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QUALITY OF THE SECONDARY SCHOOL EDUCATIONAL ENVIRONMENT: A COMPARATIVE STUDY USING THE SACERS RATING SCALE*

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The quality of education is the main priority in most states' policy, and Russia is no exception. Russia pays much attention to the accessibility of quality education for all citizens regardless of their place of residence and social status. The quality of education is considered a complex characteristic of educational activity and students' training. We will consider it within the framework of this article in the context of the assessment and development of the school educational environment. The quality of the educational environment is provided by the following factors: content components relating to the interaction between participants of an educational relationship; organization of the educational process; conditions for professional staff growth and comfortable environment for exceptional children.

The study using the SACERS rating scale revealed that schools in different districts of the metropolitan area differ in terms of providing students with equal conditions in their educational environment. The most significant differences were revealed in the following components of the educational environment: the creation of organizational conditions for extracurricular activities and additional education; interior solutions to ensure privacy, the comfort of communication, and motor activity; conditions for the learning and development of students with special educational needs. The study showed that schools with a higher quality index of the educational environment have quite homogeneous educational conditions. They provide relatively equal access to quality education compared to a group of structural units with a lower quality index. The differences in the compared educational organizations specifying the heterogeneity of educational conditions are related to characteristics such as the variability or uniformity in the use of resources, resource availability or its active use, whether it is a systematic or fragmented working process, and the focus on control norms or development.

Keywords: *variability and use of school resources, quality of the educational environment, heterogeneity of educational conditions, educational environment, equal access to quality education, SACERS rating scale, schools with different educational environment quality indices.*

Today, the issues of providing equal access to quality education are relevant not only for the Russian Federation but for many countries. In Russia, access to quality education for all citizens regardless of their place of residence and social status is a priority goal of the State's policy on education.

What constitutes quality education today? How can educational organizations, many of them lacking resources, integrate the traditional approach to education and the new demands of our

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time? These new demands include flexible curricula, staff training, retraining, continually updated textbooks and materials, access to new information and communication technologies, and deep international cooperation. It should be noted that the search for answers to these questions has been going on for quite some time, as the idea of what education should be is changing alongside society's development.

According to the results of international comparative studies (PISA, PIRLS, TIMSS, ICCS, ICILS), the Russian Federation demonstrates positive results in ensuring education equality. Russian students show the lowest Achievement gap among students from the highest and lowest socio-economic groups [1].

The improvement of education quality at a state and educational organization level is carried out as follows: through assessing the quality of training (learning achievements) and the educational activities conditions; through improving the quality of management decisions; through the development of educational conditions in educational organizations.

According to World Bank experts, Russia's effectiveness in ensuring equal educational opportunities for students to receive a quality education is determined by serious and sustainable measures to improve educational policy and focus on building educational infrastructure [1].

The study revealed that Moscow's educational infrastructure has a much higher index than other regions, both in the education system as a whole and in the context of general education [2, 3]. The positive dynamics in Moscow's education quality was revealed in the framework of the independent assessment, which was carried out according to criteria such as openness and accessibility of information about the organization; comfort conditions; service accessibility for exceptional children; friendliness, politeness of the social sphere employees; satisfaction with the conditions of services [4]. Thus the quality of education should be considered. First, it is necessary to consider a change in dynamics. Secondly, consider those resources through which specific results have been achieved [5, 6].

The results of research among the schools in the capital region allowed us to get a diverse view on the heterogeneous development of educational conditions, which requires finding management solutions that guarantee quality learning for each school student [7, 8].

Most parents associate education attainment with life success and place high demands on the quality of education [9]. At the same time, it should be noted that the availability of high-quality education differs between the administrative districts of Moscow. Children from the city center have a better opportunity of getting a quality education, even if their parents do not search for the best school for their child.

The outlined contradiction between the apparent progress in ensuring equal access to quality education, both nationwide and in the metropolitan region, and the presence of sure signs of Elitism in education has led to an interest in this problem and an empirical study of the educational environment in Moscow schools.

Methods and organization of research into the educational environment using the SACERS rating scale

SACERS (School-Age Care Environment Rating Scale) [10, 11] was used as an independent instrument to assess the educational environment. In the present study, we used a version of the method adapted to the conditions of the Russian school system [12, 13].

