

THE EVALUATION OF DIVERSITY OF EDUCATIONAL ENVIRONMENTAL MODELS OF LATVIAN RURAL SCHOOLS

Latvijas lauku skolu izglītības vides modeļu daudzveidības izvērtējums

Irēna Katane

Latvia University of Agriculture, Latvia

E-mail: irena.katane@inbox.lv

Anna Laizāne

Latvia University of Agriculture, Latvia

E-mail: anna_laizane@inbox.lv

Abstract. *Under conditions of changes and instability in any state rural schools are faced to look for different directions of development in order to manage in the rural areas. Thus the inner structure of rural schools becomes complex and causes formation of new educational environmental models of Latvian rural schools. The aims of the article: 1) to give substantiation of the concept model; 2) to give classification of educational environmental models of rural schools; 3) to emphasize the advantages of cross-school mentoring seminars; 4) to define the most suitable and least suitable environmental model of Latvian rural schools for sustainability in the future perspective on grounds of the results of five cross-school mentoring seminars that were held in 2011.*

Keywords: *advantages of cross-school mentoring seminars, educational environmental models of rural schools, model.*

Introduction

Rural schools are one of the most important educational resources of any country because they reflect traditions and their originality. In the period of time of changeability rural schools search new and innovative opportunities in order to preserve their viability nowadays and sustainability in the future perspective. Thus many rural schools have become complex in their structure and functions, but there are still rural schools that work traditionally, without any initiative to change something in the inner educational environment of their rural schools. What is more, many rural schools underwent the process of reorganization, therefore losing their independence and becoming branch offices of rural schools as centers or changed their status, for instance, basic school ⇒ preschool, etc. There was carried out the research on the evaluation of diversity of educational environmental models of Latvian rural schools during the forming experiment – cross-school mentoring seminars *Rural Schools as the Fluctuation of Educational Environment in Latvia and Abroad of the 21st Century* that were held in 2011 in Zemgale and Latgale regions with the aim to provide the exchange of innovative working experience among rural schools that promotes and facilitates further self-development and sustainability of rural schools in Latvia, gathering 111 experts.

The **aims** of the article: 1) to give substantiation of the concept *model*; 2) to give classification of educational environmental models of rural schools; 3) to emphasize the advantages of cross-school mentoring seminars; 4) to define the most suitable and least suitable environmental model of Latvian rural schools for sustainability in the future perspective on grounds of the results of five cross-school mentoring seminars.

The **methods** of the article are: 1) study of scientific literature; 2) the forming experiment in the way of cross-school mentoring seminars; 3) the questionnaire *The Evaluation of Educational Environmental Models of Rural Schools*; 4) mathematically statistical analysis of acquired data by SPSS software 17.0.

Discussion

In the beginning of the article the authors would like to emphasize the concept *model* and its importance for researches on educational environmental models of rural schools in the field of pedagogy.

The base of significance for *modelling method* is concerned to be a model. The concept *model* is used in many scientific branches, for example, psychology, fine arts etc. Model is artificially created object in the way of scheme or physical construction, in the forms or formulas of signs that are very similar to research object or phenomenon and reproduce in a simple way a structure, features, coherence and relationship among elements of proper objects (Дахин, 2010). Models are classified in the following way (Богатырев, Устинова, s.a.):

- 1) *physical models* that have the same nature that is closed to original;
- 2) *applied mathematical models* whose physical nature differs from prototype, but there is possible a mathematical description of original behaviour;
- 3) *logically semiotical models* that are constructed from special signs, symbols and structural schemes.

In the connection with modelling of educational environmental models of rural schools, firstly, there are three elements – the researcher, researchable object and result – model, secondly, the model of educational environment of rural school is a logically semiotical model as it shows structures and relations between them.

The abroad examples of diversity of educational environmental models of schools (Balázs, s.a.; Павлова, s.a.) reveal that: 1) Hungarian basic schools offer such models as forest schools, Eco-schools; 2) Russian rural school *Сельцовская средняя общеобразовательная школа имени Е.М. Мелашенко* has developed according to three projects in the following directions: the school as the center of agro-ecological education (Russian - *школа как центр аграрно-экологического образования*), the rural school – school of equal opportunities (Russian - *сельская школа – школа равных возможностей*) and the rural school – center of social adaptation (Russian - *сельская школа – центр социальной адаптации*); etc. These examples prove that nowadays rural schools search innovative ways of preservation of their viability and sustainability in the future perspective.

