

# Integrating FILA into CLIL to enhance students' analytical and argumentative skills: An Action Research Study Integrated learning

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## Abstract

The study examines the efficiency of integrating the cognitive strategy of FILA (Focus, Information, Learn, Action plan) with the subject-language integrated learning (CLIL) in the context of the development of creative and analytical thinking of primary school students. The study was carried out in the format of school action research and implemented in two consecutive cycles, including the stages of planning, pedagogical intervention, observation and reflection. The study involved 32 seventh grade students, divided into experimental and control groups. A mixed research method was used to analyze the results. Quantitative data were obtained on the basis of pre-test and post-test measurements of indicators of divergent thinking (fluency, flexibility, originality), as well as the level of proficiency in subject-specific academic vocabulary in CLIL conditions. Qualitative data included an analysis of completed FILA tables, products of students' learning activities, pedagogical observation materials, and students' reflexive responses.

The results of the research shows a steady positive trend in the development of originality and flexibility of thinking of students in the experimental group compared with the control group. The obtained data confirm that the use of the FILA strategy in combination with CLIL creates conditions for the formation of high-level thinking and the development of suprasubject competencies that are in demand in the modern educational process. The practical significance of the research lies in the proposal of a proven methodological tool applicable in interdisciplinary school practice.

**Key words:** FILA strategy, CLIL, creative thinking, divergent thinking, analytical skills, action research.

## Introduction

The existing education system is developing in the environment of dynamic change in the fields of technology, economics, and social life. In other words, there is a need to reconsider the objectives and outcomes of learning in educational organizations. The emphasis is no longer on the development of knowledge in specific disciplines, but rather on the development of creative and analytical skills, as well as the ability to rationally solve complex problems. Analytical reports from international organizations emphasize the importance of developing students' skills and abilities to adapt to uncertain and dynamic life situations (OECD, 2020; World Economic Forum, 2023).

Creative thinking has been described as a multifaceted cognitive process comprising ideas' fluency, flexibility, and originality. Nowadays, research reveals that creativity is no longer viewed as a natural phenomenon, although it can be specially developed through the process of learning in the presence of a thought-out pedagogical design and cognitive support for the student (Beghetto, 2021; Said-Metwaly et al., 2020). Thus, in this context, a special role is played by the organization of educational work on HOTS and working with information.

One of the effective strategies that has contributed to the development of cognitive and linguistic skills is subject language integrated learning (CLIL). It has been found that by imparting knowledge through an additional language, students have an opportunity to enrich their conceptual knowledge, cultivate analytical skills, and promote their metacognitive skills as well (Coyle et al., 2021; Dalton-Puffer et al., 2022). Nevertheless, while performing interdisciplinarity and creative tasks in the context of the CLIL environment, students may experience cognitive overload as well.

In this respect, the interest in the application of cognitive strategies and organizers in teaching is growing, which enables students to think in a systematic manner in a meaningful way. One of these is the application of the FILA strategy, which is comprised of the following components: Focus, Information, Learn, and Action Plan. These components enable students to progress through the different phases of the analysis of problems, working on the information obtained, thinking of ideas, and planning the actions to be taken. Studies on the theory of cognitive scaffolding have confirmed the application of these strategies to be effective in the formation of analytical thinking, the quality of ideas, as well as the recognition of learning processes (Hmelo-Silver & Jeong, 2021; Belland et al., 2020).

Despite increased interest in cognitive strategies and CLIL, research on these strategies in mainstream schools is limited. This study aims to investigate the efficiency of the FILA strategy used with CLIL. The focus is on developing creative and analytic thinking based on school action research principles.

### **Research methodology**

The study was conducted at a secondary school in Kazakhstan. It used the format of school action research, which allowed investigation of pedagogical intervention effectiveness in a real educational context (Cain, 2021). Thirty-two seventh-grade schoolchildren aged 12-13 participated. The students were divided into two equal groups of 16: an experimental group and a control group. The experimental group received the lesson using the strategic approach of the cognitive strategy FILA, as well as subject-language integrated learning. The control group received the lesson using the traditional form, as well as the elements of the cognitive strategy FILA, subject-language integrated learning. The students of the experimental and the control group were of different levels of academic success, which made it possible to examine the effect of the strategy on students of different levels of academic success.

It is worth noting that the study contains two cycles of action research. In each of the two cycles of action research, there were stages of planning, action, and reflection. The planning process involved an interdisciplinary team of teachers. This increased the reliability of the study (Kemmis et al., 2020).

