

## THE EFFECTS OF PROFESSIONAL DEVELOPMENT AND TEACHER EDUCATION ON STUDENTS' LEARNING OUTCOMES

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**Abstract.** *Teacher education and professional development is a continuous process with an overall goal of transforming potential into performance. Teachers gain the right skills, attitudes and knowledge through a combination of teaching and professional skills and application of the relevant pedagogical theory. The process includes improving general educational background and the knowledge of students' subject areas, i.e. content knowledge, understanding the nature of the learners and the development of practical skills and competences.*

*Medical English provides teachers with numerous opportunities for professional development of both language and medical teachers. In this area, two primary categories of teacher knowledge include general pedagogical knowledge (principles and strategies of classroom managements) and content knowledge (the knowledge of specific subjects). Teachers are offered an invaluable opportunity to learn from one another - language teachers can broaden their understanding of medicine, whereas medical teachers may develop their teaching practices and use the methodology of language teaching to improve and enrich their own subject-specific classes.*

*There is a positive correlation between the quality and degree of learner achievement and teacher competence and motivation. In other words, high quality teaching is a prerequisite for high quality education and it is, therefore, one of the most important determinants of students' learning outcomes.*

**Key words:** *English for Medical Purposes, teacher education, learning outcomes, adult learning*

### 1. INTRODUCTION

As an international language, English is used in a wide range of occupations. The widespread usage has led to the development of English for Specific Purposes (ESP), described as the most vibrant and innovative area of language teaching (Dudley-Evans, St John, 1998). It is often said that the basic distinction between ESP and General English is the insistence on specialized vocabulary and language structures that are closely related to the learners' primary fields of study or their occupations. For example, the demand for English in the field of medicine, English for Medical Purposes (EMP), represents a program that concentrates on language learning in general but also includes a specific purpose (Robinson 1991.). An EMP course will focus on highly technical medical terminology and

specific grammatical structures, phrases, styles and principles of oral and written communication which are characteristic for medical profession. This basic distinction supports the description of ESP as a goal-oriented course. It emphasizes practical outcomes by preparing students for effective communication in the tasks awaiting them in the future. In other words, ESP is closely connected to language for professional/occupational purposes where learners have to learn how to use language in areas where they are going to work.

Another important difference refers to the learners themselves and their reasons and purposes for learning. An ESP course is usually designed for adult learners and it is based on needs analysis (Robinson, 1991). Needs analysis is necessary in order to assess the learners' skills and abilities, determine priorities, analyze the needs, demands and expectations, establish the course topics, design appropriate materials and define the goals of learning. Needs analysis is one of the major interests in this approach because it enables teachers to create knowledge about the specific language learning needs to be covered in the classroom, in order to make teaching as efficient as possible.

ESP classes for adult learners, in our case medical students at the tertiary level of education, introduce the possibility for integrating content with language teaching. Having in mind that ESP teachers are most often language teachers with no discipline-specific training, the question that arises concerns the level of specialized knowledge, i.e. content knowledge, that teachers need to have in order for teaching to be efficient.

Furthermore, another issue that is of interest concerns the options for establishing a close cooperation with discipline-specific (in our case medical) teachers as a source of invaluable content. This type of teaching could prove beneficial to all the parties included since learner achievements and learner outcomes are in a positive correlation with teacher competence and motivation.

All these characteristics need to be considered when designing the course. Suitable methods and approaches should be applied in order to meet the learners' needs which is one of the basic goals of English for Specific/Medical Purposes.

## 2. MAJOR CONSIDERATIONS IN EMP COURSE DESIGN

As adults, ESP learners already have clearly defined interests, learning styles, strategies and motivation for learning. This means that they know where they will be using the English language and they know what they want to learn. Compared to young learners, adults have some specific characteristics. To be effective in teaching adults, it is important to know how they learn.

First of all, adult learners are self-directed. They like to have control over their own learning, they need to know the purpose and the benefits of learning before they enter the process. Their motivation comes not only from external but also from internal factors, such as professional ambitions, career aspirations, satisfaction, self-esteem, etc.

Another thing that distinguishes them from young learners is a range of life experiences from which they develop their learning styles and strategies and expectations with regard to teaching styles and methodologies. Readiness to learn springs from the assumption of new roles. They are oriented and perceive the need to acquire new knowledge which would help them to cope more effectively with real-life situations. They are particularly motivated if they see that the knowledge and skills they acquire can be applied practically.

Adult learners need to know *why* they are learning something. They learn through problem-solving and through doing. Most importantly, they learn when the knowledge is of immediate use.

Experience gained from previous need analyses (questionnaires and direct conversations during the course) has shown that our medical students are generally aware of the communicative tasks they will be performing with respect to the English language. They realize the importance of English in their future careers and further professional development. With regard to language learning skills, the data show that they perceive speaking skill as the most important in learning English and they generally demand communication activities. However, the importance of other skills, particularly writing, is not neglected (Antic, 2009; Antic, Milosavljevic, 2016).

