in a discipline. These first and second features are closely linked. In this process, the EFL instructor need not be an expert in career development in a particular professional discipline. Rather, the instructor carries out diligent research for a basic approach, and then calls on successful role models in the discipline to relate their own paths to success. The third transferable feature is to address specialty areas that offer great benefits to the individual. Grant proposal writing is a salient example, which when mastered can enhance the career of a researcher and add value to the institution. Such instruction should draw on the resources of the EFL instructor, the institution, and on input and mentoring from successful grant writers who are invited to serve as guest lecturers.

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WRITING FOR PUBLICATION: AN UNDERGRADUATE COURSE FOR STUDENTS IN COMPUTING

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***Abstract*—This short paper briefly describes the design and initial delivery of a new course for undergraduates in computing (computer science, computer engineering, and information systems) called *Writing for Publication*. The paper explains the rationale for its inclusion in the university's curriculum, the educational philosophies upon which it is based, achievements from the first trial run, and plans for improvement based on student and faculty evaluation. The paper will prove useful to anyone who considers the incorporation of writing for publication training at the undergraduate level for students in technical disciplines to introduce them to the values and conventions of professional practice early in their university education.**

***Keywords*— field of computing, genres, periodicals, writing for publication, undergraduate education**

1. INTRODUCTION

The value that professionals bring to society comes not only from the quantity and quality of their professional knowledge but more importantly from their ability to use that knowledge for the good of others. Knowledge can be used to advance a discipline by adding to its knowledge base, modifying its social structure, or moving it in new directions. Or it can be used to help those outside the discipline by addressing the needs of clients, customers, and others who can benefit from the professional know-how. One of the most effective ways to disseminate professional knowledge, of course, is through publication, and thus mastering the publication options in a discipline increases professional worth by expanding the repertoire of genres one is able to employ. Universities that include some training in the publication opportunities that characterize their students' disciplines equip their graduates with essential skills that make them attractive not only to employers but also to readers who can learn from the expertise.

In October 2008, the University of Aizu added this agenda to its English language training objectives with the establishment of a new undergraduate course for students in computing called *Writing for Publication*. In this course, students learn about the publication options that are available to them as undergraduates, and then learn

how to write and publish in some of these genres in order to generate valuable information for themselves and for others. This paper provides an overview of this course and its philosophy, the achievements during its initial trial run, and plans for further improvement of the course for 2009.

2. RATIONALE AND UNDERLYING PHILOSOPHY

The *Writing for Publication* course was created by the Center for Language Research in the School of Computer Science and Engineering at the University of Aizu to accomplish several educational goals:

To develop students' professional perspectives

- by helping them focus their professional goals and motivations on meeting the needs of others
- by helping them to view publication as a valuable tool for professional contribution to society
- by helping them see that professional output provides direction for the selection and mastery of educational input

To develop students' professional knowledge

- by helping them learn about the wide range of publication options available to them
- by helping them learn the defining characteristics of each publication genre
- by helping them learn where these genres normally appear in the professional and public literature
- by helping them learn the special characteristics that distinguish good papers/writing from poor papers/writing
- by helping them learn the procedures and requirements for submission of their work for publication

To develop students' professional skills

- by helping them learn how to discover and assess needs
- by helping them learn how to generate helpful information that can meet these needs
- by helping them learn how to select appropriate locations for the effective dissemination of needed information
- by helping them learn how to analyze audiences and previous text to guide their own production of suitable text
- by helping them learn how to write appropriate text
- by helping them learn how to assist in the writing and improvement of others' text
- by helping them learn how to engage in effective communication with editors and reviewers

To develop students' professional advancement

- by helping them to generate publications that provide evidence of their experience and expertise on their résumés
- by helping them begin to develop name recognition in their areas of specialization and professional interest

In short, these goals were established for this course in order to help students learn how to see, think, and act like genuine professionals who study, write, and publish in order to meet the needs of others rather than merely serving self-oriented needs.

