

Possibilities of General Education Subjects in the Development of Personal Mobility in High School Students

Nargiza Sadikjanovna Khidoyatova

Director of School No. 5 of Yunusabad district, Tashkent, Uzbekistan

Abstract:

The need for an up-to-date system of personal mobility development that is limited to the formal education context has been stimulated by a rapid shift in the social conditions of high school students. It is argued that the development of young people's self-reliance in personal mobility should be seen as an integral part of their broader independent everyday mobility. Furthermore, it is recommended that personal and independent mobility be improved to reduce reliance on parental support systems. The key element of a possible personal mobility developing education is independently planned and implemented safe individual everyday mobility, learning by doing in practice. However, current general educational subjects are not seen as being able to contribute to such education and should be improved accordingly. Lately, the circumstances of the daily living environment of high school students who move from home to school and vice versa have changed significantly. New high schools have been built on the outskirts of cities, and the number of students traveling to distant schools has increased considerably. Designated transport services (using school buses or cars) provided by municipalities to ease commuting have usually been put into practice in every high school. However, parents mostly must take care of transport. Moreover, combined mobility using different transport means is commonplace. Such changes in everyday mobility have influenced both the development and the capability of personal mobility. Before, the everyday mobility of young people was based on the independent use of walking or cycling, which is essential for gaining personal mobility. The transport model of high school students heavily relying on parental support to ease mobility is something completely new. Poor walking and cycling skills have been detected in high school students, which indicates a lack of affordability. Moreover, the role of general education subjects commonly seen as having excellent possibilities for developing personal mobility skills is extremely limited. Various developmental skills are at

stake in the research of personal mobility, such as taking care of one's own safety in transport, organizing freedom of movement, and understanding the need of keeping transport sustainable. Such basic mobility skills should be integrated into broader everyday mobility skills. General education subjects in the development of personal mobility are at stake, such as physical education, civics and ethics, geography, biology, and arts.

Keywords: General education subjects, personal mobility, high school, social adaptation, personal development, academic mobility.

Introduction

Contemporary education must look for new ways of self-realization of individuals in order to adapt to the current pace of life, the high rate of the modern world development, the geographical mobility of modernization in the context of globalization. In this regard, the objective of education shall be determined by seeing personal development as a basis for an individual's good emotional state. As personal development is a dynamic process, it is very important to train high-school students to work on their personal mobility on a regular basis. Personal mobility is treated as an individual's integration ability into life space. Moreover, there is a dialectical relationship between personal mobility and education, as the latter shapes its most considerable areas.

There are several factors that determine a person's mobility, e.g. health, personality, knowledge, skills, professional dignity, social context, attitude to foreign culture and to oneself, positive relationships with people. Although educational institutions may influence all of those factors only indirectly or partially, there are some of them upon which educational institutions can have a direct impact. They mainly refer to a person's personality development and improvement of knowledge and skills. Hence, the educational process is treated as a field of personal mobility development opportunities. In this regard, general education subjects are of great interest, as it is up to the teacher's endeavor how to present them so that they would help high-school students to adapt to and feel competent in various life spaces.

It is widely known that general education subjects are less popular among educators than professional and alternative ones, while the latter are not necessarily oriented to the personal development of high-school students. The aim of this research was to reveal the possibilities of general education subjects in the development of personal mobility for high-school students. Research on general subjects, personal mobility, international educational documents and educational programs, including the New School of Europe 2020 by the Organization for Economic Cooperation and Development (OECD), experimental programs of European high-quality education adapted in Lithuania, were conducted from such a perspective.