The SACERS scales are a logical continuation of the international educational environment diagnostic line, in particular of the ECERS-R scale which was designed to study the quality of preschool education [14–16].

The SACERS methodology consists of seven scales: Indoor Space and Furnishings, Health and Safety, Activities, Interactions, Program Structure, Staff Development, Special Needs

Supplementary Items. These scales are represented by forty-eight indicators. Each is assessed on a 7-point scale, which reveals the level of development of the educational environment: Poor, Minimal, Good, and Excellent.

The study of the educational environment in Moscow schools was conducted using a random sample – 58 structural units of educational organizations in Moscow from nine districts (Central, Northern, North-Eastern, Eastern, South-Eastern, Southern, South-Western, Western, and North-Western).

Research methods: participant observation, survey. Methods of mathematical data processing: mean, variance, standard variations, medians, contingency tables, a confidence interval for the mean, Student's T-test by Welch's method, analysis of variance.

Research results of the educational environment using the SACERS rating scale

Let us turn to the research results of the Moscow schools' educational environment using the SACERS scales. The quality index of the Moscow schools' educational environment amounts to 5.21 points. This value represents a Good level of development of the educational environment and indicates the sufficient potential of Moscow educational organizations in terms of creating educational conditions.

The highest values were obtained in the following scales: Interaction (5.81 scores), Staff Development (5.63 scores), Program Structure (5.34 scores).

High scores indicate:

– a good potential of Moscow schools in terms of interaction between students and staff, staff and students, and staff and parents

– positive trends in providing varied programs of additional education and extracurricular activities and use of the city's socio-cultural space

– favorable conditions created in the Moscow educational system in terms of staff professional growth. Moscow schools can take professional growth courses both based on their educational organizations (when an invited lecturer works with staff) and based on other educational organizations in Moscow [12].

The value of the Health and Safety indicator (5.08 points) indicates that educational institutions currently have sufficient capacity to organize nutrition for students and the work of medical staff per the needs of students. An adequate number of systematic activities to protect health and promote healthy lifestyles are planned and carried out in educational institutions in Moscow.

Lower scores compared to other indicators were found on the scales Activities and leisure (4.65 points), Space and furnishings (4.64 points), and Special needs (4.3 points). It indicates that:

– There is an insufficient amount of special facilities in Moscow schools, limited resources to implement programs (variety of materials, facilities), lack of free access to materials outside of specially organized classes with staff

– The main problems of the school space are as follows: lack of educational space and inability to transform the space in order to organize various forms of learning and extracurricular activities. It is caused by the typical design of school buildings (inconvenient layout of rooms, which hinders movement, limits the implementation of a variety of activities, does not provide sufficient facility visibility)

– As a rule, in Moscow educational institutions, the tasks and features of inclusive education are poorly considered. There are poor conditions for the education and development of exceptional children.

The average values for 48 indicators of the educational environment are presented in Table 1. Now let us analyze them.

Table 1

Average values of the indicators of the educational environment using SACERS scale (as a whole)

Scale	Score
Space and Furnishings	
1.1. Indoor space	4,93
1.2. Space for gross motor activities	5,29
1.3. Space for privacy	4,05
1.4. Room arrangement	3,62
1.5. Furnishings for routine care	6,07
1.6. Furnishings for learning and recreational activities	5,40
1.7 Furnishings for relaxation and comfort	3,71
1.8 Furnishings for gross motor activities	4,29
1.9. Access to host facilities	6,28
1.10 Space to meet personal needs of staff	4,62
1.11. Facilities for the school staff individual work	4,36
Health and Safety	
2.12. Health policy	5,26
2.13. Health practices	5,19
2.14. Emergency and safety policy	5,39
2.15. Safety regulations	4,77
2.16. Attendance	6,76
2.17. Departure	5,31
2.18. Meals	5,21
2.19. Personal hygiene	4,12
Activities	
3.20. Arts and crafts	4,02
3.21. Music and movement	5,17
3.22. Blocks and construction	4,59
3.23. Drama/theater	4,76
3.24. Language/reading activities	5,41
3.25. Math/reasoning activities	5,03
3.26. Science/nature activities	5,05
3.27. Cultural awareness	4,57
Interactions	
4.28. Greeting/departing	5,13
4.29. Staff-child interactions	5,90
4.30. Staff-child communication	5,47
4.31. Staff supervision of children	5,91
4.32. Discipline	6,47
4.33. Peer interactions	6,41
4.34. Interactions between staff and parents	6,31
4.35. Relationship between program staff and classroom teachers	5,91

