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**Designing a Needs-Based Technical Writing Course for Engineering Students:  
A Study of Bachelor-Level Male Engineering Students at IIUI**

Ghulam Abbass,<sup>1</sup> Arshad Mehmood Raja,<sup>2</sup> & Muhammad Munhib Shah<sup>3</sup>

**Abstract:**

The aim of this study is to design a needs-based Technical Writing course for the undergraduate students of the Faculty of Engineering and Technology (henceforth FET) at International Islamic University, Islamabad (henceforth IIUI). Data for this purpose was collected from 40 students from the 6<sup>th</sup> and 8<sup>th</sup> semesters of FET at IIUI. The research instruments employed for the collection of this data were a survey questionnaire and a diagnostic test designed to find out the students' needs and lacks. Findings indicated that the students were quite aware of their current and future needs and were thus also interested in being taught things that would benefit them the most. They also gave suggestions for the improvement of the course and hinted at what they expected from their teachers. Study material for a pilot course was drafted on the basis of these findings.

**Keywords:** English for Specific Purposes (ESP), needs analysis, needs-based course, technical writing, syllabus, course designing

**INTRODUCTION**

The English language is one of the official languages of Pakistan and is considered to be a key to success in the country. It is, however, very difficult for engineering students in Pakistan to shape their thoughts in English, which, despite all of its popularity and benefits, is still a foreign language. This task becomes even more difficult when they have to write in a complex academic register. The

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<sup>1</sup> Ph.D. Scholar, Department of English, Eastern Mediterranean University (EMU), Famagusta, North Cyprus. Email: gabbasteacher@gmail.com

<sup>2</sup> Assistant Professor, Department of English, International Islamic University, Islamabad, Pakistan. Email: arshad.mehmood@iiu.edu.pk

<sup>3</sup> Adjunct Faculty, Department of English, International Islamic University, Islamabad.

students need a high level of linguistic competence in order to perform at the workplace and pursue higher education, and even professional engineers need a sound grip on the English language if they wish to continuously polish their skills and stay abreast with the latest developments in their fields. A qualified engineer, in other words, is expected to have proficiency in the English language, especially if (s)he wants to find success in the local and global market.

The students of Bachelor of Science, Engineering (BSE), at IIUI, study Technical Report Writing as a compulsory non-engineering course in their seventh semester. These students are divided into five sections and each section is taught the course by a different teacher. All five sections, however, are given the same question paper for their mid- and end-term examinations. Although teachers teaching this course coordinate with one another to bring uniformity in their course outlines, yet they do not take into account the students' current and future needs vis-a-vis technical writing. Hence, this study is an attempt to design a needs-based Technical Writing course for Undergrad students of FET at IIUI.

The study aims at: designing a needs-based but uniform technical writing course for the students of BSE; finding the problem areas in the students' writing skills, and; suggesting teaching material and devising activities for the improvement of the students' report writing.

The study, is of great help to the students, the teachers, and the university. It would help students in developing a clear idea about the course and will add to their motivation by addressing their real life needs and wants. It would also enable teachers to have a clear course outline to work with, thus helping them both in planning and cooperation. The university administration would also be satisfied as they would have a clear outline given to them, ensuring that, even if a different set of teachers is assigned the course in upcoming semesters, the new teachers would have a basic outline to work with when preparing for the course. Furthermore, since the course is being designed on the basis of survey findings and diagnostic test results, the course contents would be much more realistic and help address directly the needs and the wants of the students.

### **Limitations**

The study is based purely on the opinions of bachelor level male engineering students at IIUI. It has not taken into consideration the opinions of female students, teachers and employers. Future researchers may involve these groups to add to and thus improve upon the findings of this study.

