

Designing an English Curriculum for Teachers of Hungarian Math and Science

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With the recent political changes in Eastern Europe, there are changes in language policy which reflect a growing need for content-area instruction in the major European languages. In Hungary, the need for Hungarian teachers of math and sciences who can teach these subjects in English has now become a priority. This demand for linguistically proficient teachers and students was recognized during the mid-1980s with the establishment of dual language schools (DLS) by the Hungarian Ministry of Education. These secondary schools provide courses in mathematics, physics, chemistry, biology, and geography, which are taught in a chosen target language, such as English, German, French, Russian, or Spanish. In the beginning, many of these courses were being taught by native speakers from other countries who already had training and experience in the particular field; however, these teachers are now becoming scarce because of the limited economic benefits which exist for them if they remain in Hungary. Now the objective is to employ Hungarian teachers who are recent university graduates in math and science, and who have completed an extended language training program for prospective secondary teachers in Hungarian DLS.

In order to train Hungarian teachers for DLS where the medium of instruction is in English, an English for Pedagogical Purposes (EPP) program was initiated in 1989 at the Faculty of Sciences at Eötvös Loránd University (ELTE) in Budapest. During the summer of 1989, an interinstitutional agreement between the University of California, Los Angeles, (UCLA) and the Hungarian Ministry of Education was reached in order to guide important aspects of this training. A major goal of the agreement is to develop a curriculum for a five-year program to train Hungarian DLS teachers of math and sciences to effectively teach these subjects in English. This curriculum project has involved British and Hungarian ELTE faculty as well as visiting applied linguists from UCLA. The 1989-1990 academic year was devoted to establishing a needs anal-

ysis of both the students already enrolled in the EPP program and the secondary students enrolled in several Hungarian DLS. During the spring term of the 1990-1991 academic year, an EPP curriculum was designed and implemented.

I

All students in the EPP program are Hungarian ELTE students who are majoring in math and/or sciences. They have all passed an EPP entrance examination which consists of an oral interview and a grammar test for those who have not passed the Hungarian State Examination of English at the intermediate level. Students in the program are characterized as having an intermediate level knowledge of English.

The students enrolled in the EPP program during the academic year of 1990-1991 were divided into four groups. Those in Group IV were fifth year students in the process of completing their final requirements for the university diploma in a chosen math and/or science major; nine of the eleven had received USIA scholarships to attend a special EPP program at UCLA which was held during fall term, 1990. Group III consisted of twelve students, all in their fourth year at the university.

Seven of the twelve were selected for the EPP program to be held at UCLA during fall term, 1991, and two of the remaining five students received scholarships for teacher training in Great Britain for the academic year of 1991-1992. The students in Group II were third year students and those in Group I were second year students. These two groups were not eligible for scholarships, having completed less than two years of the program.

A profile of the students is shown in Table I, which gives the breakdown of sex, age, origin, and major for each group. Table I indicates that both sexes are almost equally represented in the total number of students, with 21 males and 23 females enrolled in the program for 1990-1991. It is interesting that in Group IV there are almost twice as many females as males, whereas in Group III the males number twice as many as the females. Group II is the smallest, with only two males and six females. Group I, the youngest and newest to the program, is the most balanced in terms of sex distribution. Of the 44 students, 27 are from Budapest, and 17 are from other places in Hungary. There is a large number of students whose major subjects are math and physics; 31 of the 44, or approximately 70% of the students enrolled in the program, are training to be teachers of math and physics. If we include the 5 students who are majoring in either math and technology or math and computer science, then the total number of students with math as one of

their majors increases to almost 82%. There is a large proportion of math students in the program because math is almost always paired with a science major. It is, however, unclear why there are so many students enrolled with math and physics majors.

Table 1 Student Profiles, 1990-1991

Group	Male	Female	Age	Origin Bp/other	Major m/p	Major m/t	Major b/c*
VI	4	7	23	6/5	8	1	2
III	8	4	22-24	8/4	9	2	1
II	2	6	20-24	3/5	4	0	4
I	7	6	19-22	10/3	10	2	1

*Key to majors: m/p = math/physics
 m/t = math/technology or math/computer sciences
 b/c = biology/chemistry

II

The curriculum committee consisted of American, British, and Hungarian faculty in the EPP program at ELTE during the spring term of the academic year 1991-1992. Faculty and administrators from Karinty Frigyes Gimnázium, the DLS in Budapest, also contributed their suggestions for the curriculum. The aim of the project was to design 10 courses for the five-year program; students would attend one course per semester for a total of approximately 600 hours of instruction.

