ABSTRACT

Two common problems with advanced reading courses in English as a second language (ESL) for students of science and technology are the lack of authenticity in the reading tasks and the fact that the choice of reading material is often limited by what the language teacher can understand. These two constraints often diminish student motivation. An interactional, learner-centered reading comprehension course has been developed for advanced ESL students of science and technology. In this course, student interest and knowledge of a specific content area are used to create both the motivation to read and an authentic task to complete: the preparation and presentation of an oral report. The success of this approach depends on the teacher's willingness to (1) adopt a non-authoritarian attitude and genuinely respect the student's interests, preferences, and specialized knowledge; (2) invest time and effort beyond that required by conventional teaching; (3) acknowledge ignorance of certain subjects and enjoy learning from students; and (4) work out and adhere to a detailed schedule of student conferences and presentations in advance. (MSE)
An Interactional, Learner-Centered Reading Course

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Abstract

Two well-known problems associated with advanced EFL reading courses for students of science and technology are the lack of authenticity in the reading tasks and the fact that the choice of the reading material is frequently limited by what the language teacher can understand. These two constraints often lead to lack of motivation on the part of the student, other than the motivation to pass the course. This article describes an interactional, learner-centered reading comprehension course for advanced-level EFL students of science and technology in which student interest and knowledge of content-area subjects are used to create both the motivation to read and an authentic task to accomplish — the preparation and presentation of an oral report.
Introduction

Among the current developments in teaching English to speakers of other languages is a focus on the special language needs of particular groups of language learners, or English for Specific Purposes (ESP). The term ESP includes English for Science and Technology (EST), English for Academic Purposes (EAP), Vocational English as a Second Language (VESL), and English for professional purposes. The number of ESP courses, language immersion programs, and courses in which content is the focus is increasing as language teachers become more aware of the advantages of teaching language through subject matter.

Review of Literature

A review of the literature indicates the centrality of a number of trends which are of concern to language teachers. The learner's role in the language learning process is viewed as one of active creator, not passive recipient. With this, "comes the corollary that both similarities and differences will be observed in the way individual learners go about the task" (Morley 1987:i17). As active creator, responsibility for learning is placed with the learner, not the teacher.

Teachers are viewed as managers or facilitators of language-learning experiences, rather than as instructors or presenters of material. In order to make students more receptive to learning, teachers should provide a non-threatening
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environment in which students are not on the defensive. Corder (1976) noted that efficient language teaching must work with, rather than against, natural processes if it is to facilitate and expedite, rather than hinder, learning. In other words, teachers, as managers of language-learning experiences, and teaching materials must adjust to the learner rather than vice versa (the situation in traditional language classrooms).

There is much support for content-based language learning. A form of communicative language teaching not only provides learners with opportunities to use their English for communicative purposes but also endeavors to integrate such activities into a wider program of language teaching (Morley 1987). Attention is increasingly being given to the intellectual involvement of the learner in the learning process. It is no longer sufficient for the learner's intellect to be involved only with language; the intellect must also be involved with the content as it uses the language. This may be viewed as a "narrow" versus "broad" approach to language learning (Morley 1987).

On the theoretical side, Krashen (1982) argues that his criteria for optimal input can be met by content-based teaching. The teacher's role is to make the linguistic input comprehensible to the learners. The content is in itself interesting, or at least relevant, to the learners. Course content is not grammatically sequenced and provides much input. Anxiety can be
reduced to a minimum by concentrating on the content, rather than on the medium of instruction. Taylor (1983) points out that language is best acquired when it is not studied in a direct or explicit way, but rather when it is a vehicle for doing something else. Maley (1983) also notes the importance of recognizing that the target language (L2) is a means to an end, and not an end in itself.

Among the fundamental principles of ESP are an emphasis on context, the importance of attending mainly to meaning and not to language form, and consideration for the needs of the learner. In order to meet the objective of preparing learners to function in very specific environments, ESP courses are primarily structured to promote efficient and effective acquisition of particular language and communicative skills (Graham & Beardsley 1986).

In EFL, university-based, academic settings, the focus in ESP courses is often on the reading of academic discourse, with exams designed to assess reading comprehension. The type of motivation needed to perform this task is known as extrinsic motivation; i.e., the learner performs in order to achieve an end result (passing the exam and the course). It is claimed that assigning a reading and then asking comprehension questions to check whether students have understood the text merely induces surface processing (Alderson & Urquhart 1984). Students trained in this kind of activity come to perceive reading in English as a
Learning compartmentalized skill to be performed only in the English classroom in response to a requirement of the teacher and not as a tool for acquiring information in the real world. Such language teaching is based on narrow, language-oriented objectives which restrict the learner's development and are counterproductive to the learning of effective reading (Tarantino 1986).

