

Analyzing The Effectiveness of School Timetable on The Holistic Development of Secondary School Students in Khordha

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Abstract—A school timetable is a powerful administrative tool that provides a framework to operate the aims and objectives of the school. This study majorly examined how a timetable helped children develop physically, intellectually, mentally and socio-emotionally. A mixed-methods approach was employed on a sample of 120 secondary school students from 5 different schools of Bhubaneswar City, that combined numerical analysis along with qualitative insights. The results highlighted that the students found their ongoing timetables aided them in all the five aspects of holistic development. While 59% of students got chances to play and perform, 56% could balance their academics and leisure time, only 30% were motivated to study regularly, and 90% reported active participation in team projects. Around 79% managed two major subjects back-to-back, but 24% struggled with concentration, and 44% of students found that there were no regular excursions for them. Students suggested timetables that contained time periods for self-directed learning, major subjects and extracurriculars, and an individualized approach to foster motivation, creativity and well-being. The study's conclusions inform educators, policymakers, and school administrators about the need to prioritize timetable transformation as a strategic force for enhancing student academic outcomes and supporting holistic development.

Index Terms—educational effectiveness, holistic development, mixed-methods research, school timetable, student development

I. INTRODUCTION

"Timetabling represents the most important planning exercise in the school calendar. It not only gives practical expression to the curricular philosophy of the school, it sets, maintains and regulates the teaching and learning pulse of the school and ensures the delivery of quality education for all students" [Learning and Teaching Scotland, 2006]. This statement, written by educators, emphasizes the importance of the timetabling process for the

educational system and highlights the multiple objectives of the task. Moreover, it makes clear that while the timetabling practice requires adopting all requirements and constraints that hold uniquely for each institution, quality is an ill-defined feature that every institution strives to achieve.

One of the essential organizational tools that shapes the daily routines and learning experiences of students is the time table of school. It affects the physical,

intellectual, mental, emotional and social domains of a student's holistic development to create a disciplined lifestyle. Since a school timetable has the potential to significantly contribute towards student's; holistic development hence there is a need for a well-planned timetable that balances curricular and extracurricular activities. It should allow the students to explore their strengths and weaknesses, relax, and socialize in the community. It is an aid for their personal development. On the contrary, a strict timetable can potentially hinder a student's overall developmental needs by causing stress, exhaustion and a decline in motivation. This also hampers a student's abilities to face challenges and overcome rejections. Many times, a rigid timetable leaves the students in a chaotic and perplexed state of mind.

Research has shown that different approaches to scheduling, such as block scheduling or flexible hours, can impact concentration, energy levels, and engagement. This article explores the effects of varied school timetables on students' holistic growth, analyzing how time allocation across subjects, rest periods, and extracurriculars contributes to students' overall well-being and learning outcomes. Through a review of recent studies and data analysis, the study aims to provide insights into how educational

institutions can optimize schedules to promote a more balanced development, preparing students for the complexities of life beyond academics.

II. HOLISTIC DEVELOPMENT

In today's rapid-paced environment, where academic achievement is prioritized, it is imperative to take care of our children's overall development at school. A balanced and sound education system should encourage self-awareness, emotional intelligence, and cognitive development as well. According to Dewey (1938), experiential learning experiences that combine academic rigor with real-world applications facilitate cognitive, affective, and psychomotor development. Moreover, studies have shown that social-emotional learning programs can enhance students' self-awareness, relationships, and academic performance (Durlak et al., 2011; CASEL, 2019). The integration of physical education and sports can also contribute to students' physical and mental health, as well as teamwork and discipline (UNESCO, 2014). Furthermore, psychological well-being is critically linked to students' academic resilience and motivation (Seligman et al., 2009). Effective schools prioritize holistic development by incorporating diverse pedagogies, community engagement, and inclusive practices, ultimately preparing students for successful, happy, and healthy lives (Fullan, 2014).