The educational philosophies that undergird the rationale for such a course as well as the development of instructional materials, course activities, and participant roles and relationships are rooted in the scholarly and practical literature on educational needs assessment [1]-[3], English for Specific Purposes [4]-[6], the development of professional expertise [7], [8], second language acquisition [9], [10] educational best practices [11]-[13], professional science/engineering culture [14], [15] and writing for publication [16]-[18]. In essence, the course was built around the cumulative philosophy from the literature mentioned above that effective learning takes place when professors and students work together in a friendly, supportive, stress-free partnership to set obtainable learning goals, plan effective educational tasks, and actively engage in authentic real-world activities that have direct relevance to the genuine needs and interests of all participants as well as to the needs and interests of society.

The course was offered as an elective for undergraduates at the junior or senior level to provide interested students (aiming at careers in university or corporate research) some essential professional training early on in their education to parallel and support their current learning. The course was taught in English and focused on publishing in English to develop student capacities to address broader global needs through sharing their expertise to educated readers around the world. The foundational principles taught in English that were related to publishing in English are transferable to publishing in Korean, Japanese, and Chinese, the native languages of the students enrolled in (or auditing) the initial offering of this course in the 2008-09 academic year.

3. COURSE ACTIVITIES

Course activities in the first trial run of this course consisted of the following in varying degrees of depth:

Lectures and Discussion

- The purposes and advantages of writing for publication
- Concepts of genre and professional discourse communities, with specific relevance to types of publications and means of dissemination in the field of computing and its professional subdomains
- Principles of document design
- Awareness of reader, referee, editor, and publisher expectations
- Methods for analyzing papers to identify generic features and conventions
- Methods for analyzing papers to identify weaknesses and strengths in linguistic and graphic communication
- Citation styles and procedures
- Formatting styles and procedures
- Submission requirements and procedures
- Lifestyle modification for the effective inclusion of studying, writing, and publication within one's normal university experience

Project Activities

- Group and individual investigations of specific genres (e.g., interview articles, review articles)
- Presentations of student investigations with supportive explanatory handouts and published examples
- Group analysis of specific papers to identify characteristic generic features, along with strengths and weaknesses in communication
- Individual study and writing for publication
- Class study and writing for publication (e.g., this conference proceedings article)
- End-of-term discussion on this course's strengths and weaknesses, along with recommendations for its improvement

Students who participated in the initial offering of this course consisted of five undergraduate students (four juniors and one senior) and two auditing graduate students (one at the master's level and the other at the doctorate). The two graduate students audited this course because they wanted to take advantage of this training since there wasn't any similar instruction in the university's graduate school, except in the context of individualized advisor-to-student training within each of the university's research laboratories. *Writing for Publication* was held in a small classroom, with moveable chairs and a whiteboard to facilitate lectures and class discussions, and additionally in a high-tech computer-equipped classroom, where lecture and project material could be projected on a screen at the front of the room or where the professor could work individually with each student on specific papers and projects at the student's computer terminal. As is typical of most university courses in Japan, the class met once a week for 90 minutes for a duration of 15 weeks, followed by a 90-minute exam during final exam week. The final exam for this course consisted of individual student presentations of their work.

Students who signed up for this course did so for three reasons, according to responses collected from questions distributed via email: 1) to learn about publishing, 2) to learn how to write for publication, and 3) to improve general English reading and writing skills relevant to engineering publications. None of the students had ever published anything in English before, except for the auditing doctoral student, who had published four international journal articles in English, one domestic journal article in Korean, and eleven international conference proceedings papers in English. All of these, however, had been coauthored with various Korean professors he had worked with in graduate school. His reasons for auditing *Writing for Publication* were to learn things about publication that he had not learned from his Korean advisors, as well as learn how to improve his own writing skills so that he could generate publishable papers on his own.