End of Table 1

Scale	Score
Program Structure	
5.36. Schedule	4,00
5.37. Free choice	5,97
5.38. Relationship between program staff and program host	5,91
5.39. Use of the city's socio-cultural space	5,98
5.40. Use of electronic resources	5,79
Staff Development	
6.41. Opportunities for professional growth	5,83
6.42. Staff meetings	5,89
6.43. Supervision and evaluation of staff	5,84
Special Needs Supplementary Items	
7.44. Provisions for exceptional children	4,31
7.45. Individualization	3,86
7.46. Multiple opportunities for learning and practicing skills	4,19
7.47. Peer interactions	5,14
7.48. Promoting Communication	5,36

The highest scores were obtained in the Attendance and Discipline indicators (6.76 and 6.47 points, respectively). This reflects the general trend observed in schools, where the main focus is shifted to the controlling-disciplinary impact on students and routine moments.

The indicator Access to host facilities (electives, CAS activities, clubs) (6.28 points) has presented a high score. The combination of schools with different specializations into educational complexes allowed the expansion of the range of these programs. However, the availability of specially equipped rooms, sufficient materials, and equipment for implementing all areas of extracurricular activities and additional educational services is a lacking factor in many educational organizations.

High values were identified for the indicator of the furnishings for routine care availability (Space and furnishing scale). This indicator shows a sufficient amount of furnishings in the canteen and classroom, which, as a rule, is in good condition and appropriate to the age and height of students.

Almost all indicators of the Interactions scale are close to the Excellent level. For example, Peer interactions and Interaction between staff and parents have 6.41 and 6.31 points, respectively. At the same time, the values of Staff-child interaction, Staff supervision of children, Relationship between program staff and classroom teachers are within the Excellent level.

The lowest values were obtained for the Space and furnishings indicators, namely for the Room arrangement indicator (3.62 points). This data indicates a lack of well-equipped, specialized spaces for various activities, insufficient spaces and rooms for independent use by children, spaces for homework or other independent work, and outdated buildings that do not meet the modern requirements. Furnishings for relaxation and comfort is not a sufficiently represented area (3.71 points). In educational organizations, we often observe a limited number of Home-like spaces, the lack of Coziness of recreational areas, and the absence of places for recreation and change of students' activities.

Low values were revealed for the indicator Individualization (3,86 points). Difficulties in creating equal educational conditions for exceptional students are associated with the organization of the internal space in large schools.

The overall picture of educational environment comfort zones is presented in Table 2.

Table 2

Comfort zones of educational environment in Moscow schools

ZONES OF COMFORT
Space and Furnishings
Furnishings for routine care Access to additional educational services
Health and Safety
Attendance
Interaction
Discipline, peer interactions, the interaction between staff and parents
Program Structure
Variety of additional education programs and extracurricular activities, use of the social and cultural space of the city

A comparison of the contrasting groups identified according to the educational environment quality index was the next stage of the analysis: clusters A and B. Let us specify that the division of the sample into clusters distinguished two contrasting groups: 1) cluster A – an educational environment quality index from 3, 06 to 4,69 points (15 structural units); 2) cluster B – an educational environment quality index from 5,83 to 7 points (14 structural units). Cluster C included structural units with average values of the educational environment quality index. This group was not further compared with clusters A and B.

The educational environment quality index in cluster B was 6.36 points, which is close to the highest Excellent level. In cluster A, the quality index was 4.26 points, not reaching the Good level.

When comparing the highlighted groups, it should be noted that the average values of the subscales in group A are within 6–7 points (Excellent level) compared to group B, where the values are within 3–5 points (Good level). The greatest differences in quality indices are observed in the subscales of Space and Furnishings, Health and Safety, Activities, and Special Needs Supplementary Items. This reflects the overall picture for the sample as a whole. Significant differences were found in all subscales (Table 3).

