Needs Analysis: Strategic Issue on the Teaching of English for Specific Purposes for the Study of Sciences and Technology

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Abstract: With the development of science and technology scholars and professionals now need to acquire a higher form of literacy to be able to participate in groups of similar fields or groups of works. The need for English as one of the International language, an established language, has increased because English has access to world knowledge particularly in the field of science and technology, computer utilization, international trade and commerce. However, the need can vary in terms of the study fields, selection of skills, selection of language functions, and the language learners. Effective strategies can only be applied through a thorough analysis of the learners' needs, which will refer to the whole range of language resources for material selection. Since it is clear that ESP course is directly concerned with the purposes of which the learners need English, ESP course should be learner-centered. In this paper the writer would like to give the results of needs analysis (wants and strategies: Shaw, 1982, Allwright and Allwright, 1997) done among the learners (students and lecturers of engineering studies from various departments) of Institut Teknologi Sepuluh Nopember Surabaya (ITS) who are learning English at ITS Language Center to fulfill the market demand for job employment of their career and further studies.

Key words: reeds analysis, ESP, Science and Technology

Language needs analysis are most often needed where the learners in need of specific situation face very similar difficulties. The purpose of the analysis is not only to identify elements but also to find relative importance: what is the most desired. West (1994), states that needs analysis is essentially a pragmatic activity focused on specific situations, although grounded in general theories on the native of language and curriculum. Needs analysis can be very relevant for language learners to focus on what is mostly desired in their study, jobs and professions. The Learner's need of English differ from profession to profession, from department to department even within ITS as an Institute of Technology. English course at Higher Education of Non-English Department are expected to equip the students with working knowledge of English to prepare them in their future career.

SPECIALIST KNOWLEDGE IN ESP APPROACH

The first important of all for the ESP researcher in the content of students' specialist disciplines which involve the knowledge and the conceptual networks involved. One important reason for the development of English for Specific Purpose, is learners are expected to master some knowledge of English usage through general English class but they have not learned to use of the language in their specialized contexts of profession or study. Approaches to linguistic analysis for ESP do not only involve changes in method but changing of the language use and its description. English for Specific Purposes focuses attention on the purpose of learners (learner-centered) and refers to the whole range of language sources. Learners of ESP are usually studying in order to perform a role needed in their job or profession. The measure of success in mastering this specific English is whether they can perform convincingly as required in real practice. ESP course should be directly concerned with the purposes for which the learners need English so that purposes are expressed in functional terms. ESP course should be designed to satisfy the learners need on that account it should be based on rigorous analysis of learners' needs and should be designed specifically in terms of differences in the selection of skills, topics, situations, functions and language level.

NEEDS ANALYSIS OF ITS LANGUAGE CENTER

ITS Language Center is striving to secure its position as the prominent source of high quality ITS Graduates with international competence. In order to prepare the graduates to be leaders in engineering and scientific fields as well as educational development in Indonesia, graduates should be prepared to have high communication skill and writing skill in order to be better competitors in the global market. The mission is to prepare ITS graduates and academic staff to be able to lead global competition beyond the natural boundary with a deep appreciation

towards the value of life-long learning, to conduct and decimate the result of innovative researches and to serve the local, regional, and natural communities related to engineering fields. The objectives of ITS Language Center are :

- improving the education quality by supporting the academically standardized English language competence and communication skills needed in specific engineering fields.
- improving the communication skill writing skills.
- improving the English ability in general English divided into level of course.
- providing other foreign language courses.

THE SERVICE OFFERED

To meet the need of ITS strategic issues, ITS Language Center has provided services to ITS members and communities as follows:

- Language Course:
  - English : General English in 5 levels
    - Basic
    - Elementary
    - Pre Intermediate
    - Intermediate
    - Advanced
  - Applied English
    - English in Engineering Studies
    - Mechanical Engineering
    - Chemical Engineering
    - Maritime Engineering
    - Computer Programming
    - Electronics
    - Industrial Technology
  - Academic English
    - Academic Writing
    - Paper Presentation
    - Business English
    - English for Job Interview
  - Other Language Course
    - French
    - Mandarin
    - Japan

LANGUAGE CENTER USERS

In a year, there are not less than 1500 course participants and more than 700 ITS TOEFL Version takers.

Course participants ITS academic staff, Undergraduate and Graduate students and Non ITS users have come to the center with different demands and needs. Sometimes they request the specific course which is not offered such as English for Banking and Public Relation while actually most of the course materials are designed focussing on notional and functional language areas seen as particularly relevant to engineering studies. At the beginning of 2001 a formal need analysis was conducted to obtain a data base information concerning the needs of English of ITS members in particular and ITS Language Center users in general. It is known that in Engineering studies and science faculties, students are often expected to participate in seminars, which are different from general seminars. Very often they are expected to demonstrate ideas which they develop in their project of engineering activities and it is very common in ITS that these activities are carried out in English.