If reading of technical discourse is to be successful, readers must have a reason for reading. They must actively engage themselves in the process of reading and be keyed into the material to be read even before beginning the actual task of reading (Wardaugh 1976). In order to provide the learner with tasks which depend on intrinsic motivation (i.e., performing out of interest or relevance to the learner), both Widdowson (1982) and De Escorcia (1984) stress the need for conceptual and procedural activities which characterize the learner's area of study. "Content provides a vehicle for engaging the learner's participation and increasing his motivation. Familiarity with a given topic will make the student feel that, for once, he is not at a disadvantage in front of the teacher, who traditionally has provided all the answers" (De Escorcia 1984:143). Williams (1986) also emphasizes that the text must be of interest to the learner, for without interesting texts it is impossible to achieve very much. Such an approach to language teaching differs from the
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traditional formalistic one and provides fresh motivation to university students.

As English has developed into a language of wider communication, the number of native-nonnative and nonnative-nonnative exchanges has increased. To adequately prepare learners to achieve external communicative goals, De Escorcia (1984) suggests mirroring communicative skills in the native language; similarities and not differences should be stressed. Barnes (1983) has termed this "hot" education: pupil-centered learning, role equality in the classroom, varied interaction, problem solving, and the creation and simulation of real events within which learning occurs.

Background

The role of EFL in Israel is similar to that in other countries. Students begin to learn English from an early age in elementary school and continue their study of the language at the secondary and tertiary levels. While emphasis at the elementary and secondary levels is on communicative English, the goal of English study at the tertiary level is on reading for academic purposes. University students thus have a good foundation in spoken English and are able to read narrative and news-type texts; they are not, however, prepared to read long academic articles. Although lectures at the university are conducted in Hebrew, most assigned reading is in English. It should also be
noted that the majority of students do not continue their studies directly upon completion of high school. There is generally a two-four-year gap between the end of secondary and the beginning of tertiary study, when the majority of Israelis complete their compulsory military service. While such interruptions in study are not atypical in EFL, they often result not only in very slow gains in proficiency but also in actual setbacks (Maple 1987).

At Ben Gurion University of the Negev, students are placed into EFL classes on the basis of a nationally-administered psychometric examination, one section of which is an English placement exam. In addition to being divided into basic, intermediate, and advanced levels, students are further divided according to faculty (Humanities-Social Science and Science-Technology).

Reading selections in the advanced-level science and technology courses have traditionally been selected by classroom teachers. While it is not difficult to find interesting and topical material for students of science and technology, such readings are rarely utilized in the classroom for a number of reasons. First, material that is relevant and current often requires some specialized knowledge of a particular field. Such knowledge is not always available to the first-year student or to the non-specialist teacher. Second, students in the EFL classroom are not always divided according to major field department of study and thus have varied academic interests.
and backgrounds. This places a constraint on the selection of readings, with articles usually limited to material that is general enough to be comprehensible to the entire class. Such readings, however, are rarely relevant or interesting to individual students. Finally, readings in the EFL class are used primarily as a vehicle for teaching language; content is regarded as being of secondary importance. As a result, even when readings on specific topics are selected, they are adapted to serve a linguistic purpose and their content often proves too elementary to stimulate serious involvement (Tarantino, 1986).

The absence of any real interest in the reading material itself has led teachers to devise reasons to induce students to read. While contrived inducements, such as assigning homework and asking comprehension questions, may provide the learner with extrinsic motivation (the desire to pass the course), they do not result in the learning of effective reading. All too often students complain that while they have learned how to answer questions and pass their EFL courses, they have not learned how to read; i.e., they cannot deal with the bibliographies given them by their content-area teachers. They are neither prepared to deal with their immediate real world (the university) nor with the real world that faces them as university graduates (a need to keep abreast of developments in their own and related fields, participation in international meetings/exchanges/conferences, further study, etc.).
Teaching Approach

In an attempt to provide my advanced-level students of science and technology with goals and tasks that adhere more closely to the priorities readers establish in real life, I have designed a project-oriented EFL course. The course has three practical objectives: a) to raise the interest level of the reading material used in the course; b) to present students with an authentic and motivating reason to read in English; and c) to provide a link between reading in the EFL class and utilizing skills and knowledge for a meaningful purpose in a real-world situation.

