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ASSESSING EDUCATIONAL ENVIRONMENTS USING SACERS INTERNATIONAL SCALES: A BIBLIOMETRIC PERSPECTIVE

Abstract

To establish optimal conditions for school-age learners' best educational outcomes, research-evidenced documentation is a requirement prior to any significant change. This bibliometric analysis investigated articles published on School-Age Care Environment Rating Scale (SACERS) from 2017 to 2023 (n=10). Data collection involved identification, screening, exclusion, and eligibility stages. The bibliometrics R-package was used for data analysis on the Bibliometric cloud-based platform, focusing on publication patterns, citation networks, and bibliographic insights. Key findings indicate limited research-related publications on SACERS, possibly due to country-specific adaptations and variants in local languages. The scientific production varied annually, with few publications during 2017-2023. Canada, Russia, and the USA led SACERS research, implementing changes based on findings in target educational institutions. It was also found that research publications imply a university's intellectual and epistemological contribution; this also offers insights for academic institutions to enhance research strategies and academic influence. Based on these findings, we concluded that SACERS is an invaluable tool for globally evaluating educational environments. Its comprehensive assessment empowers educators to foster enriching learning environments for all students.

Keywords: SACERS scale, assessment, school-age children, bibliometrics, educational conditions.

Introduction. In an increasingly interconnected world, the quality of educational environments has become a subject of global significance (Care et al., 2016). Educational settings during early childhood and school-age years play a pivotal role (Baeten et al., 2013) in shaping the foundation of learning and development. A significant challenge in contemporary society is the need to ensure equal educational opportunities for all students. Educational institutions are expected to establish optimal conditions, encompassing material, technical, informational, methodological, psychological, pedagogical, staffing, financial, and economic aspects, to achieve the best educational outcomes. These conditions not only

refer to the resources required for implementing educational programs but also impact the potential for supporting and enhancing the existing level of education. Addressing the issue of providing equal access to quality education involves reevaluating educational content and assessment procedures, taking socioeconomic factors into account, and improving the efficiency of both administrative and pedagogical actions (Marfan et al., 2018). This necessitates a thorough examination of school structures and the overall learning environment (Begimbetova et al., 2023).

In the pursuit of providing quality education to learners across the globe, the assessment of educational environments has emerged as an essential endeavor (Xiong et al., 2017). By understanding and evaluating the factors that influence the learning process, educational stakeholders and educators can make informed decisions to enhance the overall educational experience. This assessment goes beyond traditional academic achievement and encompasses various aspects, such as the physical setting, teacher-student interactions, and curriculum effectiveness. Several international studies have illustrated the transformative impact of the School-Age Care Environment Rating Scale, hereafter referred to as SACERS, on educational practices (Shmis et al., 2019). Research findings by Kwon and Park (2020) highlighted the fact that the implementation of the scales in diverse countries

led to targeted improvements in educational environments and teaching methodologies. By conducting a systematic evaluation of educational environments, we gain valuable insights into the strengths and weaknesses aspects for improvement in the educational landscape worldwide (Ndukwe et al., 2020).

Main part. The SACERS international scales have become a prominent instrument in evaluating educational environments on a global scale. Developed as an observation-based assessment tool, SACERS offers a comprehensive framework to measure the quality of educational settings for school-age children. Its application spans preschool to secondary school levels and enables educators and researchers to assess the effectiveness of various educational programs. As an internationally recognized standard, the SACERS provide a common language for comparing and improving educational practices worldwide, promoting a shared understanding of what constitutes an enriching and conducive learning environment.

SACERS Comprehensive Assessment: The Seven Scales School-Age Learners' Needs

The SACERS is based on criteria that emphasize the development of school-age learners and meet their developmental needs within the school environment. The methodology of SACERS consists of seven scales as Fig. 1 illustrates it:

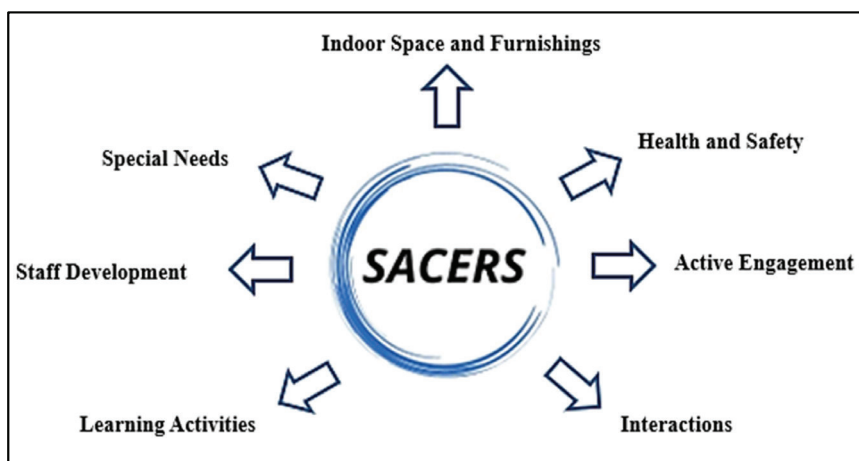


Figure 1. SACERS seven scale

- | | |
|---|--|
| <p>1. Indoor Space and Furnishings:</p> <ul style="list-style-type: none"> • Assesses interior space, room layout, open areas for physical activities, and solitude. | <ul style="list-style-type: none"> • Evaluates whether there is even availability of staff rooms and furniture for educational and relaxation purposes. |
|---|--|

2. Health and Safety:

- Measures the educational environment's health and safety aspects

- Does reviews about food catering organizations affiliate to schools; it also considers other safety-related aspects.

3. Active Engagement/Time-Use:

- Assesses how organized are the extracurricular and educational activities.

- This measure expands on aspects of arts and crafts, music and dance, drama, science, and research activities observed in schools.

4. Interactions:

- Collects data related to interactions and communication within various systems in the educational institutions (learner-teacher, learner-learner, teacher-teacher, and teacher-parent).

5. Learning Activities:

- Measures aspects related to schedules, daily routines, and supplementary educational programs.

- Observes the existence or non-existence of learning activities variability versus monotony.

6. Staff Development:

- Concentrates on the indicators of teacher activities and opportunities for professional development.

7. Special Needs:

- Assesses if there is the provision of conditions for interaction and learning for students with special needs/disabilities (Ivanova E.V. et al, 2019; Vladimirovna et al., 2019; Ivanova et al., 2018).

These scales are detailed in 48 indicators, each of which is rated on a 7-point scale: 1 point - inadequate; 3 points - minimal; 5 points - good; 7 points - excellent; 2, 4, 6 - intermediate scores. Quality levels corresponding to 1, 3, 5, and 7 points are specified as separate indicators. An indicator refers to a description of observed actions or objects. Advantages of the educational environment assessment tool (SACERS).

support in developing an educational environment that takes into account the unique learning paths of all students...

help in adapting the curriculum, teaching methods, assignments, and more, for universal use by all individuals involved in education without additional time or financial investments...

assistance in empowering educators to meet the needs of students - universal design promotes a more flexible curriculum, while assistive technologies provide physical adaptations, devices, and tools to enhance opportunities for students with specific requirements.

The purpose of the study. In this article, the researchers aim to conduct a bibliometric analysis to explore the research landscape surrounding the assessment of educational environments using SACERS Scales.

The importance of the article - The focus here is to delve into the scholarly output produced by researchers and authors worldwide, uncovering then their contributions to the field of educational environment assessment. By utilizing bibliometric techniques, the authors seek to identify trends, patterns, and collaborations among authors, institutions, and countries involved in research related to SACERS. This bibliometric analysis helps us to gain a comprehensive understanding of the global research efforts and the impact of SACERS in shaping educational practices and policies worldwide.

Materials and methods. This research is a bibliometric analysis (Donthu et al., 2021) primarily analyzing scholarly outputs related to the assessment of educational environments using SACERS Scales. To analyze data, the bibliometric R-package was used and it helped to perform the bibliometric analyses on the Bibliometric cloud-based platform (Begimbetova et al., 2023). The outputs of interest were publication patterns, citation networks, and other bibliographic information to gain insights into the structure and impact of academic literature in a particular field.

The R Program package used:

```
#To run BiblioShiny  
library(bibliometrix)  
biblioshiny()
```

The databases consulted for articles collection include Dimension, Education Database, ERC, ERIC, Scopus, Web of Science, and Google Scholar) with the keywords like "SACERS", "school environment assessment", and "school age care environment rating scale". The Boolean operator was AND as in "school AND age AND care AND environment AND rating AND scale." The same was for other keywords used in the databases during the identification stage (Fig. 2).