## **LITERATURE REVIEW**

### **General Overview of Technical Writing**

Richard Nordquist (2020) defines Technical writing as a ... written communication done on the job. Like business writing, technical writing is often subsumed under the heading of *professional communication*. According to Kenneth G. Budinski (2001: 1), Technical Writing is a broad area which encompasses a variety of documents produced by professionals in the fields of science and engineering. Most of these documents can be grouped into the following four categories: reports and communications in day-to-day business; technical papers, magazine articles, books, and theses for the purposes of education, teaching, and the sharing of information; patents; and operational manuals, instructions, or procedures.

Most technical writing in day-to-day business involves the writing of various technical reports. These reports are a major part of an engineer's work since they are produced many times during projects. It is rare for a company to pay an engineer who did not produce any work which they could evaluate, implement, and benefit from. Also, it is only on the basis of these reports that an engineer and his work may be judged. So, for instance, an engineer who works in a company that is developing a new transmission for a car would produce several types of reports dealing with the design, evaluation, and implementation of the new component.

### **English for Specific Purposes (ESP)**

After the Second World War, English gained the status of an international language and became a "must have" for people all around the globe (Hutchinson and Waters 1987:7). Researchers realized that the commonly prevailing courses on General English were not meeting the needs of different professions and that English teaching had to now become less generalized and more target focused, aiming in each instance at a specific type of English register and usage. This resulting form of English teaching, called ESP, has been identified by Johns and Evans (1998:4-5) as one that is designed to meet the specific needs of the learners, so that whatever is taught and the way it is taught is specifically designed in each instance to prepare the students for the contexts in which they will be using the language. Usually, ESP courses are targeted at advanced and adult students belonging to a specific field or discipline, though it does not necessarily have to be so.

ESP, in other words, is more of "an approach" than a method or "a product" (Hutchinson and Waters, 1987:19). An ESP course is not something one picks off from a shelf and starts teaching, but an entire way of language instruction in which one has to analyze the students' future requirements and current situation, while taking into consideration their expectations and the environment in which they are studying, in order to design a course and a plan that has been made specifically for the students being taught. ESP courses, in other words, are designed to help students use language effectively in their professional life. Thus, when designing an English Language course for engineering students, the approaches and methodologies of ESP must be employed for maximum benefit. ESP, for this reason, has been an approach that makes heavy use of the needs analysis process.

Various studies have been conducted investigating issues of needs-based language course design. One such study is by Eshtehardi (2017), which highlights the importance of needs analysis in designing exam courses. Similarly, Ulfah et. al's (2021) article also provided the employees of the Protocol Department in the Palembang City Mayor Office with a needs-based course design entitled English for Professional Purposes: Basic level of conversation. To further add to the existing literature, Shrestha (2021) investigated the extent to which an online course could address the student needs. She argued that student needs analysis is paramount for any new course design and online delivery.

In Pakistan, however, this approach to teaching is yet to be fully established. In a study conducted at NUML, Dar (2010) concluded that there is often a conflict between the expectations and desires of the students and the perceptions of program managers and designers. This, obviously, has had a bad effect on student and teacher performance as these courses often do not deal with the actual needs of the students. Furthermore, according to a report submitted to the Higher Education

Commission in 2006 (Shamim et al., 2006) as well as research conducted by many others (Zafar, 2003 & 2009; Mansur, et.al 2009), most of the teachers teaching ESP subjects are not even aware of what ESP is. In other words, the teachers have no idea as to what they are supposed to do and are thus not able to perform properly when teaching an ESP course.

### **Needs Analysis & Diagnostic Testing**

The needs analysis, according to Dudley-Evans & St. John (1998), is a process that is used to establish the *what* and the *how* of a course—that is, what to teach and how to teach it. It involves choosing material, preparing activities, planning lessons, and so on. As such, it is a very important step in the designing of a language course (Michael, 2005). To perform a needs analysis, one has to identify the necessities, lacks, and wants of the students (Hutchinson and Waters, 1987). In other words, the course designer must be attentive to the requirements, the situation, as well as the expectations of the students while selecting materials and methodologies for the course (Hutchinson & Waters, 1987).