Table 3

The mean values of the educational environment's components quality indices and the significance of their differences in groups A and B

Subscales	Group A	Group B	Median differences
	<X>	<X>	Yes/ No
1. Space and Furnishings	6,08	3,60	Yes
2. Health and Safety	6,49	4,36	Yes
3. Activities	6,17	3,94	Yes
4. Interactions	6,72	5,23	Yes
5. Program Structure	6,56	4,80	Yes
6. Staff Development	6,90	4,91	Yes
7. Special Needs Supplementary Items	5,82	3,34	Yes

The most significant differences in groups A and B were found in the Special Needs Supplementary Items scale. This may indicate that, in terms of education for exceptional children in schools with a lower index, it is necessary to create special conditions for children pertaining to different categories – hearing impaired, severe speech disorders, Autistic Spectrum Disorders. Thus, the school space and equipment should meet recommendations of the psychological, medical and pedagogical commission on educational conditions. The needs of exceptional children should also be considered, along with the requirements for special conditions presented in the Federal Educational Standard for students with disabilities. Conditions must be created for exceptional children to participate in educational and extracurricular activities and include them in fellow students' communities.

The data from the Special Needs Supplementary Items scale (3.34 points) of the Group B schools indicates that these educational organizations created special conditions related to the transformation of the subject-space environment. They have functional spaces, some didactic materials, and equipment for teaching children with disabilities. Interaction between the support specialists and teachers is built to allow consistent and effective work. Separate conditions for interaction between unimpaired and exceptional children are created (exceptional children are not excluded from events and activities, ensuring their inclusion at the level possible for them).

As shown in Table 4, in group A the standard deviation ranges from 0.37 to 1.50, compared with group B, where this ranges from 1.70 to 2.10. This means that the structural subdivisions of Group A schools are more homogeneous according to the highlighted parameters than those of Group B. At the same time, Group A revealed relatively homogeneous conditions for the Interaction and Staff development subscales, while Group B – for the Staff development and Program Structure subscales.

Table 4

The standard deviation value of the quality indices of the educational environment components in groups A and B

Subscales	Group A schools б(X)	Group B schools б(X)
1. Space and Furnishings	1, 44	1,87
2. Health and Safety	1,06	2,10
3. Activities	1,26	2,01
4. Interactions	0,77	1,90
5. Program Structure	1,11	1,72
6. Staff Development	0,37	1,70
7. Special Needs Supplementary Items	1,50	1,80

Analysis of the educational environment in different clusters shows significant differences for most of the educational environment indicators (Table 5). The exceptions include the following: Space for privacy, Health policy, Drama/theater, Greeting/departing, Free choice, Promoting communication.

The indicator Space for privacy revealed low values in both groups (in group A – 4.29 points, in group B – 3.53 points) (Table 5). This means that in most Moscow schools, students often have no opportunity to be alone or in a small group isolated from others. There is a limited amount of space for individual work, including homework. Students do not have the opportunity to use

mobile furnishing to independently organize private areas (for example, with the help of mobile shelving, benches, and bean bag chairs). Teachers rarely organize a variety of individual and small group activities in spaces separate from the main classrooms. Teachers generally prefer activities in classrooms.

Table 5

Mean values of educational environment indicators and the significance of their differences in groups A and B

Indicators	Group A	Group B	Mean differences
	<X>	<X>	Yes / No
1.1. Indoor space	6,43	3,47	Yes
1.2. Space for physical activities	6,50	4,27	Yes
1.3. Space for privacy	4,29	3,53	No
1.4. Room arrangement	5,36	2,53	Yes
1.5. Furnishings for routine care	Not available	Not available	
1.6. Furnishings for learning and recreational activities	6,50	4,87	Yes
1.7. Furnishings for relaxation and comfort	5,36	2,60	Yes
1.8. Furnishings for active recreation	6,07	2,33	Yes
1.9. Access to host facilities	6,86	5,07	Yes
1.10. Space to meet personal needs of staff	6,21	3,40	Yes
1.11. Facilities for the school staff individual work	6,29	2,87	Yes
2.12. Health policy	6,43	5,21	No
2.13. Health practices	6,36	3,93	Yes
2.14. Emergency and safety policy	6,36	4,29	Yes
2.15. Safety practice	6,50	2,71	Yes
2.16. Attendance	Not available	Not available	
2.17. Departure	6,64	4,54	Yes
2.18. Meals	6,93	4,00	Yes
2.19. Personal hygiene	5,71	3,20	Yes
3.20. Arts and crafts	6,50	2,53	Yes
3.21. Music and movement	5,93	4,40	Yes
3.22. Blocks and construction	6,14	3,47	Yes
3.23. Drama/theater	5,86	4,47	No
3.24. Language/reading activities	6,29	4,93	Yes
3.25. Math/reasoning activities	6,21	4,20	Yes
3.26. Science/nature activities	6,43	3,47	Yes
3.27. Cultural awareness	6,00	4,07	Yes
4.28. Greeting/departing	5,93	4,71	No
4.29. Staff-child interaction	6,57	5,20	Yes
4.30. Staff-child communication	6,71	4,27	Yes
4.31. Staff supervision of children	6,93	4,67	Yes
4.32. Discipline	Not available	Not available	