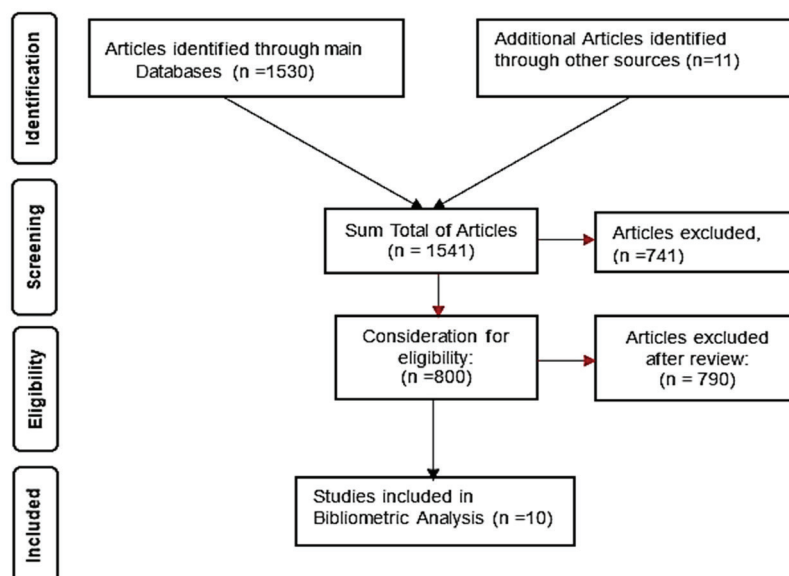


Figure 2. Chart flow source (adapted from Schaller & Vatananan-Thesenvitz, 2019)

Results and discussion. Based on Figure 1, this study covers the period from 2017 to 2023 and involved 21 authors conducting research on the SACERS scale using 40-related keywords. The research analysed 10 articles from various

sources, including books and journals, selected based on their discussion of SACERS fields or aspects. Among the 10 articles analysed, 4 were single-authored works (Fig. 3).



Figure 3. The visualization of the main information

The study referenced 401 sources, with an average document age of 3.5 years. The average number of co-authors per article was 2.4, suggesting significant collaboration among researchers. The research achieved an average of 10 citations per article, indicating that it was highly regarded by other scholars in the field.

So, as one can see numbers talk of themselves. The SACERS research-related publications are limited. One of the reasons is that individual countries may have adapted it to their own needs and created

variants. Two publications were found in the German language about the “*Hort- und Ganztagsangebote-Skala: (HUGS)*”, a variant of SACERS in Germany. What is important is that those German authors admit that SACERS or HUGS is a great tool with high potential that can guide or document practical suggestions for educational change.

Annual Scientific Production around the “SACERS” Keyword

The annual scientific production in areas related to the SACERS scale can be seen in the plot below (Fig. 4):

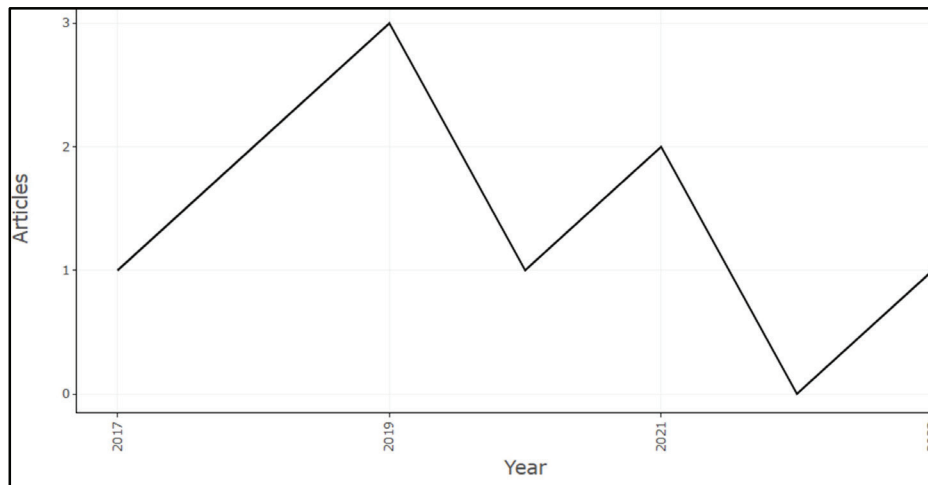


Figure 4. Published articles each year from 2017 to 2023

The annual scientific production of the institution varied over the years. It started with 1 article in 2017, increased to 3 articles in 2019, and saw a dip in 2020 with 1 article. The following years had 2 articles in 2021, none in 2022, and 1 article in 2023.