As far as the first aspect of a needs analysis (i.e. the target situation analysis) is concerned, Munby (1979) has tried to come up with a comprehensive model that specifies the various uses of language that the learners will encounter in a particular target situation. We must not forget, however, that when we conduct a needs analysis, we are not just trying to understand the target situation, but also the current position of the students and their background as English language learners. That is, we need to know where they are *at the current moment* in addition to where they eventually want to be. For this purpose, we have to make use of a diagnostic test (or a series of diagnostic tests) that try to understand the current situation of the students. The purpose of this test is to find out where the students stand with respect to their goals (Tudor, 1996), so that, on that basis, one may figure out “what learning still needs to take place” (Hughes, 2003: 15). Both these factors are then complemented by the students’ wants, which can be found through surveys and interviews.

### **METHODOLOGY**

The researchers used a mixed method approach to conduct this study. While the quantitative method was used to calculate Mean, Standard Deviation, Median and Mode of the collected data, the qualitative method was used for interpretation purposes. The present study focuses on the needs of Bachelor level engineering students at IIUI. It makes use of a cross-sectional survey in order to find the needs, wants, and lacks of the students. The questionnaire, after being piloted and tested, was distributed among 50 randomly selected students. 40 of these questionnaires were returned after being filled. A diagnostic test was also conducted to help find the lacks of the students. A data file was created to enter and analyse the responses of the students. The researchers employed the twentieth version (v.20) of SPSS for the purpose. All suggested teaching material, in this study, was selected on the basis of these results. The students consulted for the study belonged to the 6<sup>th</sup> and 8<sup>th</sup> semesters, the reason being that they were either just about to study Technical Writing in the upcoming semester (in case of 6<sup>th</sup> semester students) or had just finished the course and were thus acquainted with what is usually taught (in case of the 8<sup>th</sup> semester).

### **Data Analysis**

The researchers organized the data into a frequency distribution, making it easier to present and explain. Percentages can be calculated of individual responses in order to analyze and compare the various patterns and tendencies that can be seen among the students. This measure, however, takes into account more than one metric, and the researchers have calculated the mean, standard deviation, median, and mode to find the overall tendencies and opinions of the students.

The following table shows the results for the first seven items on the questionnaire and is followed by a brief analysis of the responses. The (Likert) scale of these questions is given below:

**5: Strongly Agree      4: Agree      3: Neutral      2: Disagree      1: Strongly Disagree**

| Query No. | Query                                                                                                                                                   | Mean | Standard Deviation | Median | Mode                  |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------------------|--------|-----------------------|
| 1         | Technical English is different from general English                                                                                                     | 4.2  | 0.71               | Agree  | Agree                 |
| 2         | English courses in the engineering program mostly meet the future needs of the students                                                                 | 3.7  | 1.06               | Agree  | Agree                 |
| 3         | I am satisfied with the contents of English courses in my engineering program (For students of 8 <sup>th</sup> semester)                                | 3.4  | 1.17               | Agree  | Agree                 |
| 4         | The contents of the course are generally realistic (meet engineering students' needs)                                                                   | 3.8  | 1.05               | Agree  | Agree                 |
| 5         | The contents of English courses are practical (related to real life and applicable to corporate industry)                                               | 3.7  | 1.00               | Agree  | Agree                 |
| 6         | English courses in engineering program are important for my career                                                                                      | 4.3  | 0.71               | Agree  | Strongly Agree, Agree |
| 7         | The study material in English courses covers language skills (listening, speaking, reading, writing) and systems (grammar, phonology, lexis, discourse) | 4.0  | 0.85               | Agree  | Agree                 |