THE PROCEDURES

The methodology applied for the analysis through the implementation of structural questionnaires and in sights into the rationale behind the perceptions of needs were gained from the exploratory interviews. The respondents were academic staff who took English course at the center (whether they were sent by the department or came individually for specific purpose, such as asking for training to prepare paper presentation abroad) and students who took the course under the Que Project (there were 600 students from the Department of Mechanical Engineering) and course takers from other departments. By the end of the course program (advanced level) these students were expected to achieve the ITS TOEFL Version score not less than 475. Eventhough these students came to the center with the same target, actually their motivation to learn are very different, particularly in choosing the importance of skill areas. Obviously when they came to the Advanced level, in which classes are specified into skill based activities, such as Reading Class, Speaking Class, Listening and Writing Class, most of the students chose Speaking Class more often compared to the academic staff who focussed on Writing and Reading Classes. The purpose of joining the classes also varies in terms of functions depending on language - based activities they are often involved.

Result of Analyzed needs

Language – based tasks and activities	Ranked 1st-4th importance for engineering and science and science students							
	Student				Academic staff			
	1	2	3	4	1	2	3	4
Listening								
- Lectures			✓					✓
questions and answers informal meetings			✓		✓			
instruction and explanations		✓			✓			
news		✓			✓			
films	✓					✓		
normal conversation	✓				✓			
listening comprehension test in TOEFL	✓				✓			
	1	2	3	4	1	2	3	4
- Speaking								
class discussions	✓				✓			
asking questions	✓					✓		
giving presentations			✓		✓			
making public speech				✓		✓		
speaking preparation		✓				✓		
- Reading								
text books					✓			
journals					✓			
test questions	✓					✓		
computer manuals		✓			✓			
news papers		✓			✓			
novels				✓		✓		
- Writing								
Lab reports			✓			✓		
Assignments	✓					✓		
Test answers	✓				✓			
Papers (projects)		✓			✓			
Note takings			✓		✓			

Listening :
Students' need for listening mostly are for listening to films,

conversation and test preparation to TOEFL. Second priority is for listening to the news and instructions, it seems that needs for listening to the lectures and formal meetings are still considered less important. Academic staff mostly need listening for a lot of purposes but they consider listening to lectures is less important.

Speaking :
Student need speaking mostly for class discussions and asking questions. For the academic staff the emphasis is on class discussions and giving presentations. Both students and academic staff consider that speaking test preparations are also important.

Reading :
Eventhough the focus of the teaching of academic English is on the reading skill, surprisingly students consider reading text books less important (priority 3). This is maybe because most lecturers are still using text - books in Bahasa Indonesia or translated ones. This does not seem to encourage the students for a better reading skill. While academic staff mostly consider that reading text books, journals, computer manual and newspapers very important.

Writing :
Student mostly consider writing ability is only needed for writing assignments and answering tests, while the academic staff mostly need writing skill for (particularly IELTS) and note – takings (for preparing them for further studies).

CONCLUSION

By analyzing learners needs important insights about the context of studying and English language use, in ITS are obtained. Surely this result will help to shape the development of material designs and teaching strategies. In particular, efforts should be done to avoid learners learning English only for the sake of achieving high scores. In this case, test results can be unreal since the real competence cannot be guaranteed only from the scores obtained in the test.

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APPENDIX: QUESTIONNAIRE

I. Background information
    Please tick (v) the appropriate space (s)
    1. Sex : male ( ) female ( )
    2. Department :.....................................
    3. English Language experience before entering ITS
       - studied as a subject in high school ( )
       - take extra English course ( )
       - others:...........................
    4. Present level:
       - Foundation ( )
       - Elementary ( )
       - Pre Intermediate ( )
       - Intermediate ( )
       - Advanced ( )
    5. Is your native tongue Bahasa Indonesia ?
       Yes, ( )
       No, ( ) I speak ....with my parents.
    6. When do you use English?
       - when studying ( )   - participating seminars ( )
       - when socializing ( )   - at home ( )
       - giving lectures ( )   - others :...........................

II. Language needs in ITS
    From the basic skills, which are the most important to your Engineering and science studies? 1 is the most important.
    - Reading comprehension ( )   - Speaking ( )
    - Listening comprehension ( )   - Writing ( )

    2. How important are these tasks in English for your other subjects?
       1. very important ( )   3. less important ( )
       2. important ( )   4. not important ( )