The mixed research method was used to collect the research data. The quantitative research was conducted on the basis of the pre-test and post-test measurement of the level of the following aspects of divergent thinking: fluency, flexibility, originality, as well as the level of the students' proficiency in academic vocabulary in the context of the CLIL classroom. Qualitative research was conducted on the basis of the analysis of the completed FILA tables, the results of the students' learning activity, the materials of the pedagogical observation, as well as the reflective answers of the students. The research was conducted according to the recommendations regarding the methods of research in the field of small-scale pedagogy (Peters, 2023).

## Results

Following the research methodology explained in the previous section, the analysis of the results is based on a comparison of the data from pre-test and post-test measurements of indicators of divergent thinking, as well as an analysis of the use of subject-specific academic vocabulary in CLIL conditions. The choice of these indicators was predetermined by the purpose of this research: to estimate the influence of integrating the cognitive strategy of FILA and CLIL on the development of creative and analytical thinking in students in the experimental group compared to the control group.

### The results of the development of divergent thinking

The presentation of the quantitative data showed that in all important indicators of divergent thinking, positive dynamics were revealed. However, more pronounced changes were characteristic of the students of the experimental group.

**Table 1.** Pre-test and post-test results of divergent thinking indicators in the experimental and control groups

Indicator	Group	Pre-test	Post-test	Difference
Fluency (number of ideas)	Experimental group (N = 16)	25	32	+7
	Control group (N= 16)	24	28	+4
Originality(uniqeness of ideas)	Experimental group (N = 16)	13	19	+6
	Control group (N = 16)	12	15	+3
Flexibility	Experimental group (N = 16)	18	26	+8
	Control group (N = 16)	18	23	+5

Based on the above, an examination of the results of the data presented above in Table 1 reveals that there is an increased level of fluency of ideas between students of the experimental group and those of the control group. This suggests that the FILA table has helped the students to develop a mental construct that has helped to improve the effective use of time when carrying out a creative task. A notable increase was observed in the indicators of originality for the students of the experimental group. In the controlled group, the increase was slight, which allows suggesting the relatively meager potential of the traditional approach for the development of divergent thinking. At the same time, the trend of development of the indicated indexes of thinking flexibility in both groups is positive. But in the experimental group, students demonstrated a trend of moving from various semantic categories and ways of solving a problem, which is a well-developed cognitive switching.

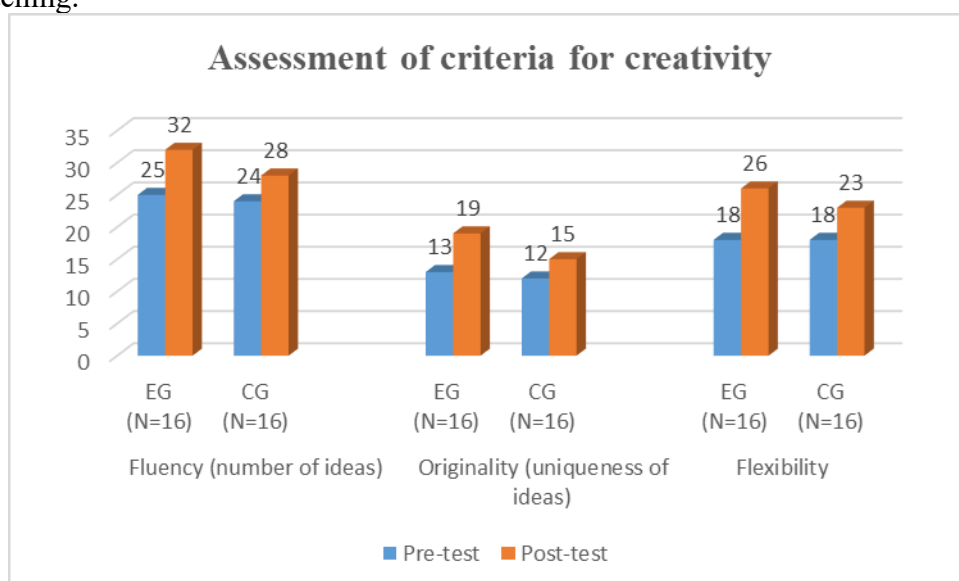


Figure 1. Pre- and post-test results of divergent thinking indicators. (EG- Experimental group, CG- Control group)

The figure illustrates a more pronounced growth trend in fluency, originality, and flexibility among students in the experimental group.