After examination and evaluation of Latvian educational environmental models of rural schools, the authors of the article have divided them in four main groups:

1. *Traditional educational environmental models* offer the most widespread educational environmental models such as a basic or secondary rural school (functioning of schools responds to the Educational Law of Latvian Republic, the school's functions correspond to pupils' audience accordingly to basic or secondary school's educational programs). The school's operation is without any changes because, firstly, *the school's administration does not see any danger for school's existence and sustainability in future*, there is enough number of pupils and set of forms that have not substantially changed in the last years, that is why the rural school does not want to change anything in its every day work because the basic audience is saved – schoolchildren and youngsters, secondly, *the school's administration and all personnel perceive danger of school's existence and its sustainability in future* because the number of pupils and forms have decreased or it has been always a situation that the amount of pupils and forms were very low. Therefore the school as an environmental system is not opened to changes from inside - („from the bottom”), but waits for favourable reforms from outside - („from the top”).

2. *Educational environmental models of structural reorganization* include multi-structural educational environment. It is related to comprehensive schools that as a result of the optimization in the time of the reform in 2009/2010 school year have become the component of the multi-structural educational environment or substructure: 1) have become a multi-structural educational environmental center that has got one or more branch offices; 2) have lost their independence and were joined to some rural secondary school or basic school in such way becoming the branch office of this particular school.

3. *Multi-functional and multi-structural educational environmental models within the framework of one school* encompass rural schools that offer multi-divisional educational environment for all rural community because the rural schools are social-cultural environments which offer the formal and non-formal education in the aspect of life-long and wide-long learning. By broadening target audience and functions in the aspect of a person's age period 'down' – preschool and school age children and 'up' – adult formal and non-formal education, rural schools as an educational environment system form new substructures.

4. *Combined (mixed) educational environmental models* include the features of a multi-structural and multi-functional educational environmental model. The rural school as a multi-structural educational center or as a branch office broadens its functions and increases its target audience by offering a wide range of formal and non-formal educational programmes.

In order to find out the most and least suitable educational environmental models of rural schools, the authors of the article organized the forming experiment that was carried out in the form of five cross-school mentoring seminars *Rural*

Schools as the Fluctuation of Educational Environment in Latvia and Abroad of the 21st Century and were held in October and November, 2011 in five different rural schools – Jaunsilavas Basic School, Valles Secondary School, Riebinu Secondary School and Annas Brigaderes Basic School.

After cross-school mentoring seminars the authors could define certain *advantages of them*, for example, the participation of the majority of representatives of the particular school; the knowledge acquisition in the concrete issue; the possibility to share experience with the representatives of other schools and learn new practical things in the connection with the topic of the seminar; the solving of particular problems and questions; the use of evaluation skills; the facilitation of the cross-school cooperation and getting into the contact with other representatives of the seminar and as a result of this cooperation cross-schools' nets of collaboration are formed.

To find out the point of view of experts about the most and least suitable environmental model of rural schools for sustainability of Latvian rural schools in the future, the questionnaire *The Evaluation of Educational Environmental Models of Rural Schools* that consisted of two tasks was handed out. In the frames of the first task each participant as an inner expert had to evaluate its own represented rural school's educational environment model.

The results of the first cross-school mentoring seminar (see Table 1) show that 71% of experts of the seminar see their represented rural schools' educational environmental model as the *multi-functional and multi-structural educational environmental model within the framework of one school*, but 18% of experts of the seminar admitted that their existing educational environment of rural school is the *combined (mixed) educational environmental model*. What is more, 11% of experts considered that their educational environment of rural school corresponds to the *traditional educational environmental model*. None of the first cross-school mentoring seminar's experts marked the *educational environmental model of structural reorganization*.

The second cross-school seminar's results show that 83% of experts evaluated their represented rural schools as the *multi-functional and multi-structural educational environmental model within the framework of one school*, but 17% - as the *combined (mixed) educational environmental model*. Other types of educational environmental models of rural schools were not marked in the questionnaire by experts.

The third cross-school mentoring seminar results reflect that 73% of experts regard their rural schools as the *multi-functional and multi-structural educational environmental model within the framework of one school* and the *combined (mixed) educational environmental model* appeared in 19% evaluation of experts, but 8% experts their educational environment of rural school evaluated as the *traditional educational environmental model*. None from the third cross-school mentoring seminar had chosen the *educational environmental model of structural reorganization*.

The fourth cross-school mentoring seminar's results demonstrate that all experts (100%) evaluated their represented rural schools as the *multi-functional and multi-structural educational environmental model within the framework of one school*. In the fifth cross-school mentoring seminar all experts (100%) evaluated their rural school as the *multi-functional and multi-structural educational environmental model within the framework of one school*.