With these data in mind, the basic goals of the course include communicative practice in simulated professional and everyday situations, developing listening and oral fluency skills, reading comprehension of EMP materials, writing research papers, case studies, effective e-mails and formal letters, socializing in English, making efficient presentations. Clear and concise communication and broadening of knowledge are emphasized in our modern society. Particularly in medicine, precise communication is of paramount importance because this ability offers means for professional improvement and interaction with experts in the field and helps build the qualities of a good doctor.

After the starting points have been defined, the next step is the development of the teaching material. The process of material development involves writing, creating learning exercises, and working with content experts. Well-designed, direct materials help reinforce the learning objectives and outcomes based on the assessment of the learners' needs. The material should have immediate usefulness to the learners, it should be relevant to the learners' lives. The course should be engaging, giving the learners opportunity to share their experiences. Including students in the course design process, allowing them to choose the activities and materials that are interesting and context- and content-related is beneficial because it enables them to take charge of their own learning and to become more autonomous since student autonomy is another important feature of EMP classes that must not be disregarded. It implies equipping learners with skills that would enable them to continue learning effectively even after the course ends, i.e. enabling them to become independent learners (Pilott, 2013).

Furthermore, the EMP syllabus includes all four language skills (reading, writing, listening, speaking) and language systems, such as grammatical and phonological structures, but the students themselves decide which elements will be brought into focus. Teaching is thus learner-centered and the role of the teacher is to facilitate learning and guide the students towards developing appropriate strategies that would promote autonomy.

### 3. THE ROLE AND SOURCES OF CONTENT IN EMP

One of the core characteristics of languages for specific purposes is a close relation between language instruction and the subject matter. In order to develop students' linguistic ability and ensure successful communication in the field of medicine, the language teacher needs to give particular attention to specialized medical text structures, formal medical documents, long and complex sentences and highly technical medical vocabulary and terminology. Therefore, content knowledge is considered necessary for successful language acquisition. Contents of various disciplines provide frameworks for

language courses. Since interdisciplinarity is a key feature of ESP, the integration of language and content is another major issue in ESP course design.

Compared to general English, exchanges in ESP are more often initiated by students. Therefore, students are given an opportunity to bring materials from their basic medical subjects. In that way, both context- and content-based teaching and learning take place and it becomes possible to create a link between theory and practice and this integration is a key feature. Theory provides tools on which curricular decisions are based. In medical English, language acquisition is the primary goal but specialist content represents a medium for learning the medical English language. It is therefore necessary that the 'input' in the target language is understood by the learner (Brinton, Marguerite, Bingham, 1989).

One example of using medical content in language learning is the use of medical case study and case report during English classes. First of all, a distinction needs to be made between the case study method and case study (or case report) as a genre of medical writing which can be used as teaching material.

As a methodological procedure, case study is an in-depth research and understanding of a complex issue in its real-life context. It includes systematic monitoring of an event, data gathering, information and data processing and reporting on the obtained results. In language learning, case study is an active learning method which requires learners' participation and involvement. Students learn more effectively when they are actively involved in the learning process (Kreber, 2001, McKay, 2006, Merriam, 1988). It is student-centered and develops students' skills and abilities, critical thinking and reflective learning, problem-solving skills, cooperative learning and team-working skills. It enables students to apply their own styles and strategies.

Case study is essential in medical education and practice. In medicine, case study is a basic approach and diagnostic procedure which revolves around a patient with a specific health problem. A medical case study represents a relevant scientific documentation of clinical observation of a patient which broadens the understanding of etiology, pathogenesis, natural history and treatment of diseases. It is also an invaluable source of information in the training of future doctors.

As teaching material, case study (or case report) is extensively used in a wide variety of disciplines and has a global, inter-professional role. In EMP course design, case study may be used as a basis in the teaching and learning process, a platform on which other teaching methods and instructions may develop. Initially, the teacher prepares the case study materials based on the projected goals and aims of learning. However, the students are also expected to contribute with their own materials, whether from medical classes or from their everyday lives. At the basis of a case study is a problem that requires a solution or a situation that needs to be explained. The problem is context-based, related to the students' studies and future professional lives. Students work in groups, pairs or teams, they discuss about the problem and through discussion, solutions are generated.

Case study material may be used in every stage and with every item of the syllabus: vocabulary (medical affixes, derivations, word formation, medical terminology), grammar points (modals, tenses, questions, passive, indirect speech), professional communication, doctor-patient interviews, language skills (listening, speaking, reading, writing). Furthermore, it serves as a framework upon which language learning develops from professional to academic level to include presentations, conference language, writing research paper, IMRaD structure. Here is an example of a case study which was adapted for use in class:

“A 45-year-old man presented with six-month history of fatigue and anxiety symptoms. He reported no other specific physical symptoms. His blood pressure was normal and urinalysis was negative for glucose and ketones.

