

## An Analysis of Technical Writing Needs of Students in Colleges of Technology in Oman

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**Abstract:** *The overall aim of this study is to analyze the writing needs of students in the Colleges of Technology (CTs) in Oman. Within this broad perception, the study endeavored finding out to what extent the Technical Writing (TW) course materials meet the TW course features and the students writing needs. It also assessed the students' writing needs in the CTs in Oman to investigate the gap between the current practice and the best practice. Five groups of participants were approached for the purpose of data collection; students, technical writing teachers, technical departments' lecturers, CTs graduates and employers. The students writing needs were analyzed by means of questionnaires, interviews and genre analysis. Data was analyzed quantitatively and qualitatively. The triangulation of sources of information and instruments helped in obtaining a more tangible picture of the students' actual writing needs. The study revealed a level of mismatch between the TW course content, delivery and assessment and the students' actual writing needs and the TW theory. Almost all the participants agreed on the importance of making a change in the TW course to suit the students' writing needs. The findings of the study provided recommendations to improve teaching practice of the TW course in the CTs in Oman at the levels of the TW course content, delivery and assessment based on the conducted needs analysis (NA).*

**Key words:** *Needs Analysis (NA), Technical Writing (TW), Document Analysis (DA), Colleges of Technology (CT),*

### Introduction

Writing is an essential aspect for students in their technical departments and for employees in their workplace. Through writing they are able to communicate their technical knowledge to others. Writing skills are important in getting a job and are always taken into consideration when hiring employees. Writing skills are valued in private and government sectors, as shown by many studies done in this field (Barrass, 2006; Gould & Losano, 2000; Pringlle & O'keefe, 2009, & Reep, 2010). Reep (2010) referred to surveys done in the USA indicated that the writing responsibilities are a crucial part of most workdays. 120 American companies which employ more than 8 million people were surveyed to find out the importance of writing in the workplace. The surveys revealed that 70% of these companies have writing responsibilities in their job descriptions. Engineers spend 64% of their time in some form of communication with 32%

dedicated to written communication. Students in their technical departments, scientists, engineers and others should have the Technical Writing (TW) abilities in order to be effective in their workplace. In Oman TW is valued by stakeholders in the Colleges of Technology (CTs) and by decision makers in the government and private sector as an essential component of technical communication (MoM, 2004).

### **1. Statement of Problem**

Technical Writing (TW) is taught as a separate course in the CTs in Oman. It is directed at the diploma level, post-foundation students in the seven different specialisations in the CTs in Oman (Engineering, Business, IT, Applied Science, Fashion Design, Pharmacy, Photography). It is aimed at enhancing students' writing skill and enabling them to cope with their specialisations' writing needs and then with the labour market writing' needs. The TW course is a must for students of all specialisations in the diploma level in the CTs in Oman. They can take it in any semester of the six diploma level semesters. The implementation of this course started in 2011, but unfortunately it was not based on students' needs. This is referred to by Al-Husaini (2004) in his study when he mentioned that the implementation of the post foundation courses in the colleges of technology in Oman was not based on Needs Analysis (NA) study.

According to the post-foundation English syllabuses' document, the TW course' ultimate goal is to enable the learners to communicate effectively and clearly in the written mode of the language (MoM, 2004); however, there is much evidence that the objectives of the TW course are rarely attained and students often face difficulties in coping with their specialisations writing requirements, as well as the graduates of the CTs who face the same difficulty in handling their work place writing needs.

### **2. Purpose of the Study**

This study undertakes a language Needs Analysis (NA). Its ultimate objective is to examine the needs of students in the CTs in Oman in terms of writing in order to provide the data which might help to make the TW course more capable of producing students with efficient and appropriate TW skills. Brindley (1989) indicated that needs analysis (NA) is an important requirement in designing syllabus and in specifying language learning objectives. Also, Langroudi (1999) believes that the English for Specific Purpose (ESP) courses are mainly based on the analysis of students actual needs in the target situation. There are two kinds of needs; learning needs and target needs. Learning needs are more connected to the learning process such as attitudes, motivation, strategies, learning style, awareness, and personality. Target needs are what the learners should know in order to function effectively in the target situation (Kormos et al; 2002). This study involves both needs; learning needs and target needs. In order to close the gap between the current practice in TW course teaching/learning and best practice, students'