In March, 1991, the first draft of the ten courses in the five-year curriculum was produced. The course titles are shown in Figure 1. The first year would be devoted to grammar review, listening comprehension activities, and brief discussions. In the second year, students would study the organizational principals of academic writing and speaking, as well as prepare extensive assignments to improve their oral and written English skills. The two third year courses were designed to introduce students to current American and British cultural issues through reading, writing, and speaking assignments based on selected pieces of contemporary American and British literature. Instruction in English for science and technology was the basis for the courses in the fourth year. Students would learn how to present ideas about general science materials in English. The fifth year would be devoted to pedagogical issues in the English as a

Foreign Language (EFL) classroom, content-area instruction and language immersion education.

EPP faculty members began to incorporate components of the curriculum into their EPP classes to determine the feasibility of the first draft, with the idea of meeting again at midterm. A curriculum revision meeting was then held at the end of March, 1991. Discussion of classroom experiences and an analysis of the aims and goals of each course were used to determine the scope of the revision, with particular emphasis on the third year of the curriculum concerning American and British culture and literature. The consensus of the curriculum team was that, even though an understanding of both American and British culture and literature is desirable, the curriculum would need to be changed so that less time would be used for instruction in culture and literature. Devoting the entire third year to only these topics would not adequately prepare the students for their teaching responsibilities and would be inappropriate to the aims of the EPP program. Accordingly, the Hungarian EPP teachers agreed to establish the course requirements for the first two years of the EPP Program, which would include substantial use of current authentic English language material from all available periodicals. This material would be supplemented by discussions of either American or British culture and related current events.

Figure 1. First Draft of EPP Curriculum

	FALL TERM	SPRING TERM
1st year	English for general purposes I	English for general purposes II
2nd year	English for academic purposes: Composition	English for academic purposes: Oral Presentations
3rd year	Concepts in American culture and literature	Concepts in British culture and literature
4th year	English for science English for technology	English for science English for technology
5th year	English for pedagogical purposes I	English for pedagogical purposes II

The next curriculum meeting was held in June of 1991, at the end of the academic year. The analysis and discussion of the various examination procedures and the objectives for each of the ten courses for the EPP Program determined the final draft of the curriculum. The course titles appear in Figure 2. The first two years of the EPP program are designated as English for general purposes, and these courses are de-

signed to provide a thorough review of English grammar as well as extended practice in listening comprehension and speaking activities. In addition, EPP students receive an introduction to American and British culture through speaking and writing activities related to current events in the United States and Britain. The third year is designed to incorporate communicative tasks in composition and oral presentations which will prepare the students for the pedagogical courses in the fourth and fifth years. Students will concentrate on preparing their own teaching materials in math and the sciences during the fall term of their fourth year, and will begin peer teaching in the following spring. In the fifth year of the program they will focus on linguistic and educational issues as they arise in the course of their practical teaching in the DLS.

Figure 2. Second Draft of EPP Curriculum

	FALL TERM	SPRING TERM
1st year	English for general purposes	English for general purposes
2nd year	English for general purposes	English for general purposes
3rd year	English for academic purposes: Composition	English for academic purposes: Oral Presentations
4th year	English for pedagogical purposes I	English for pedagogical purposes II
5th year	Seminar on English immersion Education	Seminar on practical issues in the English DLS classroom

Of considerable importance was determining examination procedures to ensure that students are on their way to becoming capable teachers. Three methods of eliminating any students who are not progressing linguistically in the program were established. The first would be known as the Preliminary Examination, and all students would be required to take it after completion of the third year of study. This examination would test the students' written and oral English skills, and those who pass this exam would be permitted to continue in the program. The second examination would occur after the fourth year of study, when a Teaching Demonstration in English in one of the student's major subjects would be required. This would be evaluated by all teachers in the EPP Program. All students who pass this teaching demonstration would be permitted to begin their practice teaching in a DLS in the fifth year of the program. The third and final examination is held at the end of the program, when students will be required to take the Hungarian State Examination of Extended Language Training.