Physical, intellectual, mental, emotional and social development are five important aspects of a student's entire progress that are referred to as holistic development. It acknowledges that a person is more than just their academic achievements and that personal and emotional development plays an equally significant role in shaping a student's future. It is essential to move beyond rote memorization and encourage critical thinking, problem-solving, and creativity by establishing mind-body connection in a student. Physical education activities like yoga and meditation have increasingly helped students to balance their physical fitness along with academics. Education has been steadily expanding beyond the perspective of only imparting and learning knowledge of various subjects, but now it is a continuous process that allows for the empowerment, enrichment, and personal growth of the learners. The International Commission on 'Education for the 21st Century' has opined that, "Education must contribute to the all-

round development of each individual - mind and body, intelligence, sensitivity, aesthetic sense, personal responsibility and spiritual values." The goal of education is to instill life skills that help the students navigate their careers and life in an independent manner.

III. SECONDARY SCHOOL STUDENTS

As per report of National Education Commission (1964-1966), popularly known as Kothari Commission, the secondary education consisted of three parts, i.e., class 6 and 8 was treated as lower secondary stage; class 9 and 10 was treated as secondary stage and class 11 and 12 as higher / senior secondary stage. The Right to Education Act 2009, clearly stated that upper primary education from class 6 to 8, secondary education from class 9 and 10, and higher secondary education from class 11 to 12.

The NEP 2020 recommended extending the range of the Right to Education Act, 2009 to include the following education levels:

- Early Childhood &
- Secondary School

This will allow coverage of RTE to all children between the ages of 3-18 years. The "5+3+3+4" model will take the place of the "10 + 2" structure. This will be done in the following way:

1. The foundational stage is further broken into the following two components: Classes 1 and 2 in elementary school are followed by three years of preschool or anganwadi. This will apply to kids between the ages of 3 and 8. Activity-based learning will be the main emphasis of the investigations.
2. Classes 3 to 5 in the preparatory stage will be for students between the ages of 8 and 10. Subjects including speaking, reading, writing, physical education, languages, art, science, and mathematics will all be gradually introduced.
3. Classes 6 to 8 in the middle stage are for kids between the ages of 11 and 13. The more abstract ideas in math, science, social science, the arts, and humanities will be introduced to the students.
4. Classes 9 through 12 in the secondary stage are for students ages 14 to 18. Classes 9 and 10 cover the first phase, and classes 11 and 12 cover the second. The goal of these four years of education is to instill multidisciplinary study, along with depth and critical thinking. There will be a variety of subject choices.

Secondary school education must evolve beyond the structural reforms of NEP 2020 to foster holistic development, equipping students with essential life skills, vocational training, and technological proficiency. By emphasizing mental health, multidisciplinary learning, and assessment reforms, education can become more personalized and inclusive. Furthermore, extracurricular activities, career guidance, and equity initiatives can cultivate creativity, leadership, and equal opportunities, while global citizenship and environmental awareness broaden perspectives. Effective parent-teacher collaboration and strategic EdTech integration can enhance learning experiences, ultimately producing well-rounded individuals poised to thrive in life and contribute meaningfully to society.

IV. NEED OF THE STUDY:

As educators and policymakers strive to provide students with a holistic education, the importance of effective timetable cannot be overstated. A well-crafted timetable is more than just a schedule; it is a tool that can significantly impact students' academic performance, socialization, emotional well-being, physical development, and personal growth. An effective timetable ensures that students have sufficient time to engage with each subject, promoting deeper understanding and better retention. By allocating adequate time for learning, students can develop a stronger foundation in core subjects, leading to improved academic performance. Moreover, realistic timetables help students manage their workload, reducing stress and anxiety. Beyond academics, timetabling plays a critical role in fostering social skills and relationships. Break times and group activities provide opportunities for students to interact, build friendships, and develop essential life skills like teamwork and communication. Extracurricular activities, such as sports, clubs, and arts programs, encourage exploration of interests and talents, helping students develop their unique identities.