Three-field Plot (Sankey diagram)

The authors of the School-Age Care Environment Rating Scale (SACERS) drew insights from diverse sources to create a comprehensive rating system for school-age

childcare programs. The SACERS scales have been adopted in numerous countries, including Germany, the United States, Sweden, Russia, and more, highly regarded as a valid, dependable, and trustworthy means of evaluating the educational environment. In Russia, they can be juxtaposed with the scale with another meant for preschool infants, the ECERS-R (Early Children Education Rating Scale), which becomes an even more comprehensive and complete measurement combination if well-applied (Fig. 5).

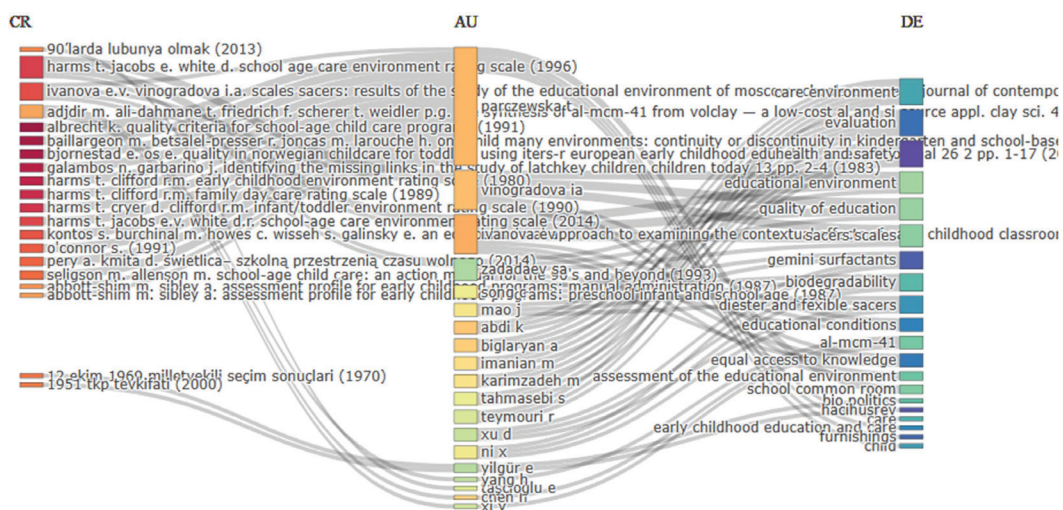


Figure 5. Three-field Plot (Sankey diagram)

The ECERS-R and SACERS scales collectively serve as a comprehensive set of instruments for evaluating the quality of education, across early childhood, elementary, and basic general education levels. SACERS is not based on a specific program philosophy but is

rooted in the developmental appropriateness for school-age children. Quality definitions, such as the Quality Criteria for School-Age Child Care Programs Manning (Manning et al., 2017) and existing instruments like Assessing School-Age Child Care Quality (ASQ). In the countries

spotted, the SACERS-related research findings were reported to have served a good course in the decision-making process for Canadian, Russian, and United States educational institutions (Parczewska et al., 2017). In other studies, such SACERS scales were adapted to local contexts to ensure they aligned with the

countries' developmental needs of school-age children.

The provided data represents a network graph with nodes and their corresponding attributes in different clusters. Each node has information on its cluster, betweenness centrality, closeness centrality, and PageRank (Fig. 6).