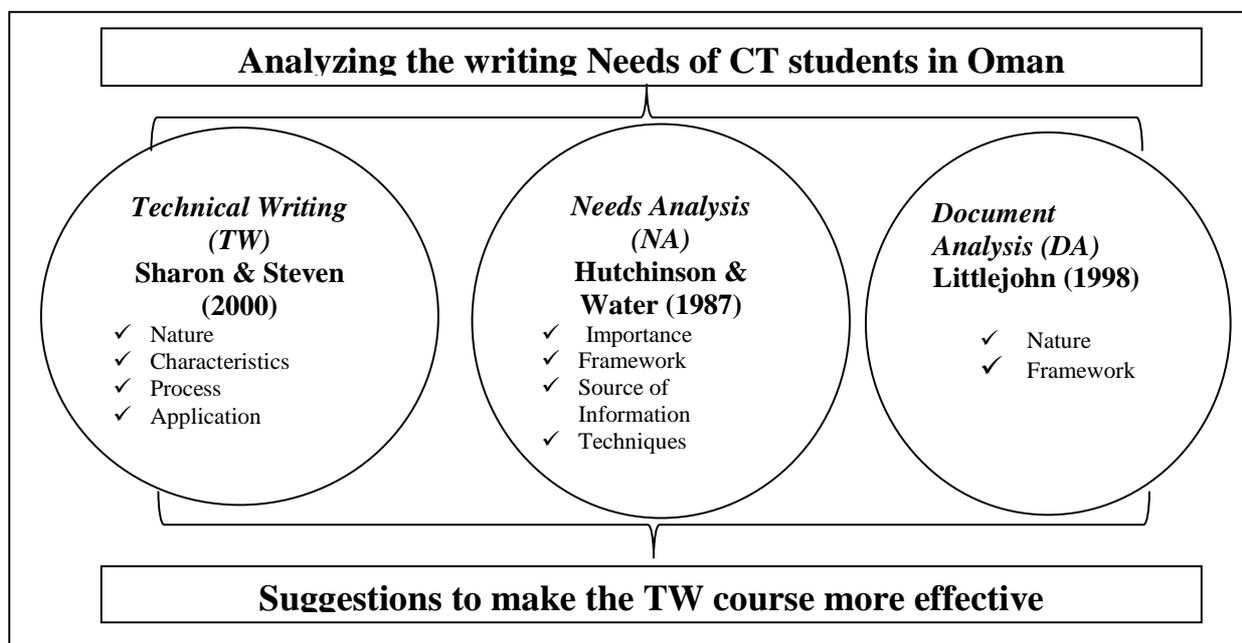
writing needs should be identified in order to make the TW course teaching/learning in the CTs more effective.

### 3. Literature Review

The literature provides the theoretical framework to the analysis of students' writing needs.

This review is also used in the data analysis to explain the findings of the study, especially to discuss the learners' needs. Figure 1 briefs the theoretical framework of this study, which is discussed in details in the following subsections.

Figure: 1



### Theoretical Framework

#### 3.1 Technical Writing (TW)

The origin of TW dates back to the ancient civilizations such as Indian and Greek in the mid 19th century. However, the TW has been in high demand after world the War II as a result of the growth of technical documentations in the fields of technology, manufacturing, aerospace industries, business and military. In 1953, two organizations devoted to TW were founded in the United States of America. Later in 1957, they were amalgamated in to one organization, forming one society of Technical Writers and Editors (Pringle & O'Keefe, 2009).

TW is the writing about technical topics or describe complicated concepts and ideas in an obvious, understandable and simple way. The purpose of TW is usually determined by the audience which also affects the style of writing. TW is important because it can serve many purposes: documenting mechanical problems by automotive technician, writing maintenance procedures by electronic engineering technicians, writing instructions for the manual users, promoting a service or product by marketing specialist, and reporting daily/weekly sales, meetings by business people (Pringle & O'Keefe, 2009).