For the first item, the mean score is 4.2 and the standard deviation is 0.71. This shows that most of the students have a good understanding of the difference between technical and general English. The mean score for the second item is 3.7, but the standard deviation is 1.06. Since the deviation is high, we can say that a considerable number of respondents are not satisfied with the English courses of the engineering program in their current form. The mean score for the third item is 3.4 and the standard deviation is 1.17, showing while most students are either neutral or satisfied, there is a considerably large amount that is not happy with what they have studied. The mean score for the fourth item is 3.8 and the standard deviation is 1.05. It may be concluded, from this, that a sizeable amount does not find the course relevant to the needs and requirements of a BSE student. The mean score for the fifth item is 3.7 and the standard deviation is 1.00. From this, we may conclude that while many find the course to be beneficial, those who think it needs to be made more relevant to their future profession are not few in amount. The mean score for the sixth item was 4.3 and the standard deviation was 0.71. From this, we can see that a lot of the students feel the need to study English and believe it will be beneficial for them in their careers. The mean score for the seventh item is 4 and the standard deviation is 0.85. This shows that, in the minds of the

students, most language areas and skills have been covered in their course, though even in this there are exceptions.

As such, we may conclude that, as far as the need for an English language course and the inclusion of the major language skills is concerned, the overall majority is convinced of the need to study English in their engineering degree and believes that adequate attention is being given to the four major skills and systems involved in language teaching. One may also note that the questions relating to these issues and the question on the nature of Technical English are the only questions that received a mean of 4 or above and that these are the only questions whose standard deviation is below 1. This does not mean that nobody is dissatisfied or that everyone understands the need for an English course, for the deviation, though below 1, is still above 0.5. As for the questions that relate to the satisfaction of the students, the overall score is below 4 and above 3, indicating that the overall trend, though not as satisfactory as might be desired, is not one of disappointment. The standard deviation, however, is above 1, showing that the students who disagree are also of a sizeable amount.

Before we move on to the other items, it might be noted that the seventh item does not deal with material, methodology, and other such issues. Thus, if students believe that most language areas are being covered but are still left dissatisfied, it is most probably because of issues in these areas.

#### Prioritizing topics

| Topic                       | Total | Most Important | In Between | Least Important | Mean | Standard Deviation | Median         | Mode           |
|-----------------------------|-------|----------------|------------|-----------------|------|--------------------|----------------|----------------|
| a. Presentation Skills      | 40    | 78%            | 13%        | 10%             | 2.68 | 0.65               | Most Important | Most Important |
| b. Technical Report Writing | 39    | 64%            | 28%        | 8%              | 2.56 | 0.63               | Most Important | Most Important |
| c. Listening Skills         | 39    | 62%            | 31%        | 8%              | 2.54 | 0.63               | Most Important | Most Important |
| d. Speaking Skills          | 39    | 64%            | 23%        | 13%             | 2.51 | 0.71               | Most Important | Most Important |
| e. Reading Comprehension    | 39    | 23%            | 62%        | 15%             | 2.08 | 0.62               | In Between     | In Between     |
| f. Grammar                  | 39    | 46%            | 38%        | 15%             | 2.31 | 0.72               | In Between     | Most Important |
| g. Vocabulary               | 39    | 46%            | 44%        | 10%             | 2.36 | 0.66               | In Between     | Most Important |
| h. Pronunciation            | 40    | 48%            | 38%        | 15%             | 2.33 | 0.72               | In Between     | Most Important |

Item 8 on the questionnaire dealt with the prioritization of topics. This was one of the most important items for the purpose of course design. The item asked students to rank the various areas and activities involved in the course in the order of their importance. The frequency distribution has been measured on the basis of the following responses:

1=most important

2=in between

3=least important

If we look at the table given above, we can see from the model answers that all of the topics have been deemed important by the students, with the exception perhaps of "Reading Comprehension" which seems to have ranked "In Between." One may conclude, then, that the students would like all of these topics to be included in the course. The highest mean score for this item is 2.68 with a standard deviation value of 0.65. This result is for 'presentation skills'. The second highest mean score was achieved by the skill of 'Technical Report Writing', the score for which is 2.56 with a standard deviation of 0.63. The reason students gave priority to these skills is probably because presenting and writing reports are going to be a part of every project they take part in as engineers, and as such becomes a career requirement. Furthermore, they might feel that reading, as it will be involved in all of their courses and will be a regular part of their everyday practice, will in all probability not require any special attention and may thus be deemed "In Between." All of these skills, we may conclude, should be distributed over the semester in a way that is in line with their relative overall importance, and further assistance might be sought from professionals, teachers, and the Faculty of Engineering and Technology, to make sure that the students' opinions are also in line with the facts on the ground.

