

## Introduction

### Research problem

An ever-accelerating pace of change characteristic of the modern society creates the knowledge avalanche. New knowledge appears much faster than earlier and education no longer manages to keep up with changes. Education as transmission of knowledge is not adequate any more to prepare students for the future life. In order to survive in a rapidly changing world students must be able to face situations when no knowledge is available to them. This problem is often seen as the driving problem of modern education (N. Khomenko, 1993; Murashkovska & Khomenko, 2002). Modern students must be able to generate new knowledge. Researchers generally agree that in order to do this, development of higher order thinking must become the heart of the curriculum (Burden & Nichols, 2000:293);(Wilson, 2000:32-33); (Fennimore & Tinzmann, 1990:5; Wiske, 1998:3) and others. Research evidence also demonstrates that thinking programmes are much more effective when infusion approaches rather than just separate courses centred on cognitive development are offered to learners (D. N. Perkins, 2002:4; Swartz, 2000). Thus, it is desirable that higher order thinking skills should be mastered at each subject of the curriculum along with obtaining specific knowledge and developing subject matter skills.

Modern languages constitute a large part of school curriculum. Modern European citizens are expected to know at least two foreign languages. Common European Framework of Reference (2001) sets out a number of useful objectives for language learning. At the same time, this document does not make any reference to higher order thinking skills. An authoritative review of teaching thinking across the world published in 2004 does not include any study in the field of language arts as, according to the authors, such studies merely do not exist. (Baumfield et al., 2004) This is explained by the fact that current language teaching pedagogies do not cater for the development of higher order thinking skills.

The **theme of the given research** is development of inventive thinking skills in language education. Inventive thinking skills are seen as an important part of higher order thinking skills.

### **The problem to be investigated.**

What pedagogical models could be useful for resolving the contradiction between the amount of knowledge to be acquired and the time available for learning?

### **Aim of the research**

The aim of the given research is to develop a model for language pedagogy catering for the integrated development of inventive thinking and language skills in the context of foreign language education and test this model in practice.

The need for a pedagogical perspective on the development of thinking skills in the process of language studies defines the object and the subject of the given research.

### **Object of the research.**

The process of learning a foreign language in an upper-secondary school.

### **Subject of the research.**

Development of learners' inventive thinking skills.

### **Research hypothesis**

Integrated development of inventive thinking and language skills will be effective if:

- There is a theoretically grounded and clearly described model for language pedagogy that allows learners to develop inventive thinking skills and language skills at the same time;
- Learners working with the proposed model demonstrate an increase in both inventive thinking and language skills;
- Learners working with the proposed model believe that it helps them improve their inventive thinking and language skills.

### **Research questions**

The Thinking Approach (TA) to language teaching and learning developed by the author presents an example of a language pedagogy catering for the integrated

development of language and inventive thinking skills. The following research questions have been formulated for our inquiry:

- Does the Thinking Approach (TA) to language teaching and learning meet the requirements set for the new model for language pedagogy?
- Do learners working with the TA demonstrate an increase in their inventive thinking skills?
- Do learners working with the TA demonstrate an increase in their language skills?
- Do learners working with the TA believe that the programme helps them improve their language and inventive thinking skills?

In addition to the primary research questions outlined above, the following questions appeared in the course of the inquiry:

- Does learning explicit problem-solving tools help learners improve their skills of solving language problems?
- Does learning explicit problem-solving tools help learners improve their skills of solving problems beyond language studies?
- Does learning explicit problem-solving tools help students improve their language skills?
- Does learning with the TA help learners improve their learning skills?

### **Methodological basis of the research**

The present thesis is an example of an interdisciplinary research and lies at the border of such areas as linguistics, psychology and educational sciences.

The views of language reflected in the research go back to cognitive and functional traditions in linguistics. Despite a number of differences, both approaches conceptualise language in the constructive way and can often be seen as complementary. We would especially like to mention Halliday's "paradigmatic orientations in grammar" (Halliday, 2002c:403-404) which are a part of the functional approach to language reflected in (Halliday 1985; Halliday and Hasan 1991). Halliday's treatment of language is also referred to as a social semiotic

approach where the basic assumption is that meanings are *made* (Lemke, 1990). Conventional imagery and symbolization lie at the heart of Langacker's cognitive grammar (Langacker, 1987, 1991). We are also indebted to the network vision of language proposed by the cognitive approach (Langacker *ibid*, (R. A. Hudson, 2003b).

The views of learning are based on the constructivist tradition that goes back to Vygotsky (Vygotsky, 1982), Piaget (Piaget, 1954, 2001; Piaget & Rosin, 1978) and Dewey (Dewey, 1998) and was later developed, among others, by Davydov (Davydov, 1996), Lipman (Lipman, 2003), Perkins (D. Perkins, 1995). The view of language acquisition as conceptualised within the given research is based on what can be called an integrated social cognitive view (Littlewood, 2004).

Inventive thinking skills are conceptualised on the basis of research in the framework of the Theory of Inventive Problem Solving (TRIZ) (Altshuller, 1979, 1986b) and the General Theory of Powerful Thinking (N. Khomenko, 1997-2000; N. N. Khomenko, 2005). Both theories conceive of inventive thinking as a set of abilities and dispositions necessary for a systematic application of a system of models for powerful thinking.