The course is based on pedagogical assumptions drawn from a review of the literature and based on many years of experience, and is consistent with current trends in teaching English to speakers of other languages. The assumptions which underly this approach are:

a) Effective language learning requires the intellectual involvement of the learner;

b) Language is not an end in itself, but a means toward achieving external, i.e., real-world, communicative goals;

c) Language learning is most effective when learners assume responsibility for their own learning.

Adoption of these assumptions necessitates the restructuring of some of the traditional student-teacher roles (Figures 1 and
2). Teachers, who are now viewed as managers or facilitators of language-learning experiences, must relinquish their traditional center-stage authoritarian position as students assume major responsibility for their learning. As active directors of the learning situation, students become aware of what they need to learn and how this can best be accomplished. Skills thus learned become more personal and meaningful and are more likely to be carried over when reading in real-world situations.

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Insert Figure 1 and Figure 2 about here

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Description of Course

The advanced-level EFL course for students of science and technology runs for thirteen weeks, with classes meeting twice a week in two-hour sessions. During the first four weeks of the course, those reading, reference, and study skills applicable not only to the students' immediate work in the EFL class but also to their work at the university are covered. Reading skills, such as skimming and scanning, recognizing the author's purpose and point of view, previewing, and predicting, are reviewed. During this period, reference skills, specifically the understanding and use of graphic presentation, and study skills, including outlining, note-taking, and the use of flowcharts, are taught.
Gee, Huxley, and Johnson (1984) and Mohan (1986) emphasize the use of graphs, tables, and flowcharts as aids to learning since they enable written information to be presented in a clear, legible, and unambiguous manner. Reading texts during this period, selected from such journals as *Scientific American*, *American Scientist*, and *Science*, are full-length unedited articles; content is general enough to be comprehensible to first-year students from various departments within the Science and Technology Faculties. During this part of the course, articles are chosen for their teaching value in terms of the skills to be reviewed, taught, and practiced.

It is during the second part of the course that the focus and emphasis shift from skill to content and from a traditional to a learner-centered classroom as students prepare short reports which they present in class. Students are responsible for many of the learning-management decisions that are the domain of the teacher in the traditional classroom. The project-oriented course allows students to choose what material will be read, what part of the material will be focused on, how much help will be provided by the teacher, how much time will be spent on the project, and where the work will be accomplished; evaluation remains the responsibility of the teacher.
The Actual Project

Introduction

Depending on the size of the class, students work individually or in small groups to prepare a 15-minute oral presentation. It is important that students respect all deadlines. To this end, a calendar is drawn up by the students and the teacher before beginning the project, with enough time allowed for revisions prior to actual presentation.

It is recommended that the teacher make two or three 15-minute presentations as an example. It is suggested that the teacher focus on the organization of the oral presentation, the evaluation form, and how to select a topic. One of the teacher's presentations should be based on an article selected from a scientific journal.

While the level of difficulty of the reading material is controlled by assigning specific academic journals, the subject matter is not constrained by pedagogical considerations. Ideas for possible topics are generated in class by brainstorming before students select a topic and text. Prior knowledge and student interest are the major factors in choice of text; student preference is respected.
Preparation

After students have selected an article, they notify the teacher in writing of the title, author, "lead" or abstract, volume, month, year, and number of pages. At this point, frontal teaching is replaced by student (individual or small group)-teacher conferences. These conferences become the forum for an authentic exchange of information in which student-teacher roles are reversed (see Figure 2). Students are responsible for explaining the content of the article to the teacher. In the case of highly specialized texts, students must provide the missing background knowledge in a format comprehensible to the non-specialist teacher. The teacher asks questions in order to get information, not in order to test the students. This helps the students to clarify their ideas and to assess their own comprehension. It is during this in-depth reading stage of the project that students are also encouraged to seek the assistance of content-area experts.

Students plan their presentations by preparing written reports. Information contained in the written reports includes the main idea of the oral presentation, an outline or flowchart of the main points and supporting details to be included in the report (not necessarily a review of the entire article but perhaps only those points of greatest interest to the presenters), audio/visual aids to be used, definitions of
difficult or specialized vocabulary used by the presenters, three comprehension questions (to be answered in writing by the audience, i.e., the rest of the class, at the time of the presentation), and a written summary of the contents of their actual oral presentation.