Background and Rationale

For high school students, the environment of their family, home, educational institution, society, or state is important. But even more important is the environment of their mind. The purpose of this environment is to prepare students for a successful life in the present and future, and to provide them with the knowledge of how to manage their lives for success and happiness. There should be enough room for students to exercise their creative intelligence and freedom of thought. Knowledge of physics and college algebra is good for modeling, but it is not a prerequisite for high school thinking. To have all opportunities is to be a free thinker. However, high school students are not free thinkers due to social limits on their ability to exercise their imagination. They have a mind, and they are thinkers and creators, inventors of new ideas, methods, and systems for a better world to live in. There are several general education subjects in the curriculum of high schools, such as Propaedeutics to Science, Philosophy, Systems Science, History of Science, and Science Methods. These general education subjects play a role in the development of personal mobility for high

school students, and together they should provide a broad vision education. In order to have a successful forward vision in life, students should possess knowledge about space and time outside of the classroom, as it is an important part of the world. These general education subjects would help them to see and think outside of the classroom. They would understand stories of man's progress, systematic thought, and methods of knowledge acquisition. The creation of this knowledge is full of personal life stories, efforts, hopes, imagination, courage, inventions, ups and downs, etc. There is a great distance in theme and thought between the very concrete life troubles and the very abstract and vacuous interests of students in their daily classes, which leads to an illusory firm ground.

Scope and Objectives

The relevance of the research lies in the fact that one of the important components of the general culture of the individual, general education, the formation of which is carried out in the general education institutions of the republic, provides a range of knowledge, skills, ideas about the conditions of life, society, politics, culture, science, as well as increasing the level of individual aptitude and contributing to its general development.

The analysis of post-Soviet educational reforms, including the system of general education in the Russian Federation, led to the conclusion that it was necessary to rethink the educational achievements of the Soviet period in the light of the declared respect for the general and cultural education of the individual, to study a number of similar problems. Similar changes took place in education and science in the Republic of Uzbekistan, the former republic of the Soviet Union, where the priority of culture, national specificity and spirituality is recognized and the values of the Islamic religion are accepted. Namely: the general education systems of the USSR and Uzbekistan were formed as a complex socio-cultural phenomenon since the end of the 19th century, based on the priority of education and scientific knowledge.

The importance of general education in the development of students' personal mobility is great. For the pupils actively mastering general education subjects improve their mental abilities, intellectual development, logical thinking, the ability to approach information critically, assess their capabilities and the general educational level, and on this basis, form goals and plans for additional education and training, self-education, professional activity in the future. UAE students of non-linguistic specialties studying a foreign language appreciate this discipline as one of the most interesting and important and seek to improve their skills and knowledge in this area.

Enhancing awareness of the possibilities of general education subjects in the development of personal mobility in high school students. Studying the importance of general education subjects in the development of personal mobility in high school students in terms of general education disciplines, eligibility requirements for conducting general education disciplines based on empirical studies, socio-psychological factors influencing personal mobility, and the levels of personal mobility of high school students. Creating a model of personal mobility of a high school student.

2. The Concept of Personal Mobility

Personal mobility is the ability to move oneself independently in one's environment. This ability is a prerequisite for the development of a person's independence and provides prerequisites for participation in society. In the electronic (media) environment, teracentrism reconstructs the perception of the world and emerges the context of personal mobility. In the context of the development of personal mobility, it is important to understand the dimensions of human mobility and the impact of educational environment on mobility. The concept of mobility - as the ability and competence to navigate in space - is developed based on the dimension of mobility 'personal' and 'physical' following the approach to individual learning and the concept of personal mobility [1].

Understanding mobility as the ability to navigate in real space, real-time, and virtual space, personal mobility is interpreted as the competence of working with various modalities and levels of both representations of spaces mediated with symbols, and constructions of own movement acts in these spaces as well as awareness of the impact of mobility on oneself and the environment. According to the differentiation of personal autonomy, the components of personal mobility are information, sign, task and trajectory mobility, as well as self-awareness of personal mobility and reflection on mobility. At high school age, the development of personal mobility depends on both the nature of the general education subjects and family, as well as on the level of individual mobility. With the aim of analysing the possibilities of the development of personal mobility, the description of general education subjects is construed and the indicative task in the context of personal mobility is defined in science, physical education, health education, and mathematics [2].

