

# **ASEDU-2020: 1st International Conference on Advances in Science, Engineering and Digital Education**

«Strategies for the formation of lean competencies of  
students in the educational process of the university»

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# Materials and methods

## Respondents

208 3-4 year students mastering undergraduate programs in the following areas of preparation:

- "Economics (Accounting, Analysis and Audit)"
- "Economics (Finance and Business Analytics)"
- "Management (Production Management)"
- "State and Municipal Administration (Regional and Municipal Administration)"

## Formative experiment

Strategies for building lean competencies of students:

- Formal learning strategy
- Practical Learning Strategy
- Hidden Curriculum Strategy
- Mixed strategy

## Criterion-level apparatus

Lean competency components:

- Knowledge and understanding
- Skill
- Implementation

The levels of lean competencies formation correspond to the first three levels of the international classification of fundamental lean competencies:

- Awareness level (1A)
- Diagnostic and Analysis Level (1B)
- Improvement and implementation level (1C)

# Results and discussion

Formation of lean competencies of students by levels			
Experimental group	Awareness level (1A)	Diagnostic and Analysis Level (1B)	Improvement and implementation level (1C)
Experimental group №1	79,31%	20,69%	0,00%
Experimental group №2	11,77%	84,31%	3,92%
Experimental group №3	48,98%	44,90%	6,12%
Experimental group №4	29,79%	44,68%	25,53%

Statistical significance of the formation of the components of lean competencies of students (analysis of variance according to the F-criterion of Fisher)				
Components	F <sub>emp</sub> ; F <sub>cr</sub> =265 at p≤0,05; F <sub>cr</sub> =388 at p≤0,01			
	Experimental group №1	Experimental group №2	Experimental group №3	Experimental group №4
Knowledge and understanding	561	214	496	534
Skill	315	428	398	628
Implementation	122	299	276	312

# Conclusions

- The conducted pedagogical experiment showed the greatest efficiency of the hidden curriculum strategy and mixed strategy in the formation of lean competencies of students in the educational process of the university, as well as the limited use of isolated strategies of formal and practical learning. Each of the strategies that have proven effective has certain disadvantages.
- To implement the hidden curriculum strategy, a powerful organizational resource is required, since this strategy requires agreement at the planning and implementation level in terms of the content and technologies of teaching the activities of many teachers. The mixed strategy is quite resource intensive. The simultaneous use of other strategies in a mixed strategy format can harm other aspects of educational activity, in contrast to the formation of lean competencies of students.