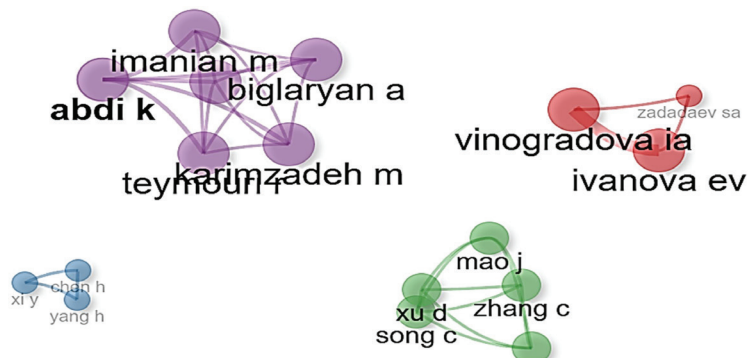


Figure 6. Collaboration network

Clusters are sorted according to their PageRank index values. Cluster 1 consists of nodes Ivanova E, Vinogradova I, and Zadadaev S, all having a betweenness centrality, closeness centrality, and PageRank value of 0.5, suggesting their importance in the network and overall scholarly contribution in around the SACERS keyword. Equally, Cluster 2 is second to Cluster 1 and it contains nodes that include Mao J, Ni X, Song C, Xu D, and Zhang C, with a betweenness centrality of 0 and a closeness centrality and PageRank value of 0.25. In the third position comes Cluster 3; it consists of nodes Abdi K, Biglaryan A, Imanian M, Karimzadeh M, Tahmasebi S, and Teymouri R, with a betweenness centrality of 0 and a closeness centrality and PageRank value of 0.2. Note cluster has no PageRank index value. Since centrality refers to how important a given node (keyword or concept) is within a particular network, the bigger the betweenness centrality, closeness centrality, and PageRank values, the higher the contribution of that particular network.

As far as authors' affiliations are concerned, in this ever-evolving landscape of academia, research publications stand as crucial indicators of a university's intellectual prowess and commitment to advancing the epistemological agenda. In this article, the affiliation-related finding is that there are four prominent universities whose staff contributed enormously

to SACERS scales. These are the Anhui Science and Technology University, Moscow City University, Central South University, and the University of Social Welfare and Rehabilitation Sciences. This is mainly indicated by the scholarly output and research productivity of these institutions for the period of interest in this article which is from 2017 to 2023; Fig. 7 illustrates the scientific outputs perceived in the angles of the institutions affiliated with prominent SACERS scales authors.

Anhui Science and Technology University maintained a consistent level of research productivity, publishing five articles annually from 2017 to 2023. Moscow City University, on the other hand, showed a consistent yet stagnant trend, with only two articles published each year from 2018 to 2023. Central South University demonstrated positive growth in research output, progressing from no publications in 2017 and 2018 to two articles annually in 2019-2023. Notably, the University of Social Welfare and Rehabilitation Sciences exhibited steady and remarkable growth, publishing six articles per year from 2019 to 2023. By analyzing these numbers, we seek to uncover insights into the research culture and academic impact of these institutions, laying the foundation for future discussions on enhancing research excellence in higher education.

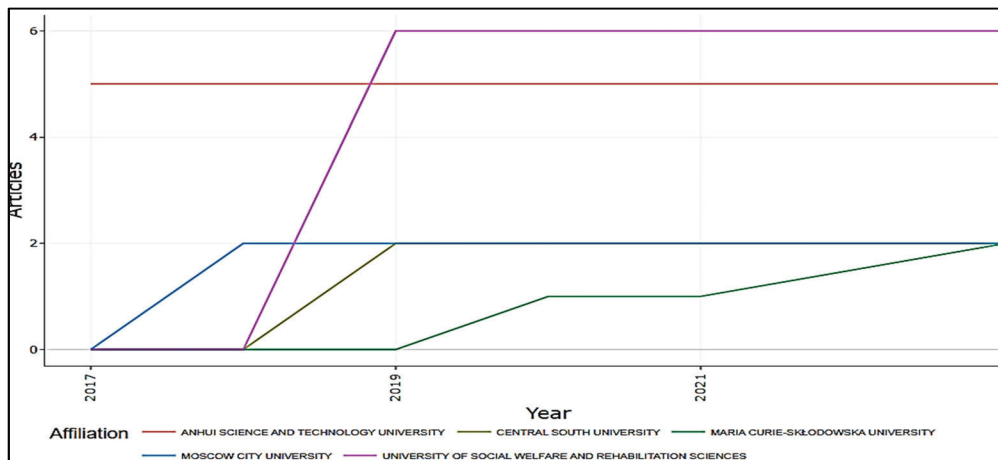


Figure 7. Affiliations' Production over Time

Over the span of seven years (2017-2023), the research productivity and total citations per article of the academic institution under study displayed varying trends. In 2017, a single article garnered an impressive average of 53 total citations, showcasing the institution's capacity for impactful research. However, 2018 witnessed a decline in average total citations per article (1.5),

despite an increase in the number of published articles (two). The year 2019 exhibited improved research output with three articles, averaging 13.67 total citations per article and sustaining academic impact for an average of 2.73 years. In contrast, 2020 and 2021 demonstrated relatively lower research productivity, each having one and two articles published, respectively (Table 1).