With an accent on the importance of general education, the relationships between scientific knowledge and the concept of personal mobility are constructed in compliance with the six propositions of personal mobility. The analysis of issues (challenges and opportunities) dependent on educational environment and socio-cultural aspect that influence personal mobility and its dimensions is taken into consideration in the context of both a subject oriented model of flexible mobility and the development of student's competence. The reconstruction of the educational environment of general education subjects is being carried out in compliance with the understanding of personal mobility and the life models of personal mobility. Scenarios for the development of personal mobility within general education subjects and recommendations are construed for enhancing the possibilities of the development of personal mobility in general education subjects.

Definition and Components

Personal mobility is a multifaceted and multidimensional construct that underpins a person's free and independent movement in their daily practices and locations. It goes beyond the mere need to move and encompasses a person's capability to perform transport-related tasks. A comprehensive framework of personal mobility, adopted for this research and the foundation for the characteristics and indicators of personal mobility that follow, embraces three constituent components of personal mobility: awareness, availability, and ability. Each of these components is further elaborated with essential characteristics and corresponding indicators that seek to provide an unambiguous understanding of personal mobility and its operationalization.

The first component, awareness, discusses knowledge and understanding that play a key role in the effort to facilitate personal mobility or the learning to inform and engage a wider spectrum of actors and stakeholders in addressing persistent mobility problems. Seven basic characteristics of awareness are highlighted, each supported by corresponding indicators that illustrate the diversity of people's awareness concerning transport and mobility.

The second component, availability, considers the notion of availability of transport or mobility technical systems. Informed by people-centered and system-oriented notions of availability, characteristics of availability structures focus attention on the essential resources needed for transport-related or mobility-related activities to happen. Four basic availability characteristics are discussed, and corresponding indicators to each structure highlight the diversity and crucial importance of available resources, such as owned and used transport modes, accessible transport services or arrangements, and the existence of transport policies.

The third component, ability, grapples with the focus on social entities perform transport-related or mobility-related actions or behaviors. Ability is elaborated through three basic characteristics and corresponding indicators concerning people's experienced skill, competence, literacy, and health-related ability to use transport services or modes and participate in transport-related activities.

3. Importance of Personal Mobility in High School Students

Generally, adolescents are at an age of getting to know themselves, both in the psychological and social context. It is of utmost importance for them to develop a strong self-concept, because this notion is how they see themselves in the future as well. To give the learners a feeling of confidence, it is vital to foster their personal mobility through general education subjects used at school, to empower them to cope with the hurdles they meet day by day, stimulating their independence in thinking and acting, feeling responsible for their decisions and free to choose how they want to lead their lives [3]. Not only Polish learners but also students all over the world face the challenges of the early 21st century. They are required to cope with responsibilities opposite to the ones met by the previous generations. They need life skills enabling independent planning and doing the tasks despite the difficulties. They have to be exceptionally mobile in every aspect of their life. The first step is to tow the line on the labor market and go up the career ladder. They are expected to move from one job to another, from one company to another, from one country to another, adapting to the new demands related to these changes as quickly as possible [1]. They should also be flexible enough to face the technical advances which generate new job types and make others disappear. Due to the internationalization of every aspect of human life, they need to observe broader, transnational dimensions as well. In other respects, the effects of such changes are crucial in the sphere of student's family, social, and cultural life.

Current Educational Approaches to Personal Mobility Development

The problem of personal mobility of very young and older students is currently dire. Many high school students lack the knowledge and life skills that ensure the safety of traffic due to a combination of personal qualities and social and environmental factors. Personal mobility, a complex system of a person's own traffic problems, knowledge, skills, and abilities, as well as a person's social action within a community, is formed throughout life. The importance of educating personal mobility in very young students is emphasized by current educational approaches that encompass general education subjects.