III

Although much has been accomplished towards establishing a working curriculum of the five-year EPP program, the project is far from finished. The limited amount of time and resources available for faculty training and program evaluation are concerns which should be addressed. These constraints will inevitably affect course design, examination procedures, and selection and development of materials. American and British participation in the program has continued to decrease since 1991, making the Hungarian EPP faculty responsible for maintaining the evolution of the program.

Another concern is that while the number of applicants to the EPP program is growing, the number of EPP faculty members will not be increased. As the interest in English instruction continues to expand, competition for acceptance into the program will increase as well, because the number of students to be accepted will remain essentially the same. In choosing students for the program two questions are continually being raised:

1. What are the best methods of selecting future Hungarian teachers who will teach math and science courses in English ?
2. Are these future teachers sincerely interested in teaching careers, or are they only interested in improving their English skills in order to compete for better jobs and opportunities to study abroad?

Answers to these questions can be found by examining the design and implementation of the EPP Entrance Examination, the competition for scholarships to study and teach abroad, practice teaching in the DLS, and the Hungarian State Examination of Extended Language Training.

The immediate challenge of selecting sincere and motivated prospective DLS teachers is found in the design of the EPP Entrance Examination, which continues to evolve as the parameters of the program are defined. In 1991, the examination consisted of an oral interview of general questions, similar to section one of the Test of Spoken English (TSE), and a description of a picture, similar to section five of the TSE. All applicants who had not already passed the Hungarian State Language Examination at the intermediate level also had to complete an inhouse 100-item, multiple-choice timed test of American grammar usage.

Of the twenty-two applicants, only nine were chosen for Group I for the academic year 1991-1992, and five of the remaining thirteen applicants were placed on a waiting list.

Especially problematic was the process for determining the final selection of students, which was ultimately based on each applicant's performance during an oral interview with several EPP faculty. While some of the questions used by the faculty to discuss the qualifications of

each applicant after the interview are indeed linguistically sound, many of the questions will clearly reveal the interviewer's subjective observations of an applicant's personality which is based on one interview of only five to ten minutes with two or three members of the EPP faculty. This aspect of the selection process, the oral interview, became the most important to address. The EPP faculty feel that the oral interview is necessary and effective because it is desirable to select students quickly and efficiently. Therefore, the content of the oral interview was expanded to include brief questions about the applicant's background and motivations for wanting to teach. Then the line of questioning is directed towards the applicant's ideas on the characteristics of both excellent and poor teachers. This is followed by the applicant's description of a picture. The last portion of the interview is a task which is more related to teaching ability: each applicant is presented with different school announcements and information which must be explained to the interviewers, who pose as students and ask questions for clarification. As a way of closing the interview, the interviewers ask the applicants if they have any questions about the EPP program. After the interview, a method for rating overall oral proficiency and comprehensibility is employed in order to standardize the final decision of each applicant's score. The Rating Scale for the English Examination for DLS Math and Science Teachers is now used, which was adapted from the Oral Proficiency Test for Non-Native Teaching Assistants and the Interagency Language Roundtable Proficiency Test.

Figure 3

Questions used to discuss the applicants after each interview
Can you imagine [applicant] as a teacher?
Can you imagine [applicant] in front of a class?
Do you think [applicant] was sincere?
Was [applicant] able to provide supplementary explanation?
Was [applicant] able to paraphrase when we couldn't understand; and, how did he or she finally get the message across?
Will [applicant] fit in with the rest of the group?

Even after expanding the content and duration of the oral interview, the issue of how best to select these future teachers remains. A written component of the test which all applicants complete is also now desirable. In 1991, the inhouse multiple-choice grammar test was the

only instrument available, and this was used only for those applicants who had not successfully completed the Hungarian State Examination. The EPP teachers were reluctant to include an essay in the entrance examination because of the amount of time and training necessary to evaluate these writing samples. They also felt that the same information, in terms of content, can be obtained in the oral interview. However, writing samples are also very informative about an applicant's attitudes and motivations when the topic is a teaching problem and the solutions to the problem. This section of the entrance examination would not only demonstrate the applicant's linguistic ability, but would also reveal his or her methods of problem solving and interpersonal relationship skills. In addition, the decision as to whether or not the applicant should be accepted is also based on an easily retrievable document which can be reviewed by the EPP faculty as well.