The teacher is available for consultation during the time the students are preparing their written reports. During such consultations, or conferences, the teacher evaluates, provides criticism, and offers suggestions. The students, however, remain free to accept, reject, or modify the teacher's suggestions. The teacher also contributes linguistic information, in response to such requests as "How do you say _____ in English?", "What is a better word for _____?", and "How can I/we express this idea more clearly?". Such questions reflect an authentic need to know specific terms, expressions, and grammatical and rhetorical structures, and are therefore more likely to be retained and integrated into the students' linguistic repertoire.

The number of student-teacher conferences varies according to student need and ability. This ensures that the teacher's time is distributed fairly between "strong" and "weak" students. The teacher must be satisfied that the students are well prepared and have attained a minimum level of competency before they make their actual presentations to the class. This can be accomplished by means of a "dry run," where the students make their presentations to the teacher.
Presentation

Several class periods are reserved for presentations. The setting for these sessions is similar to that in a seminar or conference. The presenters take on the role of speakers while the rest of the class becomes the audience. The teacher serves as time-monitor and evaluator, and solicits questions at the conclusion of the presentation. The organization of the presentation is described in Figure 3.

Insert Figure 3 about here

Evaluation

During the presentation itself, the teacher completes an evaluation form, which has previously been explained to the students (Figure 4).

Insert Figure 4 about here

In addition to the evaluation form, students should be evaluated on an individual, or small-group, basis. There are
several reasons for such an evaluation, which is not based on a comparison of one student's performance with another's. Students who give their reports early in the semester are at a disadvantage, since much of the real learning about what makes an effective oral presentation is learned through observation and during the discussion period which follows each presentation. For example, while it is useful to tell the students to use large visual aids and not to read their reports, the point is made much more effectively when the visuals are too small to be read by the audience and the student merely reads from a piece of paper. Similarly, although the teacher can stress the necessity of clear introductions and conclusions, the need for good organization becomes obvious when one speaker jumps into the middle of a report, making it impossible for the audience to understand what is being discussed because the introduction has been omitted, or leaves them hanging because no conclusion is forthcoming.

Students who do not speak clearly in English, whose oral competency interferes with audience comprehension, or who profess shyness, should be encouraged to prepare visuals, either in the form of transparencies or large posters, or to use a slide or movie projector or video, to accompany their report. Use of visual aids instills a feeling of confidence in even the weakest students, and can turn a probable disaster into a success.

The teacher can also evaluate the comprehension questions prepared by the presenters. Such evaluation should focus on the
centrality and relevance of the questions to the presentation itself. While the written task is intended to help the students organize their ideas for the presentation, it also provides an opportunity for students with poor speaking skills to demonstrate a grasp of the material.

Special Features of the Project

Special features of the oral report project include the following:

1. Because students select their own articles, the range of the reading material is extended; it becomes possible to use specialized and up-to-date texts in the students' content areas.

2. Preparing the presentation trains the students to read like "experts" in the field; students focus on content and information, rather than on language.

3. Students learn about the rhetorical organization of formal discourse actively, rather than passively. While preparing their presentations, students deal with the following questions:

   a) What information should be included in the presentation?
   
   b) Who is the audience; i.e., how much background knowledge can be assumed? Which terms and concepts will have to be explained?
   
   c) What are the various options for organizing an effective presentation?
   
   d) When and how should examples be used?
It is at this stage that students also learn to use concise and precise language, to differentiate between relevant and irrelevant information, to organize ideas logically, and to summarize.
4. In assuming responsibility for the oral report project, students acquire more control over their own learning process. The teacher relinquishes the conventional authoritarian position and acts as a guide or facilitator.
5. Finally, work on the project trains students to cope with reading tasks they will encounter outside the foreign language classroom.*

Results

The response of students to the oral report project has been positive. Most students find the preparation and presentation of an oral report to be both challenging and relevant, leading to increased attendance and participation in the English class. Motivation is high, both with respect to the subject-matter, which students find interesting, useful, and understandable, and the language work, because they understand why it is necessary to know the English language well. In addition, the oral report project offers students practice in such "academic" skills as preparing, using, and reading outlines, flowcharts, and graphs — skills useful not only in the university but also in the real world of science and technology.
A change in student attitude toward reading for information in English is evident. The emphasis on content facilitates the development of self-confidence in their ability to deal with texts in English assigned in their content-area courses and a lessening of the need to seek translations. Since students of science and technology are already familiar with flowcharts, graphs, and tables, their use in the EFL classroom helps to make students more receptive to learning in a non-threatening environment. Content-area lecturers have also reported improvement in the students' ability to read texts in English.

