

## Conclusions

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.

As stated in the introduction, the aim of the research will be reached 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.

The first chapter considered what could constitute the content of what is referred to as teaching thinking. It was suggested that various thinking oriented products on the market should be analysed at three levels: programmes, approaches and theories. Apart from this, one should pay attention to the scope of problems a given product aims to solve. Ideally, it should help us with both what we referred to as the central problem of modern education and specific problems of a local context. Three well-known approaches to teaching thinking were considered: Teaching for Understanding, Critical Thinking and Philosophy for Children. As a result of analysis, we came to the conclusion that despite numerous positive features of the approaches, they all appear to have a major drawback: none of them is aimed to resolve the driving problem of modern education. It was suggested that a possible reason for such a situation is the lack of the underlying theory which could serve as a possible methodological basis for resolving the above problem. We proposed the General Theory of Powerful Thinking (OTSM) as a possible underlying theory for teaching thinking. We also briefly characterised an educational approach to teaching thinking which is based on the OTSM approach. Thus, Chapter 1 presented the context of the given research and defined the problems the thesis aims to answer.

Chapter 2 presented a pedagogical model for the development of inventive thinking skills in the area of language studies. This model is implemented in the Thinking Approach (TA) to language teaching and learning that we have been developing for the last eight years. According to the tradition accepted in the English language teaching, we described the TA at three levels, namely those of approach, design and procedure.

At the level of approach, we outlined the following features that make the TA different from other approach to language teaching and learning:

- Most uses of language are conventional or routine ones, i.e. people do not have to solve any non-standard or creative problems (e.g. shopping, enquiring, etc). These uses of language do not require meaning making in the real sense of it - this use of language is more about reproducing well-known meaning rather than making new ones. Routine part of language competence should not be the focus of learning – necessary skills will develop within practice centred on the development of non-routine competencies.
- The TA is primarily concerned with the development of problem solving competence which includes a non-routine or creative part of language competence. Development of problem solving competence lies at the heart of learning an interdisciplinary language of problem solving which is seen as the main aim of education.
- Problem solving in the TA context is understood in a fundamentally different way from its traditional interpretation in language teaching. Tasks connected with routine uses of language are not considered problem solving ones and traditional “problem solving” tasks as known in the field of language teaching have nothing to do with the development of problem solving competence as defined in the TA.
- The TA students are expected to learn “to think grammatically” and to strive to become masters in the field of “meaning potential”. Learning a language includes learning particular “ways of construing and portraying” world.
- The TA is based on the idea of a non-linear nature of learning and thus non-linear organisation of learning / teaching process. Instead of a linear curriculum model the TA offers a modular course based on a number of

learning technologies. Technologies serve as bases for the three vectors of the TA: (1) language as the object of study (Creative Grammar Technology); (2) communication as the object of study – language used as one of the means for solving problems (interpretation) and using language as one of the means for solving problems (Text and Film Technologies); (3) learning as the object of learning (Self-Study Technology and Research Technology)

- The invention method promoted in TA may be seen as an integration of what is referred to as discovery and social construction method. We believe that students “discover” models rather than facts. With time, these models are integrated in students’ networks (internalised). However, for this to happen, models have to be tested and validated in the process of learning (and life) and this is seen as an essentially social process.
- Learning must be natural and as close to life as possible. Agreeing that classroom brings about many constraints and purposes of learning can be very different, we believe that learning is essentially about doing real things and thus one should not make a distinction between “ways of thinking” when learning a foreign language and “ways of thinking” when being a linguist. Another consequence of the “natural” principle is that questions to which answers are already known should be avoided in the classroom communication by both the teacher and students.
- The ultimate learning aim for the TA learner is to become one’s own mediator and thus to be able to scaffold him/herself in any kind of learning.

At the level of design, we presented five language learning technologies developed within the TA:

- The Creative Grammar Technology (CGT) where students work with language as an object of study. The CGT aims to help learners see language as a system.
- The Text and Film Technologies (TT and FT) where students learn to see communication as a problem solving activity as defined in Chapter 1 of the present thesis.

- The Self-Study Technology (SST) that aims to educate a learner who wishes and is ready to accept full responsibility for his/her learning and knows how to make learning a success.
- The Research Technology (RT) which provides learners with possibilities of transfer of knowledge and skills to new contexts and also aims at to teach them main elements of research work.
- The Yes-No Technology (YNT) that aims to help learners see how various problem-solving models work in a system.