Another method for further discrimination of teaching ability has to do with the selection of EPP students who are eligible for the various teaching positions and scholarships available at schools in the United States and in Britain. In May of 1991, criteria were developed for selecting seven students from the twelve in Group III who would receive scholarships to attend the special EPP program at UCLA during the fall term, 1991. The recipients are expected to participate as student teachers in a Los Angeles high school; therefore, their teaching and language skills must be well developed. The competition consisted of three components: a demonstration of teaching ability, a multiple-choice American English grammar test, and a listening comprehension test.

The participants in the competition prepared and taught a "mini-lesson" in one of their major subjects in English, and were evaluated by the teacher trainers in the EPP Program. The mini-lessons were also videotaped so that these demonstrations could be viewed again. The grammar examination was a variation of the one used in the EPP entrance examination. The listening test was a true/false test of ten questions, and the listening passage was taken from an American science professor's lecture about his teaching techniques. The passage is 14 minutes long, and students were permitted to listen to the passage twice, while taking notes on paper provided for them. The grammar and listening components of the examination were designed mainly as screening devices to ensure that all students selected would have at least intermediate levels of American English competence. In the future, these components of the selection process will be given as part of the Preliminary Examination after the third year. The Teaching Demonstration will be required after the fourth year; it will be used both as a screening instrument and as the basis of competition for scholarships.

Since the fifth year of the curriculum is designed to provide more supportive instruction for students during their practice teaching in a

DLS, extensive coordination between the EPP Program and the DLS is necessary for this goal to be achieved. Each student observes a master teacher at work in one of the DLS in Budapest, and then teaches the class for several weeks. Ideally, students would be able to observe master teachers in their classes at the DLS in Budapest, and then teach the next classes there for an entire term. In this way, the fifth year of the curriculum would enable the students to discuss problems as they occur. Suggestions have also been made for students to do their practice teaching outside of Budapest so that future teachers can experience teaching in both settings. This, however, is problematic, as students must also attend their university courses during this period.

The final requirement for completion of the EPP program is successful completion of the Hungarian State Examination of Extended Language Training, which determines the student's level of teaching competency of the student's chosen major subjects in English. Each student prepares and presents a teaching demonstration of each chosen major subject. The Rating Scale for the English Examination for DLS Math and Science Teachers is again used to evaluate the students, which also provides a comparison with the student's initial evaluation during the EPP entrance examination. The evaluation categories on the official state examination certificate are expanded to include: pronunciation, fluency, grammar, vocabulary, organization, listening comprehension, body language, facial expressions, handling of questions, and student involvement. Each student is required to submit a brief outline of the lesson, prior to the examination, to ensure that the level of material is appropriate for students at the secondary level. These lesson plans are approved by the EPP faculty a few weeks in advance of the examination. Every student must be able to demonstrate effective lesson planning and teaching skills in each major subject at the secondary level in order to successfully complete the EPP program.

IV

The challenge of selecting and training enough Hungarian teachers to teach their major subjects in English can be met through the collaborative efforts of American, British and Hungarian faculty at the interinstitutional level. The implementation of an English for Pedagogical Purposes Program at ELTE in Budapest has resulted in the curriculum design and development of criteria for teacher training and selection. Graduates of the program are now teaching in special secondary schools, known as dual language schools, throughout Hungary. Equally important is that the evolution of the project has raised compelling questions about determining the best methods to select and train future teachers of math and

sciences in English for Hungarian secondary schools. In the years to come, the EPP curriculum will continue to be implemented, revised and evaluated. These tasks will most likely be carried out by the Hungarian EPP faculty, and there is no doubt that the real challenge is theirs.

It is also without doubt that the Hungarian students and teachers in the EPP Program will benefit from all opportunities to study and teach in English-speaking countries. Programs that can provide teacher-training in countries such as Britain and the United States are essential to the evolution of DLS teacher-training in Hungary and other countries interested in establishing this system. Unfortunately, these types of programs are expensive and the costs must be compared with the ultimate benefits. As these students graduate, and face the economic pressures which now exist in Hungary, perhaps the most important question is: How many of these specially trained teachers will truly devote themselves to teaching careers, and how many of them will opt for higher-paying positions?

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