Sharon & Steven (2000) believe that the best way to define the term TW is to compare it to other types of writing. They refer to five types of writing: firstly, *creative writing* which is usually imaginative. Creative writers also use their experience to produce a text. Poetry, short stories, novels, and plays are examples of creative writing. Secondly, *expressive writing* which is used to express feelings. It is usually subjective. Journals and diary entries are examples of expressive writing. Thirdly *expository writing* which is explaining one's knowledge of a subject without expecting a response from the reader. Essays in composition classes are examples of this type of writing. Fourthly, *persuasive writing* which is used to sway the audiences' emotional attitude toward a topic. It combines the emotionalism of expressive writing with the analytical trait of expository writing. Editorials are examples of persuasive writing. Finally, *technical writing* which is different because it requires give-and-take. When someone writes a memo or a letter, he/she expects a reaction. Also when someone writes instructions, he/she knows that someone will follow them. TW creates action.

### 3.2 Needs Analysis (NA)

The importance of language learners' needs and ways of fulfilling them started a long time ago. Researchers in NA such as Nelson (2000), Hutchinson and Waters (1987) refer to the early 1960s as the birth date of NA. As NA emerged and was conceptualised in the 1960s, other factors encouraged its development. First, the 1960s witnessed rapid changes in education in the USA as a result of the nature of social factors. The guarantee of federal financial support to the educational and service-providing agencies in the USA was stipulated with providing a precise identification of needs. Without providing the required identification of needs no agency was eligible for government funds and support. Secondly, the behavioural objective movement, which appeared at that time, also encouraged the idea of NA and identification by emphasising the analysis and measurement of all goals in the education enterprise. All that pushed towards considering NA methodology as a part of the educational process. A third and important factor was the attempt in ESP (English for Specific Purpose) to fulfil learners' needs by identifying the type of language needed in the context of use.

NA is the key step that refers to the process of collecting data and analyzing them at the beginning of a learning cycle for the purpose of undertaking a thorough assessment of needs during this phase. According to Iwai, et al. (1999), the term NA generally refers to the activities that are involved in collecting information that will serve as the basis for developing a

curriculum that will meet the needs of a particular group of students. Brindley (1989) and Berwick (1989) offer definitions of different types of needs and accounts of various problems and limitations in making use of this concept, including ways in which we might usefully distinguish between the needs that were identified by the analysts and those expressed or experienced by the learners. Therefore, it is the first step to cause change as it defines the gap between the current and the desired individual and organization's performance. However, it includes all the activities which are used to collect information about your students' learning needs, wishes, wants and desires. The process also sometimes involves looking at the expectations and the requirements of other interested parties such as the teacher, the administrators, the financial supporters, and the other people who may be influenced by the program such as the student's family or the employers. NA can be very formal, extensive and time consuming or it can be informal, narrowly focused and quick. Furthermore, some of the resources for conducting NA may include surveys, questionnaires, test scores, and interviews Casper (2003).

The NA procedure is based on Hutchinson and Waters (1987) and was used by Al Husaini (2004) to find out the needs of the foundation year students in the CTs in Oman. The framework consists of two parts: an objective NA and a subjective NA. The aim of the former is to establish the requirements of the language use in the target situation, while the latter is concerned with the examination of the characteristics of the learners.

**Table: 1**

**NeedsAnalysis Framework**

<b>Objective needs</b>	<b>Subjective needs</b>
<p><b>Why</b> is the language needed?</p> <ul style="list-style-type: none"> <li>- for study;</li> <li>- for work;</li> <li>- for training;</li> <li>- for a combination of these;</li> <li>- for some other purpose, e.g. status, examination, promotion.</li> </ul>	<p><b>Why</b> are the learners taking the course?</p> <ul style="list-style-type: none"> <li>- compulsory or optional;</li> <li>- apparent need or not;</li> <li>- Are status, money, promotion involved?</li> <li>- What the learners think they will achieve?</li> </ul>
<p><b>How</b> will the language be used?</p> <ul style="list-style-type: none"> <li>- medium: speaking, writing, reading etc.;</li> <li>- channel: e.g. telephone, face-to-face;</li> <li>- Types of text or discourse</li> </ul>	<p><b>How</b> do the learners learn?</p> <ul style="list-style-type: none"> <li>- What is their learning background?</li> <li>- What is their concept of teaching and learning?</li> <li>- What methodology will appeal to them?</li> <li>- What sort of techniques are likely to bore alienate them?</li> </ul>
<p><b>What</b> will the content areas be?</p> <ul style="list-style-type: none"> <li>- subjects: e.g. medicine, biology, architecture, shipping, commerce,</li> </ul>	<p><b>What</b> resources are available?</p> <ul style="list-style-type: none"> <li>- number and professional competence of teachers;</li> </ul>

engineering;  
 - Level: e.g. technician, craftsman, postgraduate, secondary school.