The patient was obese and he reported a family history of type 2 diabetes on his maternal side. Routine blood tests slightly increased hemoglobin but were otherwise unremarkable.

Initial diagnosis was type 2 diabetes. Treatment was determined and he was referred to the dietitian. His medication dosage was increased over three weeks and he reported no adverse effects to the medication.

One month later, on follow up, he reported some weight loss. He had become increasingly stressed. He had lost 5kg since his initial appointment four weeks earlier. Medication therapy was modified. He was given appropriate counselling about blood sugar monitoring and hypoglycaemia. The dose of anti-diabetic medication was increased over six weeks to maximum.

On check-up, he reported that he had been concordant with the medication, but his blood sugars were still high and he was continuing to lose weight. He reported feeling more tired and also reported increasing thirst. Urinalysis at this time revealed glucose and ketones.

The therapy was altered and his blood sugars stabilized. The patient felt better within two weeks of initiation of the insulin. A diagnosis of late-onset type 1 diabetes was made.”

The initial stage includes pre-reading which elicits the vocabulary for working with the case study. It is followed by reading which develops from skimming and scanning the text to more focused detailed reading in order to become familiar with the facts and the issues described in the case. The next stage includes detailed analysis for thorough understanding of the situation, class discussions and subsequent pair- and group-work.

A case may also be presented in the form of doctor-patient interview (a role-play activity) in order to help clarify the situation and concepts from different perspectives. Students are given opportunities to make propositions, offer solutions to the problem, express their opinions, agreements and disagreements. Based on the medical problem presented in the case, students may be asked to write doctor's notes, a referral letter, or prepare a summary they would present to their colleagues in advisory board meetings. Such tasks are closely related to their future jobs and language is highly contextualized. Rather than learning *about* medical English, students have an opportunity to *use* it in different professional medical settings.

Next, the course moves on to the academic level when the tasks include writing reports and research papers based on the presented case. The writing phase is followed by oral communication, when students prepare presentations and practice the use of conference language.

The final stage is self-evaluation and assessment of the overall achievement and contribution to the group and what was learned. Both the students and the teacher receive relevant feedback which can be beneficial in terms of further development and improvement of the teaching and learning process.

The process can also be done in a reverse order with more focus on the students' medical knowledge. For example, the students are given short descriptions of various medical cases:

1. A 70-year-old previously healthy farmer presents with pain on weight bearing and restricted movements of the right hip.
2. A 73-year-old woman with rheumatoid arthritis on immuno-suppressive drugs presents with systemic malaise and fever. She has red, hot, swollen wrists.

3. A 66-year old woman started furosemide (frusemide) two weeks ago and now presents with a red, hot, swollen metatarsophalangeal joint.
4. A 22 -year-old male soldier presents with a two-week history of a swollen right knee, conjunctivitis and urethritis.
5. A 30 -year-old man presents with a 10-year history of back pain, worse in the morning, and one episode of iritis.
6. A frail 85-year-old woman presents with poor mobility and a recent history of falls. She has deteriorated generally over the past two weeks with fluctuating confusion. She has a mild right hemiparesis.
7. A 35-year-old previously healthy man returned from holiday five days ago. He smokes 10 cigarettes a day. He presents with mild confusion, a dry cough and marked pyrexia. His chest examination is normal. His chest x-ray shows widespread upper zone shadowing.

The tasks start with general questions related to the diagnosis, investigation, advice, treatment, followed by viva questions which require students to recall their medical knowledge and use it in a problem-solving situation, state opinions, analyze and compare ideas, propose solutions, justify the proposed actions, predict and evaluate the outcomes. The hints may be expanded into standard case studies or reports or doctor-patient interviews which require the application of medical knowledge.

The use of case study, both as a method and as teaching material, take place simultaneously. Namely, while the students work with a specific medical case, the teacher monitors the whole class systematically, thoroughly observing the students' work in order to gather the relevant information about the learning progress, and in the end reports on the obtained data, usually in the form of evaluation and assessment, including feedback on what was achieved and learned, as well as what should or could have been done differently.

#### 4. TEACHER EDUCATION AND STUDENTS' LEARNING OUTCOMES

Teacher education and professional development are continuous processes and one of the major goals is transforming potential into performance. A combination of teaching and professional skills together with the application of the relevant pedagogical theory will help teachers gain the right skills, attitudes and knowledge.

In terms of teacher knowledge, two concepts stand out (Shulman, 1987): general pedagogical knowledge (principles and strategies of classroom management) and content knowledge (the knowledge of specific subjects, or specialized knowledge). According to this theory, as experts in language and teaching methodology, medical English teachers already possess the required pedagogical background. What they need is specialized content knowledge.