**Analysis of the dynamics of indicators between groups**

A more visual representation of these dynamics of difference between the experimental and control groups can be demonstrated with a representation of the increase in indications of divergent thinking between the pre-test and post-test stages.

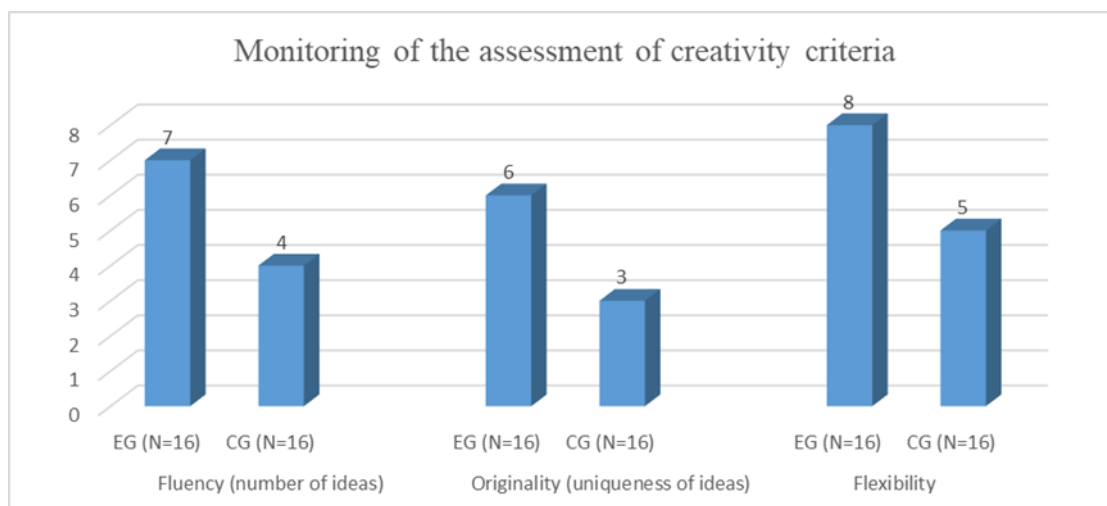


Figure 2. Changes in fluency, originality, and flexibility scores across groups.

As shown in Figure 2 and based on the information provided in the above data, the integration of the FILA strategy has positively affected the more stable and balanced development of divergent thinking. Indeed, the application of an appropriate cognitive organizer helped avoid functional fixity and increase efficiency in idea generation among the students of the experimental group.

**Results on the use of academic vocabulary in the CLIL context**

To evaluate the usefulness of the CLIL strategy, an analysis of the use of subject-specific academic vocabulary in the experimental group and the control group was conducted.

Table 2. Pre-test and post-test results for academic vocabulary use in the CLIL context

CLIL indicator	Group	Pre-test	Post-test	Difference
Academic vocabulary	Experimental group (n = 16)	5	12	+7
Academic vocabulary	Control group (n = 16)	5	6	+1

The achievement obtained by the students of the experimental groups incorporated in Table 2 suggests clearly that the students achieved important growth in the use of correct and appropriate words. This points to the fact that the acquisition of the combined subject matter content and language in combination with the use of the FILA strategies facilitates the deeper assimilation of words and the development of skills for reasoned utterances.

As for the control group, there has been a slight increase, which could be considered a part of the general course of the educational process.

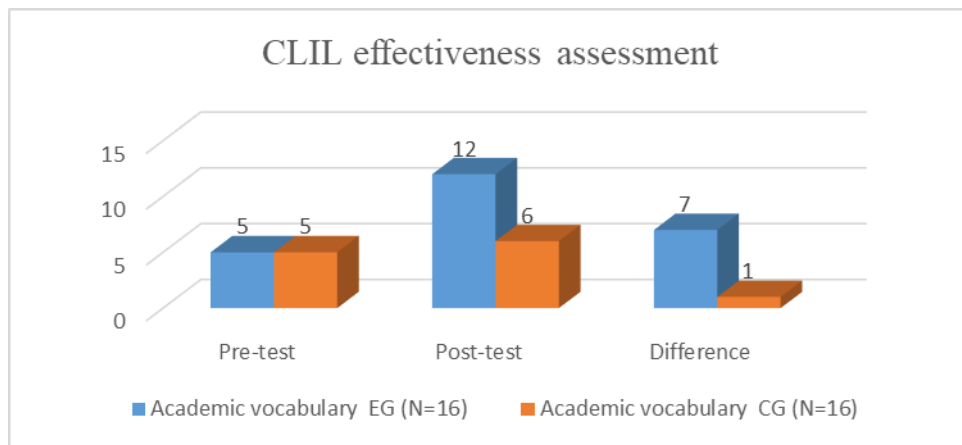


Figure 3. Pre- and post-test academic vocabulary performance in the CLIL context.