Table 1. Average Citations Per Year

Year	MeanTCperArt	N	MeanTCperYear	CitableYears
2017	53	1.00	7.57	7
2018	1.5	2.00	0.25	6
2019	13.67	3.00	2.73	5
2020	0	1.00	0.00	4
2021	1.5	2.00	0.50	3
2023	0	1.00	0.00	1

Both years recorded minimal average total citations per article, with shorter citable durations. As the data only extends to 2023, the most recent year showed a single article without any citations, leaving its potential impact open for future evaluation. Understanding these trends can aid the institution in enhancing its research strategies and fostering long-term academic influence (Kenzhaliyev et al., 2021; Kassymova et al., 2021; Abutalip et al., 2023).

Conclusion. To sum up, the SACERS research-related publications are limited and one of the reasons is that individual countries may have adapted it to their own needs and created

variants in local language as well. In terms of annual scientific production, variation of trends is traceable: few SACERS-related publications appeared between 2017 and 2023. But back in 1999, a few articles in English and non-international languages were screened.

The countries that spearheaded the research around SACERS are Canada, Russia, and the US; in these countries, changes were operated following the SACERS research findings in target educational institutions. Equally, individual authors who contributed to this field ensured their affiliated institution's scholarly visibility.

As a matter of fact, it was also noted that research publications stand as crucial indicators of a university's intellectual and epistemological contribution, breaking then the frontiers of the 'unknown'. Whether academic institutional leaders are aware or not of it, the impact they have in the world of knowledge is collected in the collective mind: their research culture and academic impact can be screened and interpreted. Understanding these trends can aid the institution in enhancing its research strategies and fostering long-term academic influence.

So, the School-Age Care Environment Rating Scale (SACERS) is a valuable and effective

tool for evaluating educational environments globally. The comprehensive assessment provided by SACERS, covering various aspects such as indoor space, interactions, and learning activities, empowers educators to create conducive and enriching learning environments for all students.

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FORMATION OF CRITICAL THINKING OF PRIMARY SCHOOL STUDENTS THROUGH AN EFFECTIVE SURVEY

Abstract

The article deals with the problem of the formation of critical thinking in primary schoolchildren through a judicious application of effective inquiry techniques. To determine the relevance of the topic, the concept of the development of education and science and the State Mandatory Standard of Primary Education are analyzed.

A review of the research of domestic and foreign scientists who studied the concept of “critical thinking” is presented. It is confirmed that this is one of the skills that allows the student to develop freely in the educational space.

Since the object of the study was primary school students, experimental work was carried out with students. Three stages of the experiment have been implemented. Tasks aimed at forming students’ critical thinking at the formative stage are developed based on the educational goals of the 4th-grade curriculum. The effectiveness of the developed tasks aimed at the problem of research has been proved in the course of experimental research.

As a result of the use of pedagogical technology for the development of critical thinking, students make mistakes at the first stage, freely express their thoughts without fear of teacher correction; update their knowledge and experience; solve large-scale problems on the topic, make common decisions; at the second stage, they understand the content of new information, compare existing knowledge and experience, pose questions aimed at finding effective and solvable ways, express their own opinion about new information, argue their positions; at the third stage, the ability to independently determine tasks, make forecasts, and make decisions develops.

Keywords: critical thinking, technology, primary class, effective question, decision-making, analysis, comparison, reflection, experiments.

Introduction. Central to our educational objectives is the cultivation of a student persona characterized by the cultivation of advanced critical thinking capabilities, an autonomous aptitude for information analysis, the generation of innovative ideas, a proclivity for pioneering endeavours, honed linguistic competencies, adept digital proficiency, and proficient research acumen within the academic framework. These objectives align seamlessly with the pivotal consideration of enhancing the intellectual reservoir of academia, as expounded in Section 2 of the concept for the development of Higher Education and Science in the Republic of Kazakhstan 2023-2029”. Consequently, the imperative emerges to foster tailored proficiencies and aptitudes that drive intellectual advancement.