### Expectation to Use English in Future

| Total | Workplace | Higher education | Travelling | Not sure |
|-------|-----------|------------------|------------|----------|
| 40    | 45%       | 38%              | 10%        | 8%       |

The next item dealt with the issue of where the students expect to use English in the future. Out of 40 respondents, 45% expect that English will be used at the workplace and 38% expect to use it for higher education. Only 10% expect to use it for travelling and 8% are not sure. The reason workplace and education have higher scores is probably that most students either go for jobs right after their BSE or they try to get admission in some foreign university, which makes it a workplace or an educational requirement. As for travelling, it is not necessary for all to see themselves travelling abroad in the future, which may explain the relatively lower score.

### Suggestions for Topic Inclusion

| Topics                                                                        | Numbers | Percentage |
|-------------------------------------------------------------------------------|---------|------------|
| a. Writing a research proposal                                                | 36      | 90%        |
| b. Writing a research article                                                 | 26      | 65%        |
| c. Writing a cover letter/transmittal                                         | 27      | 68%        |
| d. Writing a CV/resumé                                                        | 36      | 90%        |
| e. Writing correspondence e.g. complaint, inquiry and refusal letters         | 22      | 55%        |
| f. Writing process explanation (machine or any electric or electronic gadget) | 13      | 33%        |
| g. Writing feasibility report (about a project)                               | 28      | 70%        |
| h. Writing executive summary                                                  | 17      | 43%        |
| i. Writing literature review (for a research project)                         | 18      | 45%        |

Item 8, as we saw above, was about the relative importance of various aspects of language. Item 10, on the other hand, is a direct inquiry as to what topics should be included in the technical writing course. In this case, almost all of the topics mentioned have been selected by a considerable number of students. The highest score (90%) went to two different topics, "Writing a Research Proposal" and "Writing a CV/Resume." The reason behind this preference is probably the fact that the students would be starting their final year projects in the 7th semester and would be seeking jobs after they finish their BSE. Both report writing and the preparation of a CV, in other words, are among the students' immediate concerns.

The lowest score, on the other hand, was for "Writing Process Explanation," which was selected by just 33% of the students, something which the data shows might have been due to the students' field of choice, as the students of electronic and mechanical engineering were found more likely to show interest in 'process explanation' than students of civil engineering. Keeping this fact in mind, we may conclude that each topic should be given as much time as it deserves based on its importance for the students' future and based on their interests and the needs of their field. This, of course, means that teachers, professionals, and the faculty must be consulted to make sure that the students' opinions do not contradict the facts.

### **Suggestions for Improving Technical Writing Course**

The last item provided the respondents with a chance to express their opinions and give one or two suggestions for the improvement of the course. Out of 40 respondents, 24 responded to this item by suggesting topics for inclusion or discussing teaching methodology. These suggestions have been collected by the researchers in the following list, with similar suggestions being combined and repetitions having been removed:

1. The course should focus on:
  - a. Technical report writing,
  - b. CV/Resume,
  - c. Presentation skills,
  - d. Proposals for research and other projects,
  - e. Thesis writing, and
  - f. Pronunciation
2. Visual aids should be used to make the course more engaging and to reinforce the text/material used.
3. The course should be taught in the 8<sup>th</sup> (and not the 7<sup>th</sup>) semester.
4. The teacher should have some technical and background knowledge for this course.
5. Teachers should motivate learners and get them involved in the subject, especially since English is a non-Engineering course.

One thing that pleases the researchers very much is that the students seem to be well aware of their current and future needs. They seem to understand why they need English and how this language is important for their future. They also take interest in what they need to learn and the teaching methodology being used. If the course outline is designed according to the needs of the engineering students along with some teaching guidelines and perhaps some quick sources for technical and background information, it would be beneficial for both the learners as well as the teachers.