4. COURSE RESULTS

Three positive results were achieved among the students after the first trial run of this course: 1) a general understanding of the instructional content and its significance for each student's professional development, 2) increased motivation to perfect one's English writing and reading skills related to engineering publications, and 3) the production of some actual publications of social value that students could add to their résumés. Individual publications consisted of book, device, or software reviews posted on Epinions (www.epinions.com) or Amazon.com (www.amazon.com), which enabled students to evaluate products they had used and "publish"

their opinions quickly without the need for a lengthy submission-review-revision-resubmission-publication process. In addition, the auditing doctoral student completed a conference paper for the 2009 International Conference on Enterprise Information Systems (www.iceis.org) that was accepted for presentation and publication by the conference review board. And another student began work on a research project and paper with one of her professors for submission to a 2009 IEEE conference related to her research interests (computer science and applied linguistics). Additionally, the entire class worked on writing a paper and preparing an accompanying slide presentation for the IEEE PCS Japan Chapter Annual Seminar, which resulted in the paper you are currently reading. Although initial plans had included the generation of more publications, students found that learning the lecture material and conducting research on individual genres for presentation to their classmates took far more time and effort than originally expected, particularly since English was still quite difficult for most of them.

Below is one simple example of a book review posted on Epinions that demonstrates the kind of starting point where professional publication can begin for students at fairly low levels of English mastery, followed by a review of a hardware device by a student with more advanced English ability.

Excellent Book for Beginners

Computer Networking by Kurose and Ross is an excellent book for beginners in computer networks. It explains layers, multimedia networks, wireless and mobile networks, and network security in easy English supported by well-designed graphics and illustrations. It does a very good job at showing that computer networks today involve much more than standards specifying message formats and protocol behaviors. It describes emerging new trends in a lively and engaging manner, with helpful illustrations from modern Internet architectures.

I think this book is ideal for beginners. In fact, the English and graphics are so clear that it is ideal for nonnative speakers of English too. It makes difficult concepts easy to understand for students who normally struggle with even average levels of English.

I recommend that every person interested in computer networks buy this book for their first introduction to this field no matter whether their native language is English or not.

Inexpensive pen tablet display for an expert: Wacom Cintiq 12WX

If you are working in the area of digital imaging, or using image processing software as a hobby, and if you have used pen-tablet devices often, I guess that most of you are hoping to use a pen tablet display, which (hopefully) provides you with a more natural working environment. If you are worrying about the price, and if you don't know the Wacom Cintiq 12WX (12WX or the tablet below), this could be the best option for you with its relatively low price ($1,000).

12WX is a 12 inch monitor that functions as a pen tablet, which means it is a sensitive touch pad when using an electronic pen.

Compared to the other models of Wacom, this one is thin, light, and small. You can connect it with your additional graphic driver and can use it as a secondary monitor with its tablet functions. Because it is light, you can design/write/illustrate on

your lap like a laptop. This is the biggest merit of this device, since it allows you a more natural environment. You can work using the display only, and also you can work while watching another big display after synchronizing the tablet with it. But this is all what the $1,000 device have.

If you are planning to use it as a secondary display, it seems to be a bad idea. 12WX's view angle is pretty poor, and you can't read small characters well if your face is not orthogonal to the tablet. This is not a substitute for a usual display.

12WX is surely light. But this is true only if you are counting the 'display' device. It has complex cables with a (relatively) big setup box, which probably exists to convert signals between DVI and VGA. They reduce the portability severely, and it is very bothersome to re-arrange cables, frankly.

So, is this rubbish for $1,000? No, I don't think so. It is still a very good option for you, if you want to enjoy a more natural environment at an economical price. I especially recommend this to experts in computer graphics since it allows you to do high-level work with much greater ease.

Simple reviews, such as these, proved to be good starting points for nonnative speakers because they allowed them to share what they knew about the item they evaluated at their particular level of English without having to spend too much course time on affiliated research beyond the analysis of genres, reader expectations, and publication requirements and procedures.

Students in the class who worked on additional publications as co-researchers and authors with their professors were able to generate much better text, as exemplified by the following two abstracts from their papers.

Fast Unsupervised Classification for Handwritten Stroke Analysis

This paper considers the unsupervised classification of handwritten character strokes in regards to speed, since handwritten strokes prove challenging with their high and variable dimensions for classification problems. Our approach employs a robust feature detection method for brief classification. The dimension is reduced by selecting feature points among all the points within strokes, and thus the need to compare stroke signals between two different dimensions is eliminated. Although there are some remaining problems with misclassification, we successfully classify strokes according to handwriting styles through a refinement procedure. This paper illustrates that the equalization problem, the severe difference in small parts between two strokes, can be ignored by summing all of the differences via our method.