There were more representatives of rural schools in the first, second and third cross-school mentoring seminars that is why there is a sufficiently great representation of educational environmental models in the evaluation of experts. But in the fourth and fifth cross-school mentoring seminars mainly one school's representatives had participated.

Table 1

The Evaluation of Educational Environmental Models of Rural Schools

Nr.	The educational environmental model of rural schools	Proportion coefficient of indications (%)				
		1 st seminar	2 nd seminar	3 rd seminar	4 th seminar	5 th seminar
1.	The traditional educational environmental model	11	0	8	0	0
2.	The multi-functional and multi-structural educational environmental model within the framework of one school	71	83	73	100	100
3.	The educational environmental model of structural reorganization.	0	0	0	0	0
4.	The combined (mixed) educational environmental model	18	17	19	0	0

After summarization of results there was concluded that the *multi-functional and multi-structural educational environmental model within the framework of one school* is brought to the forefront, afterwards follows the *combined (mixed) educational environmental model*, but on the third place is the *traditional educational environmental model*. There was not any rural school whose educational environment would be evaluated according to the *educational environmental model of structural reorganization*.

In the next stage of the data processing, there was performed the secondary processing of data in order to obtain the conclusive statistics. We were interested, whether there exists the statistically significant unanimity in the experts' opinions of cross-school mentoring seminars. There were advanced hypotheses: H_0 : *there is not an unanimity among five cross-school mentoring seminars' experts self-evaluation of educational environmental models of rural schools*; H_1 : *there is an unanimity among five cross-school mentoring seminars' experts self-evaluation of educational environmental models of rural schools*.

The assessments, given by experts, we processed by SPSS software 17.0, using Kendall's W (tau_c) Test (see Table 2).

Table 2

The Conclusive Statistics of Kendela W Test

N	5
Kendall's W	0.883
Chi-Square	13.244
df	3
Asymp. Sig.	0.004

Since $\chi^2 = 13,244 > \chi^2_{0,05; 3} = 7,81$, but $W = 0,883$, the unanimity or concordance coefficient W is closer to 1 than to 0. *We drew a conclusion* that we reject the null hypothesis H_0 . It means that there is the unanimity among five cross-school mentoring seminars' experts self-evaluation of educational environmental models of rural schools.

The second task was connected with the evaluation of the suitability of educational environmental models of rural schools, ensuring development in the future, grading the suitability of educational environmental models of rural schools according to the environment of the school from 1 (*the most suitable model*) till 4 (*the least suitable model*). There was chosen Friedman test for data mathematical processing, using SPSS software 17.0 that shows whether there is or there is not difference among 4 assessments of educational environmental models of rural schools. The results of five cross-school mentoring seminars are represented in Table 3.

The most suitable educational environmental model in the first cross-school mentoring seminar is considered the *combined (mixed) educational environmental model*: its average rank is 1,69, then it is followed by the *multi-functional and multi-structural educational environmental model within the framework of one school*: 1,81 rank, afterwards it is the *traditional educational environmental model*: 3,15 rank and on the fourth place there is the *educational environmental model of structural reorganization*: 3,35 rank.

It can be concluded that experts of the second cross-school mentoring seminar admitted that the most suitable model is the *combined model of educational environment*, its average rank is 1,62, then follows the *multi-functional and multi-structural model of educational environment in the frame of one school* with an average rank 2,31, afterwards the *structural reorganization's model of educational environment* – 2,85 rank and on the fourth place is the *traditional model of educational environment* – 3,23 rank.

In addition to, the conclusive statistics of the third cross-school mentoring seminar reveals that the most suitable model of educational environment of rural schools is considered the *combined model of educational environment* with an average rank 1,63, then follows the *multi-functional and multi-structural model of educational environment in the frame of one school* – 1,70 rank, then the *structural reorganization's model of educational environment* – 3,07 rank and the last is the *traditional model of educational environment* – 3,59 rank.

