

LACK OF TECHNICAL EQUIPMENT IN KAZAKHSTANI SCHOOLS AND ITS IMPACT ON ACADEMIC PERFORMANCE

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Abstract

Technical equipment in schools invokes many concerns when it comes to quality of education. Nowadays, lessons mostly need devices to cover all topic materials which significantly help students to grasp more. Consequently, students, who are provided sufficient opportunities, are more likely to perform better academically. While the observed subject of this research encounters difficulties in equipping secondary education's institutions, consequences from that scenario affects students' mentality to work harder for academic achievements. To fully grasp this perspective, the researcher sought quantitative and qualitative data by conducting a survey with close-ended and open-ended questions. It was handy to analyze the most evident trends in people's opinions. As a result, it confirmed the fact that students were not satisfied with the technical conditions of their schools. In addition, they clearly expressed their discontent towards the issue's impact on their academic excellence. All things considered, those findings imply the specific areas in terms of technical equipment that should be improved to match students' needs. Further research should be done on a greater scale in order to combat this problem more effectively.

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Introduction

Education stands as a paramount element in cultivating a nation's advancement across diverse sectors. The beginning of this educational journey is primarily laid during secondary education, acting as a bridge that not only unlocks avenues for pursuing higher degrees but also facilitates specialization in various professions. With this in mind, it becomes vital for governments to establish a fully equipped education system by ensuring favorable conditions that enable students to excel in their studies. In the contemporary world, the integration of advanced technical equipment assumes a pivotal role in shaping the academic experience. This research targets to put into the examination of the most successful countries with regard to their technical infrastructure, highlighting its profound significance in the educational processes.

With a focus on the subject of this research, the objective is to thoroughly oversee the technical infrastructure in secondary education institutions in Kazakhstan. While previous research endeavors have considered the specifics of technical equipment in Kazakhstani schools, they have not adequately addressed the external ramifications stemming from this issue. This research, in particular, seeks to illustrate the relationship between the academic performance of students and the availability of technical equipment in schools. By bridging this gap, a more comprehensive understanding of the broader impact of technological resources on educational outcomes can be achieved.

More importantly, this research would help to grasp Kazakhstan's technical conditions relying on the students' perspective and their attitude towards the significance of the issue. The forthcoming hypothesis will be substantiated through the implementation of surveys and other quantitative data collection methods, giving valuable insights into the nuanced correlation between students and the technical infrastructure in educational settings. To break down the research, in the beginning, I explain the importance of technical equipment in schools by providing certain examples and fully develop the

problem within its drawbacks. Subsequently, I examine the problem within the subject the research is observing. Afterwards, I find out the opinions of students regarding the problem and make a brief summary of the results I receive. Lastly, considering every specific from each section, I analyze potential solutions to combat the issue.

Literature review

Technical tools are one of the major points that build up secondary education. They can foster students' abilities, revolutionize the way they work and think, and give them new access to the world (Peck, Dorricott, 1994). A notable example is Singapore, which successfully implemented the Information and Communication Technology (ICT) system in national schools during the 2000s. The main purpose of providing schools with developed ICTs was to engage students in high order thinking by focusing on several areas such as curriculum and assessment, learning resources, teacher development, and physical and technological infrastructure (Ministry of Singaporean Education, 1997). Nowadays, Singapore consistently attains top positions in academic subjects, as evidenced by its stellar performance in the Programme for International Student Assessment (PISA) examination (PISA, 2018). Speaking of the technical situation in Kazakhstan, apart from this research, there has been a lot of research that scrutinized the availability of technical devices in Kazakhstan's schools. A crucial step for improving educational quality is the incorporation of modernized classrooms and interactive equipment into the learning process. Despite the government initiating funding for this initiative in 2005, there remains a shortage of such classrooms in Kazakhstan (Nurbaev, 2021). Specifically, 25.4% of schools lack sports halls, and 10.2% of schools with sports complexes are situated in adapted buildings. Furthermore, 13.6% of schools lack libraries, and 15% do not have canteens (National compilation, 2020). At the same time, there is a discernible urban-rural disparity in the technical state of schools. Only 42.3% of rural schools are equipped with

interactive tools (Nurbaev, 2019). Additionally, among the 64 emergency schools, 59 are located in rural areas (National report on the state and development of the education system of the Republic of Kazakhstan, 2014).