- attitude of teachers to ESP;
- teacher's knowledge and attitude to the subject content;
- materials;
- Opportunities for out-of-class activities.

**Who** will the learners use the language with?

- native speakers or non-native;
- level of knowledge of receiver: e.g. expert, layman, student;
- Relationship: e.g. colleague, teacher, customer, superior, subordinate.

**Who** are the learners?

- age / sex / nationality;
- What do they already know about English?
- What subject knowledge do they have?
- What are their interests?
- What is their socio-cultural background?
- 

**Where** will the language be used?

- physical setting: e.g. office, lecture theatre, hotel, workshop, library;
- human context: e.g. alone, meetings, demonstrations, on telephone;

**Where** will the ESP course take place?

- Are the surroundings pleasant, dull, noisy, cold, etc?

**When** will the language be used?

- Concurrently with ESP course or subsequently?
- Frequently, seldom, in small amounts, in large chunks.

**When** will the ESP course take place?

- time of day;
- every day / once a week;
- full-time / part-time;
- Concurrent with need or pre-need.

### 3.3 Document Analysis (DA)

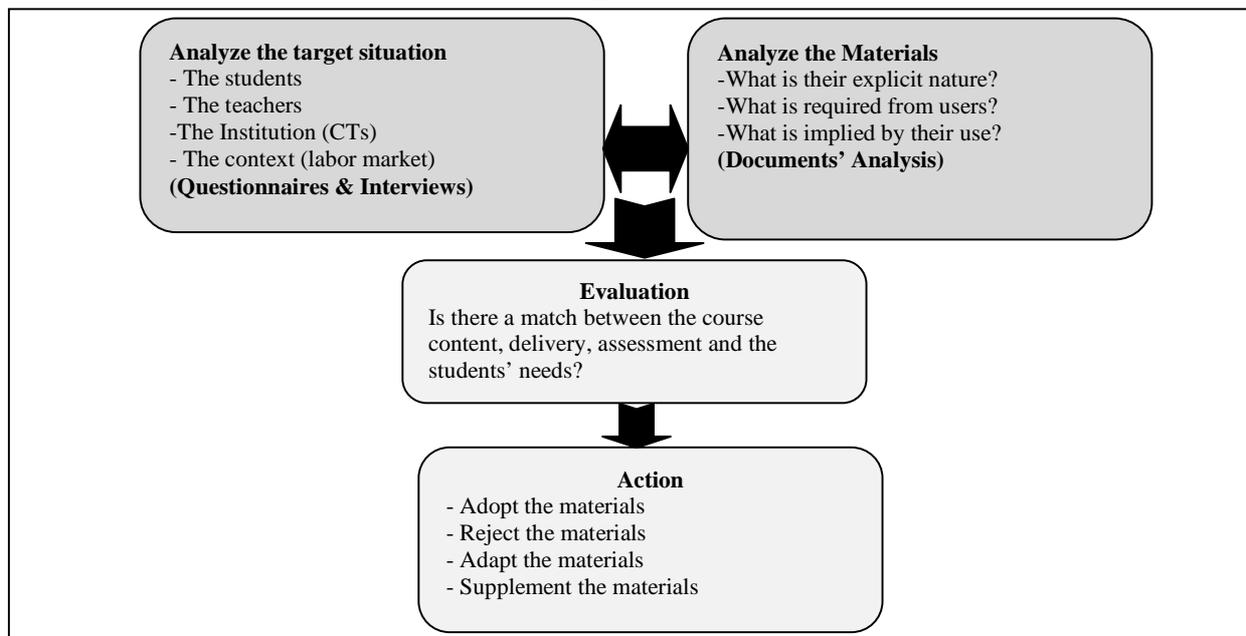
DA or the content analysis is one of the methods of collecting data for NA. It aims at gathering information about the language features, texts, and skills that are used in the target situation. It helps in enhancing the researcher's understanding of what is suitable in teaching/learning a course (Al Hussaini, 2004). This approach is different from the questionnaire and the interview approach in terms of providing more thorough analysis. It also focuses on what goes on rather than what is said to go on as in the questionnaire and the interview approaches (Al Hussaini, 2004). Furthermore, it is concerned more with the written genre of the course or syllabus being analysed. Document analysis in this study is the first step in the process of NA, which could provide preliminary information for the questionnaire and the interview approaches.