The Language and Rhetoric of Citation in the Field of Computing

This paper reports on a study of citation practices in the field of computing, based on linguistic and rhetorical analyses of 1,255 bibliographic citations in 36 academic papers from the final 2008 issues of four representative journals: *IEEE Transactions on Software Engineering*, *IEEE Transactions on Dependable and Secure Computing, IEEE Transactions on Parallel and Distributed Systems*, and the *IEEE Transactions on Computers.* Rhetorical categories were established for each type of rhetorical purpose, along with representative examples of the specific language that was employed to achieve each rhetorical goal. Citation conventions identified in the field of computing were then compared to citation conventions in other fields such as law, medicine, business, literature and psychology to reveal noteworthy differences in professional culture and discourse. The results from this study provide helpful information to students and working professionals in

computing, as well as to professional writing educators and editors, who wish to know more about the bibliographic citation options that are currently used in the computer science/engineering profession.

For the final examination, each student presented a short lecture on a specific genre that was ideal for writing and "publication" at the undergraduate level, even with limited mastery of English. Students supported these presentations with one page handouts and exemplary publications to teach their classmates about the publication option that was available. Publications focused on various types of review and interview articles, where undergraduate students could easily draw upon their own experience or the expertise of others for useful content. Other kinds of publishing options were presented by the professor (e.g., different kinds of articles appropriate for student-focused journals, magazines, and newsletters; articles for U.S. college newspapers; articles for professional newsletters and websites; etc.). Lack of time to study each of these options in detail, as well as lack of time to write for them, prevented students from generating successful publications in these other modes.

5. PLANS FOR IMPROVEMENT

At the end of this course, the students and their professor discussed how this course could be improved. All agreed that this kind of course was attractive and appropriate for a progressive bilingual university like the University of Aizu but that there were several issues which surfaced during the trial run of this course that needed to be addressed in order to enable students to achieve more impressive results within the 15 weeks allotted to course instruction. Some of these issues are the following:

- *Writing for Publication* training needs at the undergraduate and graduate levels differ considerably. Undergraduates need training at broader but shallower levels, while graduate students need more focused training on the publication of their research. Perhaps offering two different courses, one at the undergraduate level and one at the graduate would be better.

- Some students have considerable trouble navigating the Internet in English to find the information they want. Some step-by-step training in efficient Internet use may be required to better facilitate individual genre research projects.

- Students at the undergraduate level may not have enough to say yet about computing and related technical topics, so it may be productive to expand their range of topics to include other subjects they know enough to write about, while at the same time avoiding content and affiliations that may damage their growing professional identity.

- Balancing individual research/writing projects with group research/writing projects provides a nice balance of experience for each student, but greater care in the distribution of work duties might be necessary to prevent stronger researchers/writers from doing more work than weaker ones who also need to learn from the experience.

- More training in writing is needed beyond the instruction and feedback provided for specific papers in order to develop student writing skills more quickly.

Two other issues that were identified as needing attention were these: the possibility of much larger course enrollments in the future and wider ranges of English writing abilities among those who enroll. These two issues need to be thought through early since these two changes in future enrollments would create greater hindrances to learning and require some changes in course content and training to overcome them.

6. CONCLUSION

The initial run of *Writing for Publication*, offered officially to undergraduates and unofficially to auditing graduate students, went well in terms of providing students with a general understanding of the instructional content and its significance for each student's professional development, increasing student motivation for perfecting their English writing and reading skills related to engineering publications, and producing some actual publications of social value that students could report on their résumés. In contrast, less learning and writing took place than was originally envisioned due to various inefficiencies in the delivery of course content, the negotiation of project goals, and the carrying out of project activities. Improvements in the areas identified by students and their professor at the end of the course, however, will enable more impressive results in the second run of this new course, with continual refinement taking place year after year to ensure that students get the best training possible in writing for publication.