A well-structured timetable is essential for maintaining emotional balance. By incorporating breaks and relaxation periods, students can recharge and manage stress. Predictable schedules provide stability, helping students develop emotional resilience. Furthermore, timetables that prioritize self-care activities, such as mindfulness or meditation,

promote mental health and well-being. Regular physical activity is vital for students' physical health and fitness. By prioritizing physical activities in timetables, schools can combat sedentary lifestyles, improve concentration, and enhance overall well-being. By setting achievable goals and managing their time effectively, students develop motivation, self-confidence, and self-awareness. These skills are crucial for success in academics and beyond.

Findings from this study will inform educational policymakers and administrators about the importance of considering student development when creating timetabling policies. By understanding the impact of timetabling on students, policymakers can develop guidelines that promote student well-being, academic success, and social growth. This study's results will provide school administrators with practical strategies for creating effective timetables that cater to students' diverse needs. By adopting student-centered timetabling approaches, administrators can foster a supportive school environment, enhance student engagement, and improve overall academic performance.

Despite its significance, there is a scarcity of research focusing specifically on the impact of timetables on holistic development of school students. Existing studies primarily concentrate on academic achievement, neglecting other essential aspects of student development. Hence, the researchers decided to conduct the study entitled as “Analyzing the Effectiveness of School Timetable on The Holistic Development of Secondary School Students in Khordha”.

V. OPERATIONAL DEFINITION OF KEY TERMS

School Timetable: For the present study, school timetable is an organized plan that specifies time periods for different subjects, teachers, and classrooms, and provides students with a clear picture of their daily schedule, time management, and prioritizing assignments.

Holistic Development: For the present study, holistic development is defined as a multifaceted process that incorporates five aspects of human growth and development which are the physical, intellectual, emotional, mental, and social dimensions. It contains a well-balanced amalgamation of these aspects, leading to an experienced and balanced individual.

A. Secondary School Students:

For the present study, secondary school students are the students who are enrolled in the schools in Classes IX and X of Khordha District.

B.Objectives of the Study:

The study was conducted with the following objectives.

1. To study the relationship between school timetable and students' physical activity levels.
2. To identify the factors that promote both intellectual growth and mental well-being in students.
3. To evaluate the effectiveness of school timetable on social-emotional learning.
4. To find out the essential elements of a student-friendly school timetable.

C. Delimitation of the Study:

The study was delimited to the secondary school students in Bhubaneswar city of Khordha district. Here, class IX and X students were taken as sample in the study.

D. Method of the Study:

The present study was based on descriptive survey method in nature and mostly based on primary data collected from the learners of the schools in Khordha district. A descriptive study describes and interprets the present status of what is, recording, describing, analyzing and interpreting conditions that exist. In the present study under descriptive survey method school surveys were done to collect data. For this purpose, 120 sample were selected from the five higher secondary schools.

E. Population of the Study:

The population for the present study was all students of classes IX and X of the secondary schools of Bhubaneswar City.

F. Sample of the study:

For the study, the sample of 120 students of five secondary schools of Bhubaneswar Municipality were selected randomly.

Table:01

Sl. No	Name of the Institution	Total
1	SAI International School, Bhubaneswar	24
2	KIIT International School, Bhubaneswar	24
3	D.A.V Public School, Chandrasekharpur, Bhubaneswar	24
4	ODM Public School, Bhubaneswar	24
5	Kendriya Vidyalaya No.1,Bhubaneswar	24
Total		120

G. Tools:

The questionnaire developed by the researchers titled "Questionnaire on Timetable" was employed for data collection. The content of the questionnaire was developed from related literature, especially studies where similar information was solicited. The instruments were discussed with the experts for obtaining valuable suggestions for improving the items.

Questionnaires can be of two types: closed-ended or open-ended. Closed-ended questionnaires submit limited response options like "Yes/No" or multiple-choice, making them easy to administer and study. Richer insights can be obtained from thorough, free-form responses to open-ended questions, but processing time is increased. This study exclusively utilizes both for efficient data collection and analysis.

H. Procedure of Data Collection:

Selection of the proper method depends upon the nature of the problem stated and the objectives of the study to be achieved. The main objective of the present study was to analyze the effectiveness of school timetable on the holistic development of a secondary school student.