The DA attempted in this study derives its theoretical framework from the definition of shared knowledge of genre by Swales (1990) and Littlejohn (1998) who pointed out that those who share knowledge of the same genre share some or all of; shared name of genre, shared communicative purpose(s) of the share genres or their subcategories, shared knowledge of the roles of readers and writers, shared knowledge of context, which means all the events that are going on around when people speak and write, shared knowledge of formal text features

(conventions), shared knowledge of text context, such as the types of content and vocabulary in a text organization of the text, shared knowledge of register (lexis and grammar), and the shared cultural values.

The three levels of analysis together can provide information about the underlying nature of the materials, but the deep and complete understanding of the teaching/learning documents could be provided by using an analysis framework. The analysis framework helps the researcher to identify any mismatches between the goals of the course, the learners' needs, and the nature of the materials. Moreover, the framework helps the teacher during implementation to decide how far the materials match the teacher, students, and context's expectations from using such materials. Figure 2 which is adopted from Littlejohn (1998) explains the process of DA.

**Figure: 2**



**Process of DA**

#### 4. Methodology

The key word of this study is 'needs' which should involve different elements: the researcher, the TW teachers, the post foundation students, the teachers in the specializations' departments, the CTs' graduates, and the labor market. All the previous-mentioned parties shaped the process of the study and determined the needs that the TW course is based on. Graves (2000) indicated that the NA is a process which combines certain mechanisms and should involve different parties.

In this research the '*triangulation*' of data collection techniques and sources of information (Robson, 2002) is considered as a crucial factor in NA. Therefore, different methods were used and different participants were approached for the purpose of data collection. Two main types of investigation processes were used in this study; the quantitative approach and the qualitative approach. Each method has its strengths and weaknesses.

The quantitative method or the use of numerical indicators can provide a high level of measurement accuracy. Also, the measurement in the quantitative standards is considered to be valid, reliable, generalizable and more objective. On the other hand, this approach is limited in terms of providing information about the context or the situation besides the limited and controlled outcomes (Creswell et al., 2003). The use of five different questionnaires in this study makes the quantitative approach the main data collection approach in this study.

The qualitative method or using symbols and words as indicators can provide a greater depth of information about the investigated case or situation through the unstructured data which support the interpretation of the collected information. Also, it enables the researcher to interact freely with the subject in order to get a holistic view of the case under investigation. On the other hand, this approach requires a high level of experience from the researcher in order to get the targeted information from the respondents. Moreover, it may lack consistency and reliability if the researcher departs from the original objective of the research or if the participants tell some information and ignore others (Creswell, 2003).

## 5. Findings and Discussion

To achieve the main aim of this study, the researcher formed it with four main questions;

- I. What are the actual writing needs of Omani students in the CTs?
- II. Do the TW course content, delivery, and assessment in the CTs meet the TW theory?
- III. Do the TW course content, delivery, and assessment in the CTs meet the students' writing needs?
- IV. What are the deficiencies in the current teaching/learning practice of the TW course in the CTs in Oman?

To answer the above questions, the '*triangulation*' of data collection technique and source of information (Robson, 1993 and Killiny, 1994) was considered as a crucial factor. Therefore, different methods were used and different participants were approached for the purpose of data collection. Two main types of investigation process were used in this study; quantitative and qualitative approaches (Creswell, 2003; Johnson & Onwuegbuzie, et al., 2004).

**Table: 2****Participants Numbers and Responses Rates**

<b>Participants</b>	<b>Sample</b>	<b>Valid questionnaires</b>	<b>Responses rate</b>
Students	250	210	84%
TW teachers	80	60	80%
Graduates	50	50	100%
Lecturers	200	150	75%
Employers	30	30	100%
Total	610	500	82%

In order to provide sufficient data which suits the study's aim and helps in providing practical answers to the research questions, the research data was collected by using three types of research instruments: questionnaire, interview, and document analysis (DA). Moreover, five different groups were involved in the questionnaire and the interviews phase (students, TW teachers, technical departments' lecturers, graduates, and employers) in order to provide greater depth of information about the investigated case, which supports the interpretation during discussion (Creswell, 2003).