## FINDINGS & DISCUSSION

From the responses to items 1 to 7 in the questionnaire, we can see that students are aware of the difference between technical and general English and of why English courses are important for their training. This is also evident from the very fact that they have shown interest in the course content. With regards to language areas, the students seem to give preference to presentation skills, technical report writing, listening, and speaking, while also accepting other areas as a necessary part of the course. Most of them expect to use English either in the workplace or in higher education, which is why they have given precedence to writing research proposals and CVs/resumes. Alongside these, many have also shown interest in writing feasibility reports, transmittals, and research articles.

The survey data shows that the students of BSE are well aware of their current and future needs and should thus, as the main stakeholders, be considered and consulted when preparing the course content. This would ensure that the course contents are humanistic, realistic, and relevant, while also, by taking into consideration the opinions of the students, make the content at least a bit more appealing and motivating. This, of course, would also benefit the teachers, as motivated students are students who will then take part in classroom activities and who may also take similar interests in topics they had not originally considered, especially when they know that the course has been designed for their benefit while also taking their own needs and preferences into account.

Based on this data and these conclusions, a pilot course has been designed that may be found in the appendices. This course has not yet been implemented and may be modified or improved upon by future researchers through experience and trial. It may also be modified by teachers on the basis of their own needs analyses and their observations inside the classroom. This will not only allow the course to be tested and modified but will also give life to the process of active learning and teaching which can then lead to the development of a truly flexible and involving course for the BSE students.

## CONCLUSION

Based on the above data, we can now make a couple of recommendations regarding the Technical Report Writing Course so that it can be improved and made more beneficial. However, before we start discussing what can be done, it needs to be said that the current study has made use of the opinions of BSE *students* at the International Islamic University, Islamabad. The opinions and requirements of teachers and the management have not been considered, nor have the opinions of professionals or of students and teachers in other institutions. Furthermore, the fact that the current study is based on the opinions of students from the *male* department also leaves room for future researchers, who may want to look at the opinions of students from the female department. A comparison of these two departments might also prove fruitful, especially if a pattern can be traced in their commonalities and differences.

Having said that, it should be noted that the needs of engineering students are almost similar throughout society as their educational background and the context in which they will work will mostly remain the same. As such, it may be said that engineering students, for the most part, will have similar needs, lacks, and wants. There are, of course, differences (sometimes even major ones!) between individuals and classes, but the general needs of engineering students must of

necessity be similar, and it is these basic and foundational needs that should be at the heart of the Technical Report Writing course. At the same time, one must note that the students, as can be seen in the data, seem to know what they need and what sort of teaching method suits them. As such, it would be wise for the teacher to conduct a needs analysis at the beginning of every course, as it might prove helpful in both determining what to teach and how to go about teaching it.

Secondly, it should be noted that even though it is assumed that students at the BS level would have a sound grasp over basic language structures and a good vocabulary, this assumption may not always be true. To ensure what areas of language need to be improved and what should be focused on in the course, the teacher should also conduct a sort of diagnostic test which would help him/her figure out the strengths and weaknesses of the class. This analysis will add to the findings of the target situation analysis and thus help the teacher in figuring out what to include in the course, reducing thus the risk of classes that fall flat and bore the students or else leave them floundering in the dark if a topic too easy or too difficult is unwisely brought to class.

Furthermore, we must consider the various tips and suggestions put forth by the students and also by other studies. Teachers, for instance, might want to focus more on the topics which the students see as relevant, or they might like to consider trying a specific teaching method. They might like to consult some sources for developing background knowledge and building up on what they know regarding the students' field, or they might like to read up on some professional literature regarding teaching in order to improve their teaching skills. All of these activities will be helpful to the students and will enable teachers to make their classes more engaging and beneficial. Also, considering the nature of the technical report writing course that was studied, the students will be divided among five teachers, making it necessary for the instructors collaborate and work together for this course. Only then will all five sections of the BSE program be able to perform well in their exams, which, as we saw earlier, will be the same for all sections.