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SUCCESSFUL COMMUNICATION FOR ACADEMIC MANAGEMENT: CASE STUDY OF ONE OUTSTANDING UNIVERSITY PRESIDENT

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***Abstract*—Managing a university can be far more challenging than managing a corporation, for it not only requires vision and creativity to solve complex problems in the face of rigid rules and long established traditions, but it also requires superior communication skills to motivate people through persuasive reason rather than by threatening them with salary cuts or bribing them with promotions. A university president needs to possess good ideas and convey them persuasively, or everyone in the organization will simply pursue independent agendas rather than combine their efforts to move the university forward.**

In this paper, the professional management and communication skills that made one Japanese president highly successful and internationally respected will be presented. Based on my experience as one of this president's key administrative support staff, I will describe the strengths of this president along with his professional communication skills that enabled him to not only envision a very unique university for Japan but also bring that dream into successful realization. This article will be useful for anyone who is interested in professional communication within the challenging context of academic leadership.

***Keywords*—University management, professional communication, vision, reason, leadership, academic culture**

1. INTRODUCTION

This paper offers a glimpse of the management and communication skills of the founding president of the University of Aizu in Japan, which has made the university highly successful and internationally respected. Since the university's establishment in 1993, there have been four different presidents. As assistants to all four presidents, I would like to explain the strengths of the founding president of the university with the aim of providing advice to others who study or engage in professional communication in the context of academic leadership.

2. THE UNIQUENESS OF THE UNIVERSITY

The University of Aizu was established in April of 1993 with the goal of educating and graduating students who would become Japan's leading professionals in computer science and engineering [1]. In order to accomplish this, a new kind of university was needed that would be far more international than other Japanese universities, with English and international faculty playing much more important roles than they typically do in Japan. The university needed to gather a wide range of faculty from many different nations, provide equal benefits and privileges to all, and aim at maintaining a 50% non-Japanese percentage in the faculty at minimum. English would be commonly used on campus as the language of work and professional communication because English is the international working language of computer science and computer engineering. The university curriculum would need to include courses that not only taught professional English but also offer a wide range of classes in science, engineering, and math that were taught in English in order to train its students to work and communicate effectively in the language. The University of Aizu began as a project of Fukushima prefecture to spur economic development, with Dr. Tosiyasu L. Kunii recruited to serve on the planning committee, but he was later drafted to be its president since he was clearly the most qualified to realize the dream he had envisioned.

3. THE UNIVERSITY PRESIDENTS

The founding president, Dr. Tosiyasu L. Kunii, was in office from April 1993 to March 1997 and his term of office was considered as the university's founding period. Dr. Kunii earned his doctorate in 1967 from the University of Tokyo, Japan's most prestigious university, and worked there in the Department of Computer and Information Science from 1978 until 1993. In 1993, he left his job at the University of Tokyo to lead the establishment of the University of Aizu. His goal was for the University of Aizu, the first and only university in Japan solely dedicated to computer science and engineering, to be a truly international university in Japan that could serve as a model for reform for other universities.

The second president, Dr. Shouichi Noguchi led the University of Aizu from April 1997 to March 2001. He had previously worked as a professor of engineering at Nihon University, Japan after retiring from a long academic career at Tohoku University, Japan. Although Dr. Kunii had focused on making the University of Aizu an international university, Dr. Noguchi decided to develop the university in more traditional ways that were common at top Japanese universities like Tohoku University. When he became president, he worked hard to make the University of Aizu better known in Japanese industry, and he also worked hard to promote new start-up companies near the university. He even invested his own money in some of those start-ups, thus helping the University of Aizu to grow successfully in one more important direction so that it could become equally strong in traditional Japanese terms as well as on the international stage.

The third president, Dr. Tetsuhiko Ikegami, held office from April 2001 to March 2006. He had formerly worked in the management of Nippon Telegraph and Telephone Corporation (NTT). He attempted to improve the University of Aizu further by implementing corporate management techniques into the university's administration. Internationally minded like Dr. Kunii, Dr. Ikegami used his bilingual abilities to promote greater

English use in university meetings and other university activities.