Some of the principal questions with content-based instruction are whether ESP teachers are fundamentally language or content teachers and what level of content knowledge they need in order to be able to teach effectively. The relevant input in EMP can be obtained from two sources, medical students and medical teachers. Language teachers must use every opportunity to improve the skills and widen their content knowledge. With content-based instruction, students often know more about the content and their knowledge can be used to generate communication in the classroom. Even if teaching is not completely related to content, it should always reflect the underlying concepts and activities of the

broad discipline. Therefore, it can be said that in EMP, the process of teacher education and professional development includes improving general educational background, the knowledge of students' subject areas, development of practical skills and competences.

As we have seen from our example with the use of case study, it is not necessary for language teachers to be experts in medicine in order to be able to merge the pedagogy and the medical content. What is required is knowledge of the fundamental principles of the subject area, an active interest in the disciplines or professional activities the students are involved in and a thorough understanding of the specific jobs the students are going to perform (Svendsen and Krebs, 1984; Jackson, 2005; Brown, 1995). In that way, teachers gain familiarity with the work of their students and discover the communication difficulties they may confront (Stein, 1995; Jackson, 2005). The teacher's role is that of an advisor or a counselor who is knowledgeable in communication practices and negotiates with students on how these practices can best be applied to meet the teaching objectives.

Besides the students, another important source of content knowledge are medical teachers. EMP is a practical discipline and its most important objective is to help students to learn. In order to face the challenges related to the content, to achieve meaningful communication in the class and the sharing of knowledge, language teachers may feel the need to establish a cooperation with subject specialists (Hutchinson and Waters, 1987, Johns & Price-Machado, 2001). Such interaction, called team teaching or tandem teaching, allows both language and content teachers to remain in their domains, while at the same time providing opportunities for further professional development and education. Namely, a motivated language teacher will accumulate his/her knowledge of medicine that can be used in language classes, find out about novelties in the field, get a better grasp of the basic principles, etc.

On the other hand, the cooperation is beneficial for medical teachers as well. In our case, medical teachers are essentially doctors and teaching assistants who most often do not have any formal training in pedagogy and teaching methodology. In other words, they have the necessary content knowledge but need pedagogical knowledge – they need to develop and maintain the skills of a competent teacher. These skills imply commitment to the teaching-learning process, a desire to develop in the fields of both teaching and medicine, understanding and awareness of the educational needs of students and the educational principles applied in medicine, practical teaching skills, openness to cooperation and assessment abilities. For many, their teaching practice has been learned solely by doing and mostly relies on the traditional, ex-cathedra teaching. In team and tandem teaching, they are given an opportunity to learn about the methodological aspects of course design, the use of various teaching methods, approaches and principles. Even if it only inspires them to think about and reflect on their teaching practice, it will eventually lead towards improvement (Moon, 1999).

Team/tandem teaching is very important as it offers a myriad of opportunities for development of all the parties included. It can be presented as a functional triangle or a three-way dialogue which includes language teachers, medical teachers and medical students (Antic, 2015). The cooperation promotes the relationship between the participants and it can significantly increase the level of motivation. All participants play important roles, they are all parts of a larger process and their individual contributions are necessary for the process to work. After the needs and course objectives have been defined, the language teacher works as an intermediary who puts the elements together into a meaningful whole. This approach integrates medicine and English language teaching and learning,

students learn in context and they are motivated to apply their medical knowledge during language classes (Antic, 2008).

There is a positive correlation between the quality and degree of learner achievement and academic learning outcomes on the one hand and teacher competence and motivation on the other. In other words, high quality teaching is a prerequisite for high quality education and it is, therefore, one of the most important determinants of students' learning outcomes. The quality of teaching is improved when teachers widen their knowledge, deepen the understanding and improve the skills to best meet the learning needs of their students.

## 7. CONCLUSION

Teachers are viewed as professionals in the field of learning with teacher knowledge being one of the key aspects. The features that characterize expert teachers include pedagogical content knowledge, problem-solving strategies, decision-making abilities, awareness of context, perception of classroom events, respect for students, motivation. Teacher quality is one of the most important factors in student achievement (Hill, Rowan and Ball (2005), Baumert et al. (2010), and Voss, Kunter and Baumert (2011)). The main motive for investigating teacher knowledge is to improve students' learning outcomes. An emphasis on improving the outcomes also implies improving the quality of teaching. The investigation of teacher knowledge involves understanding how it is applied in decision-making processes, such as course design, lesson planning, making immediate judgments depending on observations in the classroom and in group dynamics management.

EMP emphasizes the communicative and functional demands of the real-world situations in which learners wish to use the language. EMP teachers are given types of opportunities for learning, one of which includes close cooperation with content experts and medical students. Teachers' ability to recognize these opportunities and to use them for professional development will impact students' outcomes.

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