### **Methods of the research**

The present study is an example of a mixed methods design (Johnson & Onwuegbuzie, 2004). We adopted the quasi-experimental design with the use of inferential statistics, namely the t-test, for an analysis of such variables as language and inventive thinking proficiency. At the same time, we have always complemented this by an extensive use of qualitative methods using such tools as questionnaires, interviews, case studies and applying descriptive statistics to the analysis of results. These latter tools were primarily used for the analysis of such variables as students' and teachers' beliefs about changes in inventive thinking and language skills.

## **Validation of research results**

The results of the research have been piloted in various language classrooms in Latvia and abroad<sup>1</sup>, at a large number of teacher training seminars (over 300 academic hours), presentations at national and international conferences (16 conferences in 8 countries), publications in various journals, newsletters and conference proceedings (10 publications altogether), electronic media (the Thinking Approach website<sup>2</sup> has had 38,119 visitors as for 4 Apr., 2007), national (*New Learners in the New Europe* project, 2004-2006, supported by the British Council Latvia and coordinated by the author and employing the Thinking Approach as the main methodology, Information and Communication Technology in the Learning Process 2006-2007 supported by the European Social Funds and administered by the Jelgava Adult Education Centre – the author acting as an expert responsible for the module on organisation of independent work of learners, based on the Self-Study Technology of the Thinking Approach) and international projects (*New Learners in the New Europe*, 2005-2008, supported by the European Commission in the framework of the Lingua action of Socrates programme, coordinated by the author, which includes 12 partners from 5 European countries, the Thinking Approach being the main methodology for the project).

## **Novelty and theoretical significance**

The novelty and significance of the present research is manifested in the following:

- pedagogical *model for an integrated development of language and inventive thinking skills*;
- *non-linear modular system of learning* based on the author's practical experience is proposed instead of a linear model for teaching English. Problem solving in the proposed model is understood differently from its traditional interpretation in communicative language teaching;
- a theoretically based *system of tasks and technologies for the integrated development of both language and inventive thinking skills* to be used in the context of language teaching and learning.

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<sup>1</sup> It is difficult to give a specific number here as many teachers from various countries use elements of the Thinking Approach either after attending our seminars or by working with our website.

<sup>2</sup> The website is available at [www.thinking-approach.org](http://www.thinking-approach.org).

### **Main ideas and outcomes of the research**

The driving problem of modern education can be conceived of as a contradiction between the amount of knowledge to be acquired and the time available for learning. A possible resolution to this problem can be educating “a new learner”, i.e. the learner who wishes and is ready to: (a) constantly “grow” and improve one’s own skills, thus taking full responsibility for his/her learning; (b) have a system of new and worthy personal aims behind every activity and work on their achievement no matter what; and (c) find, pose and resolve problems across fields.

In order to resolve the driving problem through educating learners described above, it is necessary to meet the demands of modern education in the field of teaching thinking by offering a system that can successfully function at three levels: (a) the level of theory, (b) the level of approach, and (c) the level of programme. Notwithstanding the abundance of various thinking programmes and a number of approaches available today, there is a lack of the underlying theory that could constitute the basis for building the educational system aimed at developing “a new learner” and thus resolving the driving problem of education.

The General Theory of Powerful Thinking (OTSM) based on the Theory of Inventive Problem Solving (TRIZ) can be seen as an underlying theory for building the educational system aimed for the development of “a new learner”.

At present, the field of language education is not seriously concerned with the development of “a new learner”. Current approaches to language education recognise the existence of the problem, however they do not offer any model for language education that could contribute to the resolution of the driving problem of education in the field of language teaching and learning.

### **Contributions for the defence**

Contributions for the defence should establish a connection between the subject and the object of the research. In the context of the given research, it means a possible connection between the process of learning a foreign language and the development of inventive thinking. The first contribution proposes a pedagogical

model for integrated learning of a language and development of inventive thinking. The second contribution reveals the structure of the model when it is implemented in the learning process. The third contribution summarises the results of the study into the efficacy of the proposed model. The author does not claim any contribution to the notion of 'inventive thinking' per se, therefore no separate contribution is dedicated to it.

1. A new pedagogical model for foreign language education is aimed at helping learners become competent problem solvers of linguistic, sociolinguistic, pragmatic and other kinds of problems when no typical solution is available. Language is seen as one of the tools for developing problem solving skills and problem solving as one of the tools for the development of language skills.
2. The structure of the proposed model comprises five technologies interconnected in a system according to the principles of the Thinking Approach to language teaching and learning (TA):
  - *Creative Grammar Technology* helps learners see language as a system.
  - *Text and Film Technologies* help learners see communication as a problem solving activity.
  - *Self-Study Technology* helps learners prepare to accept responsibility for learning.
  - *Research Technology* helps learners transfer knowledge and skills to new contexts and teaches main elements of research work.
  - *Yes-No Technology* helps learners see how various problem solving models work in a system.
3. The proposed model helps learners develop their inventive thinking and language skills and increases their beliefs in the success of learning.