However, as was already mentioned, it may be prudent to also take into consideration the opinions of professionals and teachers, and especially that of professionals. This does not mean that the students' opinions are to be ignored, but that the teacher should look at the situation from as many angles as he/she can before coming to a final decision.

Finally, it should be pointed out that the students seem to have shown greater interest in things that are of practical use and especially those that will be of use to them in their immediate context. This, perhaps, is something that should be taken into account, both in the development of courses as well as in discussions on education in general. There is much to consider here, perhaps, on the kinds of degrees that may be offered, what the purpose of each is to be, and how education may be envisioned, re-envisioned, kept relevant, and improved. The current study, however, does not enable us to comment any further, as the data that has been acquired is of a rather limited scope.

The course developed in this study can be found in the appendices and needs to be implemented and tested by teachers. Doing so will allow us to see if it works, while also helping us in modifying it and thus beginning the process of active and reflective teaching. Each time this course is taught, it can be modified and improved upon by teachers, making it more and more beneficial every time it is implemented.

## References:

- Budinski, K. G. (2001). *Engineers' guide to technical writing*. Materials Park, OH: ASM International.
- Crystal, D. (1995). *The Cambridge encyclopedia of the English language*. Cambridge: Cambridge University Press.
- Dar, M. (2011). From General to Specific English: A Case Study of NUML. *Journal of NELTA*, 15(1-2), 28-42. doi:10.3126/nelta.v15i1-2.4607
- Dudley-Evans, T., & St, J. M. (1998). *Developments in ESP: A multi- disciplinary approach*. Cambridge: Cambridge University Press.
- Eshtehardi, R. (2017). Needs Analysis and Course Design; A Framework for Designing Exam Courses. *International Journal of ALEL* 6(6): 274-88. <https://doi.org/10.7575/aiac.ijalel.v.6n.6p.274>
- Evans, D & John, M (1998). *Developments in ESP: A multi-disciplinary approach*. Cambridge: Cambridge University Press.
- Houp, K. Thomas E. Pearsall & Tebeaux, E. (1998). *Report Technical Information*. New York: Oxford University Press.
- Hughes, J. (2003). *Fast forward*. Belfast: Lagan Press.
- Hutchinson, T., & Waters, A. (1987). *English for specific purposes: A learning-centred approach*. Cambridge: Cambridge University Press.
- Mansoor, S., Sikandar, A., Hussain, N., & Ahsan, A. M. (Eds.). (2009). *Emerging Issues in TEFL, Challenges for Asia*. Karachi: Oxford University Press.
- Michael, L. H. (2005). *Second language needs analysis*. Cambridge: Cambridge University Press.
- Munby, J. (2004). *Communicative syllabus design: A sociolinguistic model for defining the content of purpose-specific language programmes*. University of Cambridge Press.
- Nordquist, R. (2020, Aug. 26). Technical Writing. <https://www.thoughtco.com/technical-writing-1692530>
- Shrestha, P. (2021). Designing an onlined business course in English by responding to student needs through an evidence-based approach. *Journal of China Computer-Assisted Language Learning*, 1(1), 47-79. <https://doi.org/10.1515/jccall-2021-2003>
- Tudor, T. (1996). *A time to keep: The Tasha Tudor book of holidays*. Simon & Schuster Books for Young Readers.
- Ulfah, B., Petrus, I., & Mirizon, S. (2021). ESP needs-based course design for the employees of government protocol department. *English Language in Focus (ELIF)*, 3(2), 143-58. <https://doi.org/10.24853/elif.3.2.143-158>
- Mansur, S. B. (2010). Unpublished report, School of Education, University of Leeds.
- Zafar, M. (2003). A needs analysis in language teaching. Report submitted to National Committee on English, Higher Education Commission, Islamabad.

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|---------------------|--------------------|
| Date of Publication | September 30, 2022 |
|---------------------|--------------------|