Table 3

The Conclusive Statistics of the Cross-school Mentoring Seminars

Number of seminars	Educational Environmental Models	N (number of cases)	Mean (average rank)	Std. Deviation	Minimum	Maximum
1 st seminar	The educational environmental model of structural reorganization	26	3,15	0,834	2	4
	The multi-functional and multi-structural educational environmental model within the framework of one school	26	1,81	0,634	1	3
	The traditional educational environmental model	26	3,35	0,846	1	4
	The combined (mixed) educational environmental model	26	1,69	1,011	1	4
2 nd seminar	The traditional model of educational environment	13	3,23	0,832	1	4
	The multi-functional and multi-structural model of educational environment in the frame of one school	13	2,31	1,109	1	4
	The educational environmental model of structural reorganization	13	2,85	1,144	1	4
	The combined model of educational environment	13	1,62	0,768	1	3
3 rd seminar	The traditional model of educational environment	27	3,59	0,694	1	4
	The multi-functional and multi-structural model of educational environment in the frame of one school	27	1,70	0,669	1	3
	The structural reorganization's model of educational environment	27	3,07	0,781	2	4
	The combined model of educational environment	27	1,63	0,792	1	3
4 th seminar	The traditional model of educational environment	19	3,47	0,697	2	4
	The multi-functional and multi-structural model of educational environment in the frame of one school	19	1,63	0,597	1	3
	The structural reorganization's model of educational environment	19	3,16	0,688	2	4
	The combined model of educational environment	19	1,74	1,046	1	4
5 th seminar	The traditional model of educational environment	23	3,00	0,426	2	4
	The multi-functional and multi-structural model of educational environment in the frame of one school	23	1,61	0,499	1	2
	The structural reorganization's model of educational environment	23	3,74	0,689	1	4
	The combined model of educational environment	23	1,65	0,935	1	4

On the contrary think the experts of the fourth cross-school mentoring seminar. To their mind, the most suitable model of educational environment is the *multi-functional and multi-structural model of educational environment in the frame of one school* with its average rank 1,63, then follows the *combined model of educational environment* with a rank of 1,74, the next one is the *structural reorganization's model of educational environment* – 3,16 rank and the *traditional model of educational environment* with 3,47 rank.

However, experts of the fifth cross-school mentoring seminar propose that the most suitable model of educational environment of rural schools is the *multi-functional and multi-structural model of educational environment in the frame of one school* with its average rank 1,61, then follows the *combined model of educational environment* with the rank of 1,65, the next one is the *traditional model of educational environment* – 3,00 rank and the *structural reorganization's model of educational environment* – 3,74 rank.

From the given analysis of the conclusive statistics it can be drawn the conclusion that according to the opinions of experts the most suitable educational environmental model for sustainability of rural schools ensuring development in the future is the *combined (mixed) educational environmental model* and the least suitable educational environmental model – the *traditional model of educational environment*.

In order to determine coincidence among the assessments of experts, there were advanced two hypotheses: H_0 : the point of view of experts of cross-school mentoring seminars about models of educational environment of rural schools *is similar*; H_1 : the point of view of experts of cross-school mentoring seminars about models of educational environment of rural schools *is different*. The hypotheses were tested by Friedman test.

There were gained the following comparison results of the experts' assessments of five cross-school mentoring seminars (see Table 4):

- The 1st cross-school mentoring seminar: since $\chi^2 = 35,492 > \chi^2_{0,05; 3} = 7,81$, but Asymp. Sig.= 0,000 $< \alpha = 0,05$, then **H_0 is rejected and H_1 is accepted**. We drew a conclusion that the point of view of experts of the first cross-school mentoring seminar about models of educational environment of rural schools *is not similar*, it is different.
- The 2nd cross-school mentoring seminar: since $\chi^2 = 11,492 > \chi^2_{0,05; 3} = 7,81$, but Asymp. Sig.= 0,009 $< \alpha = 0,05$, then **H_0 is rejected and H_1 is accepted**. We drew a conclusion that the point of view of experts of the second cross-school mentoring seminar about models of educational environment of rural schools *is not similar*, it is different.
- The 3rd cross-school mentoring seminar: since $\chi^2 = 47,222 > \chi^2_{0,05; 3} = 7,81$, but Asymp. Sig.= 0,000 $< \alpha = 0,05$, then **H_0 is rejected and H_1 is accepted**. We drew a conclusion that the point of view of experts of the third cross-school mentoring seminar about models of educational environment of rural schools *is not similar*, it is different.

- The 4th cross-school mentoring seminar: since $\chi^2 = 30,979 > \chi^2_{0,05; 3} = 7,81$, but Asymp. Sig. = 0,000 $< \alpha = 0,05$, then **H₀ is rejected and H₁ is accepted**. *We drew a conclusion that the point of view of experts of the fourth cross-school mentoring seminar about models of educational environment of rural schools is not similar, it is different.*
- The 5th cross-school mentoring seminar: since $\chi^2 = 45,522 > \chi^2_{0,05; 3} = 7,81$, but Asymp. Sig. = 0,000 $< \alpha = 0,05$, then **H₀ is rejected and H₁ is accepted**. *We drew a conclusion that the point of view of experts of the fifth cross-school mentoring seminar about models of educational environment of rural schools is not similar, it is different.*