End of Table 5

Indicators	Group A	Group B	Mean differences
	<X>	<X>	Yes / No
4.33. Peer interactions	6,86	6,20	Yes
4.34. Interactions between staff and parents	6,93	5,40	Yes
4.35. Relationship between program staff and classroom teachers	6,86	5,36	Yes
5.36. Schedule	6,07	2,93	Yes
5.37. Free choice	6,64	5,60	No
5.38. Relationship between program staff and program host	6,71	4,93	Yes
5.39. Use of the city's socio-cultural space	6,64	5,27	Yes
5.40. Use of electronic resources	6,71	5,27	Yes
6.41. Opportunities for professional growth	6,86	4,93	Yes
6.42. Staff meetings	6,86	5,29	Yes
6.43. Supervision and evaluation of staff	Not available	Not available	
7.44. Provisions for exceptional children	6,11	2,60	Yes
7.45. Individualization	5,33	2,50	Yes
7.46. Multiple opportunities for learning and practicing skills	5,56	2,40	Yes
7.47. Peer interactions	5,89	4,20	Yes
7.48. Promoting Communication	6,22	5,00	No

As for the other indicators, no significant differences were found between groups A and B. They both have relatively high average values within the Good level (Health policy, Drama/ theater, Greeting/departing, Space for privacy, Free choice, Promoting communication.).

To understand the possible reasons why educational conditions in Moscow schools differ significantly according to some educational environment indicators, let us turn to qualitative analysis. Table 6 presents a characteristic comparison of the educational environment in schools which differ according to the quality index, compiled based on statistically significant differences identified in the quantitative analysis.

The data in Table 6 generally reflects an Increment in the selected indicators from cluster A to cluster B. For example, while educational organizations with a lower quality index (cluster A) have rooms with necessary space, light, and ventilation, schools with a higher quality index (cluster B) are characterized by spacious rooms with light and temperature control. Similar positive changes are noted for other indicators.

Table 6

Comparative Characteristics of the Educational Environment in Schools with a Different Quality Index

Cluster A	Cluster B
A sufficient level of space, light, ventilation, temperature modes; Premises are in good condition	Large, open spaces that are aesthetically pleasing and allow the following: easy movement and activity; placement of furnishings without restricting movement; control of air ventilation and amount of natural light
The classrooms are well visible but not always conveniently located; the purpose of the rooms is uncertain, there are no designated spaces for certain activities	The classroom layout is arranged with dedicated spaces for specific activities. Separated quiet and noisy areas and unoccupied space with all necessary furnishings for independent work
Spacious exterior and some interior activity spaces are used daily. Areas for outdoor activities are organized in the schoolyard	The space for physical activity is large, pleasant, and varies, both inside and outside the building, is used daily, and is separated according to specific age groups
There is minimal stationary and portable equipment for individual or group activity, indoors or outdoors, in good working order	A variety of fixed activity equipment that is easily accessible at all times, sturdy, age-appropriate, and develops various skills. A variety of portable equipment for individual and group play
Staff rooms are not separated from the students' space except for separate restrooms. Storage spaces are available for staff belongings	Staff areas are separated from student spaces, furnished with comfortable furnishings in good condition and comfortable for adults. There is sufficient storage space for personal belongings and work materials
There are small spaces for staff conversations and meetings during the school day, combined with an office space shared with administration. There is storage space for lesson materials	Spacious workspaces for staff and storage space for materials. Sufficient space for staff to meet and discuss and have some privacy, and furnishings appropriate for adults. Staff involved in extracurricular activities have their workspace
There are no obvious safety concerns. Supervision is organized to ensure that safety is observed. Employees have a prescribed policy for emergency and urgent situations	Systematic safety work with staff, students, and parents is implemented. The environment is organized to prevent problems and possible emergencies
Meals are provided on a regular basis under the requirements of Sanitary regulations and standards	The meals are served in a comfortable environment under the requirements of Sanitary regulations and standards; parents are provided with information about their children's nutrition
Basic art materials in good condition are available to students, but their use is regulated	A variety of art materials are freely available to children in the required quantity and configuration. Students are given the opportunity to choose any materials and art activities they wish
The daily schedule exists and students are familiar with it, the activities take place in a repetitive sequence throughout the day. The schedule includes daily physical and speech activities	The schedule includes different types of activities, including outdoor activities, and students may choose activities they like
Conditions for the professional growth of staff involve regular professional growth on the educational organization's grounds and access to reference materials	Conditions for staff growth include a variety of field trips and in-house training activities that take into account the needs and interests of staff and the availability of a professional library, including one in electronic format

