

This type of training is considered as:

1) in-depth study of a foreign language with a significant expansion of the content of the study at the subject material expense; mastering the ability to communicate freely in the studied language within the scope of the subject material;

2) mastery of factual subject material using a foreign language as a means of learning, formation of the ability to present such material by foreign language means.

Each branch of the educational course contributes to the development of language competence in various subjects from music to mathematics, from science to sports – components of a child's speech development. At the same time, the mastery of any aspect of the educational course partly depends on the knowledge of the language of the given region. Acquiring language skills in chemistry, psychology or mathematics is essential in understanding these disciplines.

**Keywords:** bilingual education, ethnic communities, immersion education, language policy, learning foreign languages.

## **STEM TECHNOLOGIES IN VOCATIONAL EDUCATION – THE KEY TO REORIENTING THE ECONOMIC DEVELOPMENT MODEL (THAILAND'S EXPERIENCE)**

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**A**lready in the first months after the February 24, 2022, barbaric invasion, the hopes spread throughout the world for an early Ukraine defeat were shattered by the Ukrainians' invincible resistance. The Ukrainians began an active search for an answer to questions about the prospects after the victory. This is evidenced by Presidential Decree No. 266/2022 dated April

21, 2022, on the National Council for the Recovery of Ukraine from the War Consequences.

The working group “Education and Science” in the Draft Ukraine Recovery Plan considers vocational education as one of the key areas (The National Council for the Recovery of Ukraine from the Consequences of the War, 2022, p. 2). Thus, the responsibility for finding ways of post-war recovery rests to a large extent on educational scientists. An urgent issue in the implementation of such a mission is the guidelines established for scientific research. The government action plan “...takes into account the experience of European countries, and also proposes to use the European Union principles, approaches, tools and practices” (Government Portal, 2022).

The European countries are territorial and mental proximity is a weighty argument in favor of this proposal. Their current state condition can serve as a target guide for the Ukrainian economic recovery. At the same time, not only similar but also different circumstances should be taken into account in a non-committed scientific search. For example, the EU countries made the transition from agrarian raw material-dependent to a highly industrial economy in the distant past. Modern prerequisites and opportunities for making such a transition are fundamentally different. After all, the very fact of the EU's existence is the latest influential prerequisite, and the world economy globalization opens up new opportunities.

The purpose of this study is to take into account the specified circumstances by expanding the studying foreign experience horizons.

The transformation from an agrarian to a newly industrialized country (NICs) at the 20th-21st century turn is demonstrated by the Thailand example. Territorial and, to a greater extent, mental remoteness of Ukrainians protects them from the temptation of directly aping the Thai experience (which in the case of the European experience is perceived as completely acceptable). This contributes to focusing on those dependencies that are natural and which can be used in Ukrainian realities.

Thailand relied heavily on agriculture in the past. To overcome the middle-income trap and become a developed country, Thailand has developed a step-by-step strategy. Similar to Ukraine today, education here was identified as one of the key factors in the transition from an agrarian model to an economic development type where Thailand must be independent of foreign investors and rely on local wisdom to create innovations and inventions (from Thailand

1.0 to Thailand 4.0). The corresponding step-by-step economic development models Thailand 1.0 – 4.0, Industry 1.0 – 4.0, and Education 1.0 – 4.0 were set up for such a gradual transition. «Consequently, Thai vocational educators must shift their mindset from aiming to groom skilled workers to encouraging students to become innovative, as well as being inventors and entrepreneurs» (Wannapiroon et al., 2021, p. 529).

The choosing experience of the education system that was aimed at solving this strategic task is useful. In the last century's 80s, the U.S. National Science and Technology Council developed a multi-year strategic plan for STEM education devising to improve the U.S. education quality. In Thailand, STEM education has been rethought and raised to the policy relevancy level – to implement its transformation model into a developed country. The STEM curriculum, developed by Thailand's Ministry of Education, was intended to be taught in every school for five years (2016–2021). STEM standards were developed with the conceptual apparatus expansion (STEM literacy means not only knowing the content of science, technology, engineering, or mathematics as such but understanding the logic that will lead to the content assimilation).

In 2012, the Institute for the Promotion of Science and Technology and the Southeast Asian Ministers of Education Organisation officially introduced STEM education in Thailand. Both achievements (with sometimes very specific national characteristics) and unresolved problems are useful for studying. The high complexity issues here are the changing roles of the teacher (interdisciplinary, creative approach to curriculum) and the learner (creative perception and influence on curriculum materials). It's about the need for strong leadership in teaching and the challenges teachers face during integrated STEM lessons (Teo et al., 2021).

The transition from an agrarian to a highly industrial economy 1983–2013 in Thailand is considered the STEM education introduction consequence. The following sectoral changes in GDP took place: the agriculture share decreased by more than 10 pp. (from 21.4% to 11.3%), and the industry and services shares increased by almost 7 pp. (from 30.1% to 37.0%) and more than 3 pp. (from 48.5% to 51.7%), respectively. The exports structure changed as follows: the agricultural products share, in general, decreased by more than 3 times (from 61.4% to 18.2%), while machinery and transport equipment increased by more than 7 times (from 5.6% to 46,8%) (Asian Development Bank, 2015).

For comparison: according to the World Bank in the period 1983–2013, Thailand's territory was 513.1 sq. km. (Ukraine's – 603.6 sq. km.), Thailand's population increased from 48.7 to 69.6 million (Ukraine's – decreased from 50.6 to 45.5 million).

The foreign experience study in the STEM education implementation has shown the flexibility of its tools with the modification possibility in accordance with certain historical prerequisites and target guidelines. The program documents of the Recovery of Ukraine from the War Consequences contain relevant guidelines for further scientific research. The introduction of public-private partnerships in Ukraine's professional education opens up opportunities for a comprehensive solution to educational and economic problems. Relevant for further research is the successful experience of emphasizing the formation of entrepreneurial potential, which was implemented in STEM education in Thailand.

**Keywords:** economic development model, post-war recovery, STEM education, Thailand, Ukraine.

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