Each technology was described through characterising its elements (types of tasks) and showing how they make a system by working together. We then demonstrated that not only each technology is a separate system but that they together also present a system and work with the technologies is always interconnected within any TA based learning. We also outlined how the “four skills” are developed in the TA and showed how the roles of students, teachers and instructional materials in the TA differ from more traditional approaches.

At the level of procedure, we demonstrated on specific examples how the TA differs from other approaches when implemented in a real classroom. We presented the procedures in relation to each of the technologies listed above and distinguished between two different levels of procedures: the level of task and the level of the system. Finally, we demonstrated how the TA procedures change in time.

Thus, in Chapter 2 we described and theoretically grounded the model for an integrated development of both inventive thinking and language skills and presented the Thinking Approach as an implementation of the pedagogical model for an integrated development of both learners’ language and inventive thinking skills.

In Chapter 3 we presented the results of our empirical study into the efficacy of the Thinking Approach. The aim of the study is to find to what extent the use of the Thinking Approach to language teaching contributes to the development of learners’ language and inventive thinking skills. This chapter presents the results we have obtained by summer 2005. Our purpose was to find out whether 1)

students working with the TA programme demonstrate an increase in their inventive thinking skills, 2) students working with the TA programme demonstrate an increase in their language skills, and 3) students working with the TA programme believe that the programme helps them improve their inventive thinking and language skills.

We found out that students working with the TA programme demonstrate significantly better results in a thinking test in comparison with the control group ( $t=3.32$ ,  $p=0.001$ ). The reliability of this finding is limited though as students in the control group had a smaller number of contact hours per week (3 hours in control groups versus 5 hours in experimental groups).

Students working with the TA programme demonstrated a gain in thinking skills when comparing their performances on a pre and post tests. The difference is significant only at alpha 10% ( $t=1.74$ ,  $p=0.086$ ). The control groups on the other hand demonstrated a significant decrease in thinking skills ( $t=-3.14$ ,  $p=0.004$ ). We also found out that the TA groups of 10 formers performed better on thinking tests (both of them demonstrated a significant increase) in comparison with form 11 groups. The most surprising finding about results of the thinking test was a significantly worse performance of a group of 11 formers from school 1 which are assumingly the strongest group in terms of thinking skills. Possible reasons for such a situation were discussed in section 3.3.1.2 of the thesis. We believe that further research is necessary to either validate or reject our assumptions and we plan to do it in the coming academic year.

We have found no significant differences between the language progress in experimental and control groups. The reliability of this data is undermined though as only 54% of students in control groups wrote the test and many weak students are reported to have missed it. On the other hand, we observed a significant progress in groups of TA students when comparing the results of pre- and post-tests. ( $t=3.94$ ,  $p=0.0002$ ,  $N=82$ )

Our findings suggest that the majority of students accept the programme and find it useful for the development of their inventive thinking skills (mean ranking 3.92

out of 5, N=79). It is also necessary to note that the attitude to the programme dramatically changes with time, being not very high during the first month of learning (mean ranking of 2.33 out of 5, N=79) and rising to 4.04 in the second semester of learning. Moreover, we found out that students' conceptualisation of thinking skills as such changes as a result of working with the TA programme. This fact is supported by a significant change in students' evaluation of their progress in thinking skills during forms 8 and 9 (before they started working with the TA programme) in September 2004 and May 2005. ( $t=14.4$   $p=2.04307E-23$   $N=79$ , two tail).

83.5% of students mention that they have improved their language skills in English when working with the TA programme, moreover 76% mention that they have made a considerable progress. We found significant difference between students' evaluation of their progress in English during forms 8-9 (before the exposure to the TA programme) and forms 10-11 (when working with the TA programme). ( $t=8.42$ ,  $p=2.51E-12$ ,  $N=73$ ). An absolute majority of students also pointed out that they were enjoying learning with the proposed programme.

Apart from the focus on inventive thinking and language skills, students perceive the TA programme as an effective tool for the development their skills for autonomous learning. Research evidence suggests that such programmes tend to be very effective. (Moseley et al., 2004:54)

In conclusion we would like to say that our data suggest that students working with the Thinking Approach in two secondary schools of Latvia demonstrated an increase in their language and inventive thinking skills, they were ready to accept the programme dealing with the development of inventive thinking skills in the area of foreign language instruction and believe that such a programme contributes to the development of both their inventive thinking and language skills. These factors point out to successful validation of the pedagogical model catering for the development of both inventive thinking and language skills of learners. Thus, we consider that we have achieved the aims set for the given research. At the same time we agree that a further research is necessary to obtain a more reliable data

on the actual efficacy of the proposed approach for the development of students' inventive thinking and language skills.