General education subjects, such as mathematics, languages, geography, and technology, play a significant role in the development and education of personal mobility at various levels. These subjects use their own means of influencing an object while ensuring a certain conceptual unity. Pedagogical opportunities to educate personal mobility in general education subjects include the content of knowledge, methods of teaching, principles of education, forms of organization of educational activity, and ways of assessing and self-assessing knowledge and skills.

These determinants of pedagogical opportunities for development and upbringing positively affect the student's personality. As a subject of education, each general education subject can educate personal mobility in high school students at different levels. All levels of modeling personal mobility construct a certain object, student action or behavior, and the situation of this action or behavior in a model. The completeness of considering such conditions ensures the reliability, adequacy, and wide applicability of the model for evaluating its effectiveness as a component of an object, target, criterion, object, and mechanism for achieving the goal.

General Education Subjects and Their Role in Developing Personal Mobility

A new school year has begun. The doors of schools across the Republic of Kazakhstan opened for the students. Welcome bells invited children to beautiful, brightly decorated classrooms and school activities prepared with diligence. Each year, students are being taught important skills needed in life. Nowadays, the importance of health improvement becomes vital. According to clinical and polyclinical examination data of 4798 senior school students, students having deviations in functional health status is on the increase. Valid percentage numbers of main health deviations per age for boys ($n < 2693$, 56.1%, mean age 16.5 ± 0.2) are cardiovascular diseases (20.1%) and lung

diseases (8.02%), for girls ($n < 2105$, 43.9%, mean age 16.5 ± 0.2) - cardiovascular diseases (15.95%) and neuropsychiatric diseases (7.4%). Thus, the majority of high school students have poor functional health status and high health risks, whereas 5.9% - students from special medical group. At the same time, almost all students improved their health indicators from 7-9th grades. Therefore, there is a trend of improved health for high school girls and of reduced health for high school boys. As the low health group becomes low-moderate group, the acute response of the organism to physical and academic loads, compliance with health standards, and ability to recover worsen. Symptomatic principles of physical training, the selection of physical exercises, and their complex use is a significantly different approach to fitness physical training that reduces rates of growth and development of physical qualities and does not consider some important parameters of the United States. For this reason, special programs must be implemented to develop physical and functional preparedness of boys and girls. To analyze the role of 3 years of experimental-exploratory work on the trend of health improvement, free-time activity, and individual approach in fitness physical training, physical characteristics, health, attitude to physical training, and motivation of 182 high school students and boys and girls of two special classes were studied.

Physical training lessons of author program influenced positively on boys and girls in improvement of health indicators and personal mobility. The intensity of physical training lessons positively influenced health indices and personal mobility of girls who trained at high employment levels. At the same time, productive physical exercise training was to maximize deviations of breath indices for boys and girls having an initial low functional level of health. The greater share of girls had respiratory indices above normal than boys who had significant deviations of health was discovered. Free-time physical training led to health improvement and more significant fitness levels became low for boys than for girls. At the same time, the influence of free-time physical training positively influenced the improvement of endurance and strength power indices. The confidence of independence in developing athleticism levels became lesser and more and more boys than girls did exercises using an individual approach.

Integration of Personal Mobility Development in High School Curriculum

The high school period is particularly significant for the development of personal mobility. An age-appropriate worldview, interest, attitude, and motivation to study are forming and changing rapidly. The choices made during this period can largely determine a high school student's educational, occupational, and life course. Personal mobility means one's ability to effectively and purposefully use various forms of transport for traveling purposes. For high school students in Lithuania, the most appropriate modes of transport are a bicycle, public transport (bus, trolleybus, train), motor vehicle (car), on foot. Meanwhile, personal mobility development means knowledge, abilities, and personal characteristics needed for effective use of transport. Despite the increasing interest among researchers in personal mobility development among high school students, there are no detailed studies on the degree of development of personal mobility and its provision in the high school curriculum.