After approval of the proposal, the researcher tested the validity of the instruments through a pilot study to ensure that they suited the nature of the study area. The investigators shared the questionnaire in a Google form format. The researchers clearly explained the purpose of the research in the introduction of the form. They were told that the results will be kept strictly confidential. The students responded to all the questions in the questionnaire that assessed the effectiveness of their school timetable on holistic

development. The results of the test were calculated and tabulated.

I. Analysis and Interpretation of result:

The researchers employed descriptive analyses, frequencies, and percentages. The frequency and percentage analysis of the data gathered for this study was done before any necessary graphical representations were added for clarity. With the study's goals in mind, data on various areas of holistic development in accordance with their school timetable have been interpreted.

Objective 1: Relationship between school timetable and students' physical activity levels.

In order to estimate the effectiveness of school timetable, the study was first examined for any differences in the physical development of the secondary school students. The following data was collected.

Table: 02 Relationship between school timetable and students' physical activity levels

Physical Development	I get short breaks in between classes for physical movement.	I get time to play outdoor games in my school.	I get to improve my skills in performing arts.	Percentage
Agree	39	46	49	37
Strongly Agree	26	25	28	22
Neither Agree nor Disagree	13	13	23	14
Disagree	23	18	11	14
Strongly Disagree	19	18	9	13
Total	120	120	120	100

Table 2 provided information on how students perceived the influence of their school timetable on their physical development. Notably, 22% strongly agree and 37% agree that their timetable offers plenty of possibilities for physical development. While 13% of kids completely disagree, the same proportion (14%) are neither in agreement nor disagreement with the idea that the school timetable aids in their physical development.

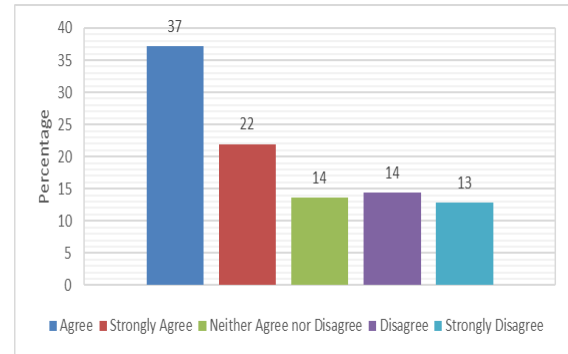


Figure 1: Graphical representation of relationship between school timetable and students' physical activity levels.

Objective 2: Identify the factors that promote both intellectual growth and mental well-being in students. This sub section includes the evaluation of responses made to factors that promote both intellectual and mental growth. In order to find out the significance of the difference the following data was calculated and analyzed.

Table: 03 The factors that promote both intellectual growth and mental well-being in students.

Mental & Intellectual Development	I maintain balance between my studies and leisure time.	I can understand each and every subject properly.	I can manage to study two major subjects consecutively, one after the other.	I can fully concentrate in every class.	I am motivated to study all the time.	I participate in different student contests organized by my school.	Percentage
Agree	48	57	58	42	26	45	38
Strongly Agree	19	15	37	13	10	32	18

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Neither Agree nor Disagree	31	29	13	36	38	26	24
Disagree	15	13	9	23	26	16	14
Strongly Disagree	7	6	3	6	20	1	6
Total	120	120	120	120	120	120	100

Table 3 provides information that while 82.5% of students feel confident in understanding academic subjects and 63.3% can balance studies and leisure, a significant number face challenges in concentrating in class 55% and maintaining consistent motivation to study 48.3%. Despite these challenges, students show a strong engagement in extracurricular activities, with 77% participating in school-organized contests. These findings emphasize the need for targeted interventions to enhance students' focus and motivation, ultimately leading to improved academic outcomes.