The Likert Rating Scale format (Anderson & Arsenault, 1998) was used to ask the participants about the extent to which they agree or disagree with the presented statement in the five different questionnaires. The interviews triangulated with the questionnaire approach, so they were used with the same five groups of participants in order to collect deeper information from them.

As mentioned previously, two types of data was collected; the quantitative data and the qualitative data. The Excel and the SPSS programs were used in analyzing the quantitative data (Bryman, 2004), while the qualitative data was analyzed by classifying them into topics and themes, which helped in bringing focus in all details (Cohen, et al, 2007 0).

**Table: 3****Cronbach Alpha score**

<b>Students' Questionnaire (30 items, 3 sections)</b>			
Section	Content	Delivery	Assessment
Number of items	10	10	10
Alpha	0.763	0.860	0.683
<b>TW teachers' Questionnaire (30 items, 3 sections)</b>			
Section	Content	Delivery	Assessment
Number of items	10	10	9
Alpha	0.912	0.703	0.692

<b>Lecturers' Questionnaire( 10 items. 1 section)</b>		
Section	Perspectives on the students' writing performance in classes	
Number of items	10	
Alpha	0.874	
<b>Graduates' Questionnaire( 10 items. 1 section)</b>		
Section	Perspectives on the TW course	
Number of items	10	
Alpha	0.789	
<b>Graduates' Questionnaire( 10 items. 1 section)</b>		
Section	Perspectives on the TCs graduates' writing performance	
Number of items	10	
Alpha	0.719	

This study has come up with a number of findings, identified a group of needs and provided some suggestions, which together answer the research questions. The following subsections are organized, based on the research questions.

### 5.1 Writing Needs of Students in Colleges of Technology

The findings from the DA showed that the main content (80%) of the TW course is essay writing. In the findings four of the questionnaires and interviews regarding the genuine writing needs of the students in the CTs, the essay writing which is the main taught writing skill in the TW course was graded as the least needed skill for CTs students by all the participants (students, TW teachers, technical departments' lecturers, graduates, employers). The report writing skill, the operational manual writing skill, the electronic communication skill and the note taking skills were graded as the most needed writing skills for the CT students in the five different questionnaires. The findings from section three of the questionnaires and the interviews regarding the writing needs of the CTs students referred to the importance of linking the TW course with the students' specialisations. The participants recommended grouping students on the basis of the specialisations. They also referred to the importance of delivering different TW courses to the different specialisations in order to satisfy the students' actual writing needs.

### 5.2 Technical Writing Course Match with Technical Writing Theory

The findings from the TW documents' analysis refer obviously to the mismatch between the TW course and the TW features mentioned in the literature review of the study., although the DA analysis findings indicated that the course designers are claiming that the selection of the course topics is based on the students writing needs and the frequency of occurrence of these topics in the target situation. The DA also revealed that the main feature of the TW course in the CTs in Oman is essay writing, while this kind of writing is not considered as a form of TW according to the researcher in this field, such as Sharon & Steven (1997) and Reep (2010).

The TW teachers' questionnaire analysis finding showed their belief that what is introduced in the TW course does not help the students to perform well in terms of writing in their

specialization classes because it is not technical. They all agreed that it is more academic rather than technical writing. The finding from the TW teachers' questionnaire analysis revealed that almost all the TW teachers believe that the course they teach in the CTs in Oman is not technical. It does not have the TW features they are already aware of.

The five different interviews' analysis findings in regard to the relation between the TW course in the CTs and the TW features indicated that the students, the TW teachers, and the graduates were convinced that the currently used TW course in the CTs in Oman is not technical. They all suggested other types of writing to be taught in the TW course.

### **5.3 Technical Writing Course Match with Colleges of Technology Students Writing Needs**

The TW course is taught for students in the CTs in Oman in order to prepare them to cope with their specializations' needs and the labor market needs in terms of writing. The finding from the DA in chapter four showed that the main content of the TW course is writing four different kinds of essays (persuasive, compare & contrast, divide & classify, and cause & effect). This finding showed that the TW course is just a repetition of what was already presented in the foundation program, level four.