The disparities in technical resources and equipment between urban and rural schools contribute to a noticeable educational gap. According to the 2015 PISA results, students in rural areas scored 19 points lower, equivalent to being six months behind in the curriculum compared to their urban counterparts (PISA, 2015). This gap is consistently expanding, as evidenced by the results shown in Republican testing. A direct correlation between students' academic achievements and the material resources of schools was identified in the 2012 PISA results (PISA, 2012).

The academic decline is attributed to specific instances of a lack of tools in schools. Firstly, insufficient specialized classrooms result in the exclusion of certain subjects from curriculums. Secondly, the absence of modern educational furniture and equipment, as well as inadequate sports equipment, prevents schools from meeting the requirements of the universal education standard. Consequently, schools struggle to support complete educational programs or offer a variety of tasks, pathways within a program. Thirdly, lack of teaching materials, which occurred due to the educational programs' updates in 2018 (Egor Seregin, 2019), also affects academic excellence. To back up the earlier statements, the research further dives into students' opinions on the issue and its impact on their individual academic performance. By examining the results, a comprehensive understanding of the topic will be gained. Drawing inspiration from the exemplary model, the research subject, and the opinions of the target audience, there are specific strategies for combating the issue. As for now, the government has initiated and should persist in launching national campaigns to comprehensively integrate technology into Kazakhstan's education. This is evident in documents such as the "On approval of the State Program for the Development of Education and Science of the Republic of Kazakhstan for 2020 - 2025" (adilet-zan, 2021) and "On approval of the norms for equipping with

equipment and furniture organizations of pre-school, secondary education, as well as special education organizations" (adilet-zan, 2016). However, for more successful implementation, the government must allocate more funds to education. While many OECD countries allocate around 5% of the total GDP, Kazakhstan allocates only 2.8%. On top of that, most funded reforms are expected to be implemented in a short period (3-4 years), impacting the quality of realizing the plan. Lastly, there should be an equitable budget distribution among rural and urban educational institutions.

Methodology

This research primarily focuses on qualifying the existence of the problem with technical equipment in schools and revealing its academic impact on students based on the opinions of research subjects. The study utilized a blend of qualitative and quantitative data to provide a comprehensive understanding of the issue.

To be precise, qualitative research was implemented to draw conclusions from experts' opinions received through interviews, while quantitative research was conducted to process some statistical data collected from closed-ended surveys. It was by no means inevitable to avoid the subjectivity of data collected from research subjects. Nevertheless, both approaches eventually complemented each other since the results obtained from one method helps to develop the concept of another method. The integration of both qualitative and quantitative methods facilitated a more complex understanding of the research subject.

As mentioned earlier, the study employed a combination of interviews and closed-ended surveys to gather comprehensive insights.

The interviews, specifically conducted with school teachers, provided an in-depth exploration of their attitudes and perspectives regarding the availability of equipment in schools. The interview process began with introductory questions, establishing a rapport with the interviewees, and gradually delving into specific inquiries related to the issue at hand. A carefully crafted set of 7-8 questions sufficed to build up a thorough understanding of their experiences and viewpoints.

When it comes to surveys, the study incorporated concrete 7 closed-ended questions, including yes/no responses. These questions were strategically designed to discover statistical trends relevant to the issue at hand. For example, participants were prompted to assess the importance of technical tools during learning processes. This method allowed for the identification of common trends and the overall direction of thoughts among the survey respondents.

Having the data collected, it was thoroughly processed in a way of discourse analysis. Firstly, major trends of opinions were pointed out by gaining results from surveys. Key points related to the lack of equipment supplemented the main objective of research which was to mark out factors influencing academic performance of students. Moreover, results helped to grasp the significance of the issue. After detecting the most scaled trends, research stopped by the opinions of experts in education in order to back up the hypothesis or the idea formed through those statistical models. Overall, all data were put in the same context which makes it a key part of discourse analysis.

The selected research methods are commonly utilized practices in the field of social sciences. Similar studies often leverage statistical models to initiate discussions and subsequently analyze the gathered statistics, establishing correlations with the central topic. In this study, a parallel approach is adopted, commencing with quantitative research and gradually transitioning to qualitative research. This dual methodology allows for the simultaneous consideration of both quantitative and qualitative data, developing a comprehensive exploration of the research topic. This integrative approach enhances the richness and depth of the study's findings, then provides a detailed understanding of the complexities associated with the technical equipment in schools and its impact on students' academic performance. To revise discussed details, the study seeks for the most vital trends dependent on the topic, consequently, deepens down into it by relying on experts' opinions and qualitative analysis.