Hence, these findings confirm that the application of FILA with reference to the practice of CLIL positively impacts student learning activities from both a quantitative and qualitative perspective.

### Discussion

The achieved results make it possible to present the revealed differences between the experimental and control groups as not only quantitative indicators of change, but also as qualitative shifts in the students' learning activity process. Also, the revealed tendency of increasing indicators of fluency, originality, and flexibility of thinking in students of the experimental group confirms the systemic effect of including the cognitive strategy of FILA in the framework of the CLIL on the entire process of generating ideas.

Qualitative research data logically complement the results of quantitative analysis, which are given in the "Research results" section. The analysis of the completed FILA tables showed that the students of the experimental group began to approach the formulation of problems, selection of information, and justification of the proposed solutions with greater consciousness. What was expected is that FILA would serve the function of cognitive scaffolding, guiding students' thinking and reducing the risks of a fragmented approach towards creative tasks.

The connection revealed between the development of creative thinking and the growth of academic vocabulary deserves special attention. The language indicators of improvement in the experimental group were not a side effect, but a result formed in the process of substantive problem solving. Thus, CLIL, combined with the FILA strategy, acted not only as a means of language support, but also as a means of deepening subject understanding and argumentation, which corresponds to the results of research in the field of subject-language integrated learning.

Processing the results by levels of academic success (A, B, and C) revealed an evident potential for differentiated learning when treating the FILA strategy. In the high level of education, it allowed deep conceptualization and detailed elaboration for ideas. At the average level of education, FILA provided information structuring and supported analytical comprehension. For students with a low level of education, it served to reduce cognitive load and stimulate idea generation.

However, there are several limitations in the present study. The small sample and the short-term nature of pedagogical intervention do not allow generalization at the level of broad educational practice. Nevertheless, the action research format allowed deep insight into learning processes in a real school context and provided an opportunity to identify sustainable trends significant for pedagogical practice.

## Conclusion

Based on two cycles of action research, it is necessary to conclude that such pedagogical approach based on a combination of learning this special cognitive strategy of FILA with teaching within a CLIL model is effective and suitable for promoting creative and analytical thinking abilities of primary level students. This is valid with reference to both qualitative education and rationality, consciousness, and subject-specific vocabulary. The practical value of this research lies in its application to real educational settings. The findings make it possible for educators to use this special learning technique in practice and to integrate it into an interdisciplinary teaching model.

## References

- Beghetto, R. A. (2021). Uncertainty, agency, and creativity in education. *Educational Psychologist*, 56(2), 96–110. <https://doi.org/10.1080/00461520.2021.1907122>
- Belland, B. R., Walker, A. E., Kim, N. J., & Lefler, M. (2020). Synthesizing results from empirical research on scaffolding. *Educational Psychology Review*, 32(3), 825–856.
- Cain, T. (2021). Action research as a tool for school improvement. *Educational Action Research*, 29(3), 345–361.
- Coyle, D., Holmes, B., & King, L. (2021). *Towards an integrated curriculum: CLIL guidelines*. British Council.
- Dalton-Puffer, C., Nikula, T., & Smit, U. (2022). *Language learning and CLIL classrooms*. John Benjamins.
- García Mayo, M. P., & Villarreal Olaizola, I. (2023). CLIL and cognitive engagement. *System*, 113.
- Hmelo-Silver, C. E., & Jeong, H. (2021). Scaffolded instruction. *Instructional Science*, 49(2).
- Kemmis, S., McTaggart, R., & Nixon, R. (2020). *The action research planner*. Springer.
- OECD. (2020). *Education 2030: The future of education and skills*. OECD Publishing.
- Peters, M. (2023). Mixed methods research in education. *Contemporary Educational Technology*, 15(2).
- Said-Metwaly, S., Van den Noortgate, W., & Kyndt, E. (2020). Approaches to measuring creativity. *Thinking Skills and Creativity*, 37.
- World Economic Forum. (2023). *The future of jobs report 2023*.