When considering the problem of equal access to quality education, it is essential not only to identify and state the differences between educational organizations with High and Good levels of the quality index. It is also important to interpret the possible reasons for determining the

identified differences. In our opinion, such reasons may be caused by the differences in the educational organization's staff attitude towards the formation and development of the educational environment, which are expressed in a number of characteristics or criteria:

– variability or uniformity in the use of resources
– availability of a resource or its active use
– consistency of work or fragmentation
– focus on control norms or development.

The criterion of variability or uniformity in the use of school resources emphasizes the differences between the compared clusters regarding the ability and willingness of the educational organization to provide conditions beyond the required level, to use variability, and to consider the interests and needs of students and staff. This difference lies in the provision of a whole set of conditions, their integrity in the school's educational environment (cluster B), or in the provision of certain specific conditions, their single cases, their uniformity (cluster A).

The resource availability criterion or its active use determines the participants' actions in the environment of the educational complex depending on their needs.

Here is one example from the area of staff professional growth. The availability and active use of educational resources in cluster B are associated with staff participation in various training activities, taking into account the needs and staff interests, which are encouraged by the school administration. On the other hand, the availability of the resource in cluster A only implies regular professional staff growth on the educational organization's grounds, sometimes without considering the needs and staff interests.

The criterion of systematic or fragmented work reflects regular, consistent work with school resources to create a comfortable school environment throughout the day for all participants of the educational process, or lack of work with school resources, respectively. Thus, the educational organizations in cluster B conduct systematic work on safety issues with staff, students, and parents. The environment is organized to prevent problems and possible emergencies. Compared to cluster A, where there are no obvious problems with safety, school security is organized to ensure a safe environment at school. Employees are provided with rules and regulations in case of emergency.

The focus on control norms or development indicates the following differences in the approach to creating educational conditions: creating conditions at a sufficient level for external and internal control, meeting the minimum requirements with regards to the organization of the school educational environment (cluster A), or the desire to develop and move forward to improve the school educational environment, when actions to create conditions are proactive (cluster B).

To a certain extent, the identified differences between the schools, which differ according to the quality index, are due to objective reasons such as the physical and spatial environment indicators. For example, the differences in physical and spatial environment indicators are due to the lack of sufficient space and facilities and the school buildings' design, often 50–60 years old or older. However, the existing differences are determined by the strategy of a particular educational organization. It was either built on the principle of minimum compliance with the requirements or based on proactive actions and preventive measures to improve the quality of education available to every student, involving accessibility and motivation to choose one's educational trajectory.

Conclusion

The quality of the educational environment is provided by the content components associated with the participants' interaction in the educational process, the organization of the educational

process, and the conditions for staff professional growth. Schools' facilities cannot be the only condition for providing quality education.

The group of schools with a higher educational environment quality index has rather homogeneous educational conditions, which provide relatively equal access to quality education compared to the group with a lower educational environment index.

Statistically significant differences between schools with different educational environment quality indices, determining the non-uniformity of educational conditions, are connected with characteristics such as variability or uniformity in the use of resources, availability of a resource or its active use, systematic or fragmentary work, or orientation on control norms or development.

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