Table 4

The Friedman Test's Conclusive Statistics of Five Cross-school Mentoring Seminars

The 1 st Cross-school Mentoring Seminar		The 2 nd Cross-school Mentoring Seminar	
N	26	N	13
Chi-Square	35,492	Chi-Square	11,492
Df	3	df	3
Asymp. Sig.	0,000	Asymp. Sig.	0,009
The 3 rd Cross-school Mentoring Seminar		The 4 th Cross-school Mentoring Seminar	
N	27	N	19
Chi-Square	47,222	Chi-Square	30,979
Df	3	df	3
Asymp. Sig.	0,000	Asymp. Sig.	0,000
		The 5 th Cross-school Mentoring Seminar	
		N	23
		Chi-Square	45,522
		df	3
		Asymp. Sig.	0,000

Statistical results of Friedman test show that there is not any coincidence of the point of views of experts of five cross-school mentoring seminars.

Conclusions

- Models of educational environment of Latvian rural schools are categorized into four main groups of models of educational environment: 1) traditional educational model of environment; 2) educational environmental model of structural reorganization; 3) multi-functional and multi-structural educational model of environment in the frame of one school; 4) combined educational model of environment.

- The research on educational environmental models of Latvian rural schools reflects that educational environment is changing and will be undergoing several changes in the rural areas of Latvia even next years because reorganization and closure of schools are still in the realization process. It becomes diverse in structure allowing to attract investments and broader the educational facilities for native inhabitants of a particular rural district. Unfortunately, no one can foresee

how long a certain rural school will function, as changes are rapid and unpredictable.

- The most suitable educational model of environment as a guarantee for sustainability of Latvian rural schools in the future is regarded the *combined educational model of environment* by experts of cross-school mentoring seminars, the second recognized model followed the *multi-functional and multi-structural educational model of environment in the frame of one school*, as fairly unsuitable educational model of environment was admitted the *structural reorganization educational model of environment* but as the least suitable – *the traditional educational model of environment*.

Bibliography

1. Balázs, É. (s.a.). Internet online Microsoft Power Point presentation *New models of education in Hungarian rural primary schools, to assist sustainable development*. National Institute for Public Education.
2. Павлова, В.К. (s.a.). Актуальные направления развития сельской школы в современных условиях. с.3-21. (in Russian) Retrieved February 6, 2012
http://sv-sidorov.ucoz.com/Innovatsii/innovacionnye_modeli_selskikh_shkol.doc
3. Дахин, А.Н. (2010). Моделирование в педагогике. Идеи и идеалы, 2010, 1(3) Т. 2., с. 11–20
4. Богатырев А.И., Устинова И.М. (s.a.). Теоретические основы педагогического моделирования: сущность и эффективность. (in Russian) Retrieved February 6, 2012:
http://www.rusnauka.com/SND/Pedagogica/2_bogatyrev%20a.i..doc.htm

Kopsavilkums

Raksta virsraksts *Latvijas lauku skolu izglītības vides modeļu daudzveidības izvērtēšana* norāda uz to, ka raksta tematika ir saistīta ar pētījumu, kas skar lauku skolu izglītības vides modeļu daudzveidības konstatēšanu un izglītības vides modeļu klasifikāciju četrās grupās, kā arī izglītības vides modeļu izvērtējumu (vispiemērotākais un visnepiemērotākais izglītības vides modelis skolas ilgtspējīgas attīstības nodrošinājumam nākotnē) veidojošā eksperimenta starpskolu mentoringa semināru laikā *Divdesmit pirmā gadsimta lauku skolas kā izglītības vides mainība Latvijā un ārzemēs*. Pēc datu apstrādes ar SPSS 17.0 datorprogrammu ir atklājies, ka vispiemērotākais izglītības vides modelis Latvijas lauku skolu ilgtspējības nodrošināšanai nākotnē - *kombinētais izglītības vides modelis*, visnepiemērotākais izglītības vides modelis ir *tradicionālais lauku skolas izglītības vides modelis*. Autores veikto pētījumu atbalstīja Eiropas Sociālā fonda projekts *Atbalsts LLU doktora studiju īstenošanai*.

Irēna Katane	Latvia University of Agriculture, Institute of Education and Home Economics J.Čakstes bulv.5, Jelgava, LV 3001, Latvia E-mail: irena.katane@inbox.lv Phone: (+371) 29110582
Anna Laizāne	Latvia University of Agriculture, Institute of Education and Home Economics J.Čakstes bulv.5, Jelgava, LV 3001, Latvia E-mail: anna_laizane@inbox.lv Phone: (+371) 22145337