Result and Discussion

The following findings serve to reveal students' perspectives on the technical state of schools in Kazakhstan and its repercussions on academic performance. A total of 110 responses were gathered through a survey exclusively conducted for this study, suggesting valuable insights into the perceptions and experiences of students regarding the prevalent conditions of technical equipment in their educational institutions. The majority of survey participants conveyed overall satisfaction with the quality of technical equipment provided by schools (Figure 1). Nonetheless, there are specific concerns highlighted by a substantial number of respondents regarding certain aspects of school equipment: internet connectivity, availability of furniture, and a shortage of educational spaces (Figure 2). Analyzing the correlation between these aspects and academic performance, a majority of students expressed that technical conditions have a significant impact on the overall academic performance of students in general (Figure 3). However, when evaluating the personal impact on their own academic performance, a vast number of respondents perceived the issue's influence as relatively minor (Figure 4). In a more detailed analysis, the impact of technical equipment on academic performance becomes evident in the limited access students have to additional practices that involve special devices. Many respondents expressed concerns about this lack of access (Figure 5). Furthermore, a large number of students believed that the current state of technical tools diminishes their motivation to study further and adds a psychological pressure to the issue. Moreover, participants expected a significant boost in their academic performance if the technical equipment in schools is improved (Figure 6). This expectation underscores the perceived correlation between improved technical facilities and the academic excellence of students. In a case of refining the state of technical equipment in schools, most of the survey participants assumed that their academic performance would boost fairly (Figure 6). To make a comparison, people believed that countries with a developed education system pay more attention to schools' technical state in order to elevate the academic performance of pupils (Figure 7).

The findings from Figure 2 highlights the students' dissatisfaction with various aspects of technical equipment in schools, indicating areas that require attention and improvement to affect the overall learning experience. The visual representation points out the technical nature of the challenges faced by students in accessing adequate and functional technical tools for their studies. Addressing these concerns becomes crucial for creating an environment that better supports effective learning.

The survey results indicate a perspective among participants regarding the impact of technical equipment on academic performance. While there is an acknowledgment that the issue plays a role in personal academic experiences, the majority evidently suggests that academic performance is fairly dependent on the given problem. Participants express a desire to upgrade the level of their studies through the use of necessary technical tools. However, the current situation is likely to be demotivating that hinders active engagement in lessons. This point of view emphasizes the need for sophisticated solutions to address both individual experiences and overall academic performance. Addressing the issue of technical equipment in schools urgently is seen as a potential catalyst for a slight to fair improvement in general academic performance, as suggested by the survey results. Participants recognize the importance of this problem, with the majority assuming that it is a contributing factor to the development of academic excellence in modern countries. This pinpoints the significance of prioritizing and resolving the challenges associated with technical equipment in educational institutions.

The interviews served as a valuable complement to the findings obtained through surveys. The experts were likely to be unsatisfied with the equipment, stating: "There is no space for providing real-life demonstrations for children to make the knowledge more applied" (personal communication, December 2022). Respondents commonly cited deficiencies in lab storage equipment, projectors, and a stable internet connection as significant challenges associated with the lack of technical equipment. However, the experts believed that academic performance is correlated with both students' motivation to

study and the development of surrounding technical conditions. Aligning this viewpoint with the survey results, it becomes evident that students' motivation is directly influenced by the availability of equipment.

Conclusion

As the educational world is expanding, incorporating technological advancements, ongoing research endeavors should remain fitted into emerging trends and shifts in students' preferences. Proposed adaptive dual approaches show how educational policies and practices align with the evolving needs of students and teachers, ultimately contributing to a better academic experience and uplifted overall performance.

The quality and availability of technical equipment play a crucial role in enhancing students' academic performance during educational sessions. In the contemporary context, students express dissatisfaction with the technical conditions provided in their schools, with concerns ranging from the quality of the Internet to the availability of furniture and specialized educational facilities. As for the research findings, a great number of students believe that this issue has a fair impact on their academic performance. Consequently, it can be inferred that, according to students' perspectives, an improvement in technical conditions could potentially bring more academic achievements.

However, it must be noted that this research focused on only two leading Kazakhstani schools, and the generalization of these findings to all schools may be inaccurate. Different schools may exhibit varying levels of student motivation and demonstrate diverse conditions for studying. Therefore, future research endeavors should broaden the scope of observation, encompassing a more diverse range of schools, to gain a comprehensive understanding of the relationship between technical conditions and academic performance.

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