The fourth and current president of the University of Aizu is Dr. Shigeaki Tsunoyama, who has been in office from April 2006 to the present. As a former nuclear engineer and manager in Toshiba, Dr. Tsunoyama is a quieter man who thinks deeply before speaking, and works hard behind the scenes to support the visions and dreams of individual professors, departments, and centers so that they can fully develop their strengths and achieve more impressive international results from their work. He is thoughtful, warm-hearted, and balanced, and exercises his wisdom to help the University of Aizu continue to develop its strengths by encouraging its faculty and staff to excel individually for the common good of the university, the prefecture that funds it, and the world.

4. HOW AND WHY DR. KUNII BECAME PRESIDENT

When Fukushima Prefecture began thinking seriously about establishing a prefectural university, Dr. Kunii, on the faculty at the University of Tokyo, was recruited to serve on the planning committee and then later drafted to be its president when it became clear that only he would be able to accomplish the vision he had laid out for the planning committee. The University of Aizu became the child of Dr. Kunii, and his high aspirations attracted the interest and commitment of many overseas academics who were impressed by the university's dream and were willing to give up their university positions elsewhere to participate in this attractive new project. Dr. Kunii created a grand design for the university with a large number of followers behind him because of several strengths that he possessed. Two of these strengths were his creative imagination and problem-solving abilities that enabled him to generate many attractive ideas almost spontaneously. He was very strategic, too, in his use of human resources. Through use of skillful communication, he was able to build a strong network of talented people whose expertise he could take full advantage of. And yet, he was not very good at dealing with others until he first got to know them well. In most cases, however, he worked with only the people who were around him all the time, such as his inner circle of support staff and devoted followers.

Dr. Kunii was a genuine international person, too. He always spoke in English if there was at least one foreign person in the group. Also, he wanted to continue his international research and publishing even when asked to become the first University of Aizu president. During planning meetings, he had assumed that another person would be selected as president of the university; however, Fukushima prefecture recognized quickly that only Dr. Kunii could handle the newly born university that he had conceived. Being strongly committed to scholarly research at a high international level, when he was asked to be President, he requested the provision of his own research laboratory as well as his own office for planning and management in order to allow him to work efficiently and successfully both in administration as well as in research. This was one of the conditions he requested in turn for accepting Fukushima prefecture's offer to be its new university's president. In his recruitment of support staff as well as university faculty, his greatest concern was the ability to generate successful results. He did not consider gender, age, or nationality to be factors worthy of consideration. He only wanted experienced professionals with winning performance records.

5. KUNII'S TWO SUPPORTING OFFICES

One of the conditions Dr. Kunii requested of Fukushima prefecture if he were to serve as President of the University of Aizu was to provide two supporting offices so that he could continue his work as a researcher as well as carry out his duties as President. The Computer Science and Engineering Laboratory was set up to allow him to continue his research, and the Office for Planning and Management (OPM) supported his university management duties. Dr. Kunii continued his academic research in computer science and engineering in his own laboratory and devoted himself to advancing this newly established university very efficiently thanks to the support persons he was able to surround himself with.

The Office for Planning and Management (OPM) was (and still remains today) an internal organization which performed general investigative research necessary for university functions, as well as general program planning and design regarding university education and research. A staff of five members served in this office for the President, which differed from the office staff normally provided for prefectural university presidents, made up of bureaucrats on three-year rotating assignments..

My primary responsibilities in the OPM were research, planning, and management for university-industry collaboration; organizing international conferences and seminars; research on intellectual property; and the promotion and facilitation of outside funding via government and corporate grants. Assisting international faculty and students from overseas was also one of my duties, and all of these original duties remain the bulk of my work today, although other duties have been added, such as research and teaching in the area of professional English communication.

6. KUNII'S GOAL AND VISION

Dr. Kunii's goal for the University of Aizu was for it to be the first and only bilingual international university in Japan solely dedicated to computer science and engineering, and expected it to serve as a role model to help bring about reform in higher education all over Japan. He also planned for the university to be Japan's most electronically equipped academic institution with classes predominantly taught in the international language of English. The motto he selected for the university was "to advance knowledge for humanity." Dr. Kunii borrowed the phrase "to advance knowledge" from American research universities in the 19th century, but he added "for humanity" to avoid permitting the university to create anything that might be harmful to human existence, such as military weaponry, in order to avoid the mistakes made by Japan and other nations in the past.