The findings of the students' questionnaire and interviews analysis in chapter four indicated that a very high percentage of participants believe that the TW course content is not interesting and not helpful in terms of their specialization classes' writing requirements. The majority said that the course needs improvement as. They commented that what they studied in the TW course has nothing to do with the kind of writing they do in their specializations. In section four, the students have chosen the writing essays need as the least important writing one, while the essay writing 1 is the main content of the TW course in the CTs.

The findings of the TW teachers, questionnaire, and interviews' analysis referred to the same setback in the TW content. A high number of the TW teachers who took part in the questionnaire tool from the different CTs in Oman strongly believe that the course content does not fulfill their students' writing needs. They are convinced that the TW course is important for their students, but not with the current content.

The technical departments' lecturers and the employers' views regarding the link between the TW course content and the students' writing needs is important, because they are the ones who can provide reliable information about the students' writing performance in their specialization classes and in the workplace. The findings from the lecturers and the employers' questionnaire and interviews analysis confirmed the importance of the writing skills in the specialization classes and in the workplaces. Also, the findings assured the importance of preparing these students well, in terms of writing. Unfortunately, neither the students in their specializations'

classes, nor the graduates in their workplaces were able to carry out their writing requirements in a satisfactory way.

The graduates who are a very important source of information in such issue believe that the TW course content is not relevant to their jobs' writing needs. They reported that what they studied in the course did not help them in doing their jobs' writing requirements.

To summarize, the main content of the TW course is the essay writing. The findings showed that the essay writing skill was chosen as the least needed skill for the CTs students, while the electronic communication skill, the report writing skill, the operational manual writing skill and the note taking skill are the most needed writing skills for CTs students.

#### **5.4 Current Practice and Best Practice in Teaching Technical Writing Course**

The TW course' main aim is to teach the students the technical writing skills to enable them to communicate in writing effectively and clearly using genres based on real life needs. The DA findings showed that the content of the TW course is the same for all the students in the seven different specializations in the CTs in Oman. The main focus of the TW course is the essay writing (persuasive, exposition, compare & contrast, and cause & effect). The syllabus designers claim that the selection of the topics is based on the students' needs and the frequency of occurrence.

The students' questionnaire and interviews' analysis findings revealed that the students are not satisfied with the course content and the course delivery. They reported that the course is not interesting and its content is not helpful. They demonstrated their displeasure with the TW course practice. They reported that the course is not helpful for their specializations' writing requirements. They suggested that in order to make the course more beneficial it should teach them the technical words which are used in their specializations. They suggested having different TW courses for the different specializations. They all agreed on the importance of grouping students according to their specializations in the TW course and to teach them the technical vocabulary and the types of writing that suit their specialization' needs.

The TW teachers also demonstrated their dissatisfaction with the current practice, as shown in their questionnaire and interviews' analysis findings. They all assured that the current practice is not the best practice in teaching such course in the CTs in Oman. They recommended grouping students according to their specializations. Also, they recommended designing different TW courses for the different specializations, to assure an effective delivery for the TW course in the CTs. Moreover, they believe that the teachers who are asked to deliver the course should have the needed knowledge and experience in this field. Not all the English teachers can teach the course. They suggested enrolling teachers who are asked to deliver the course in a specialized course in teaching TW.

## Conclusion

On the whole, the study was guided principally by four main research questions as presented previously in section 5. Almost all the TW course teachers and students were not satisfied with the course content. This conclusion was gained from the findings of their questionnaires and interviews analysis. They believe that the content of the course is not technical and does not match the features of the TW features. Based on the study findings, the researcher recommends a total change in the TW course content. Also, there should be different TW courses with different contents for each specialization in the CTs. The analysis findings indicated that the writing needs' priorities of students differ according to their specializations, so it is important to have separate TW courses for the different specializations in the CTs in Oman based on the actual writing needs of the students.

Based on the study analysis' findings, the study urges the stakeholders in the CTs in Oman to consider the findings of this study in terms of: firstly, grouping the students according to their specializations in the TW course; secondly, providing a TW course book for each group of specialization, based on the students' writing needs; thirdly, making sure that the teachers who teach the TW course have the needed skills and knowledge in the TW field. Fourthly, there is a need to conduct NA studies for each specialization in order to identify the used technical terminology, so to be considered in designing the different TW courses. Finally, the labor market stakeholders should be involved actively in the TW courses design process.

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