The restructuring of student-teacher roles in the classroom has resulted in placing much of the responsibility for learning on the student. Students are viewed as individuals possessing interesting backgrounds and specialized knowledge. This leads to spirited discussions and a more integrated class. Students realize that they are able to speak on a subject with interest and sophistication, and to make themselves understood, even if their grammar and pronunciation are not always perfect.

Conclusion

The success of the oral report project depends on several factors:

1. The teacher must be willing to adopt a non-authoritarian attitude and genuinely respect the student's interests, preferences, and specialized knowledge.
2. The teacher must be willing to invest time and mental effort beyond that which is required by conventional frontal teaching.

3. The teacher must be willing to acknowledge ignorance of certain subjects and be able to enjoy learning from students.

4. Although the teacher relinquishes much of the responsibility for the students' individual work, tight control must be maintained over the management of the project. This includes working out a detailed schedule of conferences and presentations well in advance and requiring that students adhere to it.

Focusing on the student as active creator in the language learning process has led to the development of an English course that is more interesting and relevant to the learner. Although in the first part of the course, the emphasis is on reading, reference, and study skills that are generalizable, it is only in the second, learner-centered part of the course that students actually realize that these skills are transferrable. It is then that they are ready to be independent readers.
References


Figure 1. Traditional Teacher-Student Roles.

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>selects text</td>
<td>passive</td>
</tr>
<tr>
<td>introduces topic</td>
<td>listens</td>
</tr>
<tr>
<td>devises tasks/activities</td>
<td>responds</td>
</tr>
<tr>
<td>initiates discussion</td>
<td>participates</td>
</tr>
<tr>
<td>writes questions</td>
<td>responds</td>
</tr>
<tr>
<td>assigns reading</td>
<td>reads</td>
</tr>
<tr>
<td>tests and grades student</td>
<td>performs</td>
</tr>
</tbody>
</table>
Figure 2. Re-structured Student-Teacher Roles.

<table>
<thead>
<tr>
<th><strong>Student</strong></th>
<th><strong>Teacher</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>selects topic</td>
<td>-</td>
</tr>
<tr>
<td>selects text</td>
<td>-</td>
</tr>
<tr>
<td>asks for help with language</td>
<td>helps when asked</td>
</tr>
<tr>
<td>explains content</td>
<td>asks real questions</td>
</tr>
<tr>
<td>writes questions</td>
<td>evaluates</td>
</tr>
<tr>
<td>prepares audio-visuals</td>
<td>learns</td>
</tr>
<tr>
<td>delivers presentation</td>
<td>listens + evaluates</td>
</tr>
<tr>
<td>answers audience’s questions</td>
<td>learns</td>
</tr>
</tbody>
</table>
Figure 3. Organization of Presentation.

1. Before Presentation (5-10 minutes)
   a. Speaker: distributes any handouts
      sets up audio/visual aids
      explains difficult/specialized vocabulary
   b. Teacher: instructs students to listen and take notes
      evaluates (see Figure 4)

2. Presentation Period (15 minutes)
   a. Listeners: answer comprehension questions (which have been distributed in a handout or written on the chalkboard)
   b. Teacher: reminds speaker at end of 10 minutes and at end of 15 minutes
      critiques, using oral report evaluation form (see Figure 4)

3. Discussion Period (5-10 minutes)
   a. Speaker: answers questions
      clarifies points
   b. Listeners: answer comprehension questions
      ask questions
   c. Teacher: evaluates (see Figure 4)
Figure 4. Oral Report Evaluation Form.

SCORING: VG=very good; G=good; S=satisfactory; P=poor; VP=very poor

Content & Preparation
- worksheet completed
  VG=40 G=35 S=30
- outline completed
  P=20 VP=15
- "dry run" completed
- adequate knowledge of subject
- clear purpose
- clear introduction
  VG=30 G=25 S=20
- difficult vocabulary explained
  P=15 VP=10
- logical development
- clear examples & illustrations
- clear conclusion
- followed outline

Presentation
- aroused listeners' interest
  VG=30 G=25 S=20
- spoke at a good rate
  P=15 VP=10
- spoke without reading
- visuals were clear
- visuals were helpful
- adequate volume
- able to answer questions
- stayed within time limits