7. KUNII'S WORKING STYLE

In terms of working style, Dr. Kunii worked continuously and ubiquitously. He worked all the time, no matter where he was, filling every slot of time with productive activity, frequently taking OPM staff with him everywhere to work on projects too. Dr. Kunii also responded quickly to every demand, be it the need to solve a new problem or to respond to someone's request. Drucker [2] identifies five practices essential to business

effectiveness that can, and must, be learned: managing time, choosing what to contribute to the organization, knowing where and how to mobilize strength for the best effect, setting up the right priorities, and then knitting all of this together into effective decisions. Dr. Kunii excelled in all five of these areas.

8. KUNII'S COMMUNICATION AND NEGOTIATION STYLE

Since Dr. Kunii was both bilingual and bicultural, he could understand both Japanese and Western communication, and could easily switch between them, in terms of both language and communication style. When it came to negotiations, he also had a talent for knowing just exactly who he needed to talk to and in exactly which way. He seemed to possess a remarkable amount of intuition for knowing who the key person was to achieve success in every negotiation. When he negotiated with Japanese colleagues, he used respected behind-the-scenes tactics, bottom up decision making, and traditional *ki-shou-ten-ketsu* logic (i.e., introduction-development-twist-conclusion). And he also used Japanese *haragei*, which is nonverbal communication from the gut. Japanese tend to be homogeneous enough in their thinking and actions that they can easily understand each other without having to speak explicitly about matters. Dr. Kunii knew this and took full advantage of this communication style.

On the other hand, when Dr. Kunii negotiated with Westerners, he used deductive logic and top down decision making, speaking very directly and explicitly, while providing all of the details required for his listeners to fully understand. *Haragei* was inappropriate when speaking with those unaccustomed to it. When Dr. Kunii delivered presidential messages to the faculty or explained things to the prefectural administrative staff, he continued to communicate his vision and clarify the goals he wanted everyone to aim at in the communication style that could accomplish the best results. In addition, he recorded many of his ideas on paper so that people could read and confirm his ideas later.

9. CONCLUSION

Dr. Kunii's management and communication style worked well in international settings because both Japanese and Western management, communication, and negotiation styles were required to be fully understood by both Japanese and foreign faculty. Managing an organization that uses one language in a monocultural context is relatively easy. However, managing organizations composed of many different nationalities and cultures, like the University of Aizu, is very difficult and challenging. Though the first four presidents used their management skills and communication talents to develop the University of Aizu in different dimensions, challenges still remain that will need to be addressed with yet even better communication and management styles that can take this model international university even further in its development.

References

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Author Biographies

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George Weir is a lecturer in the Department of Computer and Information Sciences at the University of Strathclyde in Glasgow, UK. He holds an MA (Hons) degree in Mental Philosophy from the University of Glasgow and a PhD in Philosophy from the University of Edinburgh. He is a member of the Association of Computing Machinery, the British Computer Society, the Institute for Learning and Teaching, the Pan-Pacific Association for Applied Linguistics and is also a Fellow of the Royal Society for the promotion of Arts. During 2005, he held a Winston Churchill Travel Fellowship through which he visited researchers and associates across Japan. At Strathclyde, he teaches computer security, digital forensics, Web applications, and enterprise networking. His wide-ranging research spans the subject areas that he teaches as well as human-computer interaction, corpus linguistics, textual analysis, and human language technologies.

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William Rozycki is newly appointed as professor in the Center for Language Research, the University of Aizu. Prior to taking the position at Aizu in September 2008, he served as associate director of the Indiana Center for Intercultural Communication at Indiana University-Purdue University Indianapolis, an English for Specific Purposes center offering disciplinary discourse training in fields including science, medicine, and law. He earned his MA and PhD from Indiana University.

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University of Aizu students who assist in this course's research, writing, presenting and publishing projects are Won-Du Chang (specializing in pattern recognition), Sho Inomata (specializing in image processing), Kana Itabashi (specializing in overlay networks), Takuya Itagaki (specializing in ubiquitous networks), Dongxue Ma (specializing in computer science and applied linguistics), Gun-Ho Na (specializing in automatic speech translation), and Koichi Noda (specializing in visualization engineering).

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