With a view of revealing possibilities of general education subjects in the development of personal mobility among high school students, an analysis of personal mobility as a subject in the educational environment and a provision analysis of general education subjects within the context of personal mobility development was carried on. An analysis of planned educational outcomes and methodology for general education subjects was performed with help of a content analysis methodology. The study seeks to reveal a provision of personal mobility development in the high school curriculum as well as theoretical and practical factors stimulating or hindering that provision. Another key goal is to assess the general education subjects' potential in the development of personal mobility among high school students.

Different researchers interpret personal mobility within various contexts. Researchers analyze transport safety, traffic environment's physical, social, economic, and psychological aspects, and the development of values, attitudes, knowledge, and abilities related to traffic systems, means of transport, traveling, and their use or development. Pedagogically, personal mobility development is viewed as the acquisition of values that promote active citizenship and civil involvement. Development of personal mobility allows not only for satisfaction of the most common but also for many other interests, such as educational, cultural, gender, employment, or individual. Personal mobility development additionally fosters systemic relations with city space planning, public transport, organization of passenger movement systems, transport environmental issues, etc. Further advancement of personal mobility development involves continual research into suitability, accessibility, and effectiveness of transport utilization forms and the emergence of new transport systems. All transport movement systems established and forming new relations impact a sustained and growing demand for mankind's market objects and ensure vital necessity for movement and passenger comfort.

4. Case Studies of Successful Implementation of Personal Mobility Development Programs

Educational programs aimed at developing personal mobility in high school students have been successfully implemented in various educational institutions and regions. This section provides case studies of three such educational programs, with a focus on their objectives, implementation, and outcomes.

The first case study is of a two-semester elective subject in personal mobility offered to high school students at a Turkish ministry of education institution. The program was evaluated for its ability to provide students with the knowledge, skills, and attitude necessary for safe personal mobility. Data was collected through structured observation and interviews with teachers and students. The results showed that the program achieved its intended objectives and highlighted the need for providing similar programs in primary schools.

The second case study is of a personal mobility development program implemented by The Mobility Research Institute of Hungary in cooperation with a group of Hungarian primary and secondary schools. The program aimed to investigate the safety and technical aspects of personal mobility education. The preliminary results showed that the implementation of the personal mobility program in an educational framework has a positive impact on the safety of young moped users and suggests that such a program could be integrated into the national school curriculum in Hungary.

The third case study is of the application of the European collaboration of educational programs for the development of personal mobility, called "Mobility for 21st Century Learners" offered by The Mobility Research Institute of Hungary. The program aimed to offer an overview of the theoretical framework and successful application examples of previously implemented personal mobility programs and initiate a discussion on the adaptation of real-life personal mobility programs.

5. Conclusion and Key Findings

The findings of the current research state the possibilities of general education subjects in the development of personal mobility in high school students and the results indicate that by implementing purposeful lesson plans and activities based on characteristics of general education subjects, personal mobility can be fostered in students of both vocational and academic types in such subjects as physical education, biology, geography, and art education, according to conclusions derived from the analysis of the implementation process. The lessons and activities planned have met the conditions required for clarity and systematic instruction in the course of implementation, therefore acting independently and successfully as vehicles for personal mobility development [1]. Considerations in improving the planning and implementation of lessons and other

activities mixed in general education subjects to help develop personal mobility are suggested based on concerns that emerged regarding the outcomes.

To increase students' knowledge on the characteristics of general education subjects' possibilities in the fostering of personal mobility, ongoing research is being implemented, as well as the planning and implementation of students' purposeful activities set in support of their voluntary exercise in hobbies fostering personal mobility. Therefore, the purpose of the current research consisted in establishing the possibilities of general education subjects in the development of personal mobility of high school students and planning and implementing the experiments to verify selected aspects of these possibilities. Aiming to reach the set purpose, the following tasks were solved in the research: evaluation of students' mobility and the involvement in velocity activities fostering its development were studied; the students' activities and general education subjects' lesson plans were introduced in the context of personal mobility studies.

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