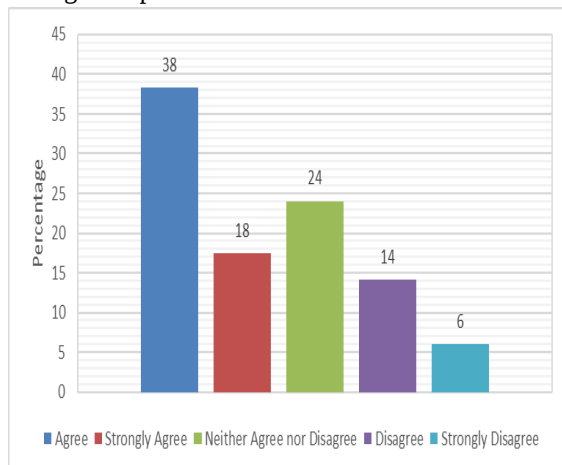


Figure 2: Graphical representation of the factors that promote both intellectual growth and mental well-being in students.

Objective 3: Evaluate the effectiveness of school timetable on social-emotional learning.

The data in this sub section includes the valuation of responses obtained for socio-emotional learning of a student from his/her school timetable. In order to find out the meaning of these differences the following data was calculated and analyzed.

Table: 04 The effectiveness of school timetables on social-emotional learning.

Socio-Emotional Development	I am always prepared to face any challenge in my class room.	I promote suitable to be practical in my classroom.	I contribute to team projects in my classroom.	I understand my strengths and weaknesses in class room.	I express my views/opinions with out hesitation in class room.	My school organizes excursions/picnics at regular intervals.	Percentage
Agree	40	51	43	46	36	28	34
Strongly Agree	39	29	65	58	46	17	35
Neither Agree nor Disagree	24	29	8	14	18	22	16
Disagree	12	7	2	1	17	23	9

e							
Strongly Disagree	5	4	2	1	3	30	6
Total	120	120	120	120	120	120	100

Table 4 provides the data on students' self-reported socio-emotional skills and attitudes reveals a generally positive outlook. A majority of students, 79%, feel prepared to face challenges, 63% express their views confidently, 81% demonstrate strong teamwork skills and 71% of students show a willingness to contribute to school projects. However, areas for further development have been identified, including fostering environmental sustainability awareness and promoting self-awareness, as evidenced by 29% and 14% of students respectively being undecided about these topics. Overall, the data highlights students' strengths while pinpointing areas that require attention for further growth and development.

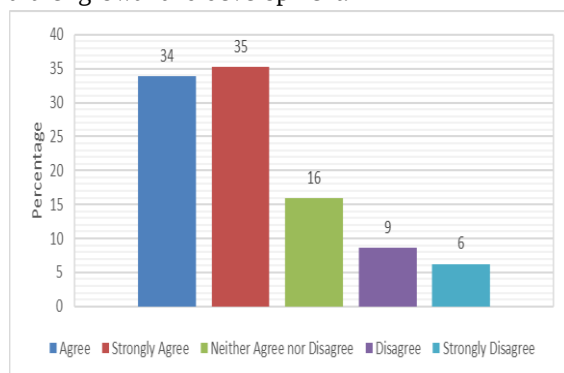


Figure 3: Graphical representation of the effectiveness of school timetable on social-emotional learning.

Objective 4: Study the essential elements of a student-friendly school timetable.

To find out the essential elements of a student's school timetable, the data entered in the questionnaire was calculated and analyzed. This diagram outlines the key elements examined in the research study to evaluate the influence of school timetables on the development of secondary school students.



Figure 4: Pictorial representation of the essential elements of a student-friendly school timetable.

VI. FINDINGS OF THE STUDY

- It was found that 32 (39.5%) agreed and 26 (21.6%) strongly agreed that it was essential to have short breaks in between classes to allow brief physical activity sessions which could improve children's concentration and general well-being.
- A significant proportion of students - 46 (38%) agreed and around 25 (21%) strongly agreed that they had the opportunity to play outdoors.
- While majority of students, 49 (40%), agreed that their school timetable helped them improve skills in performing arts, there was an equal percentage 13.7% of students who neither agreed nor disagreed and disagreed for the same.
- 56% of students agreed or strongly agreed that they could maintain a balance between their academics and free time, while 18% disagreed, indicating that a they struggled with time management.
- About 60% of students understood their subjects well, but nearly 16% reported difficulties in doing so.
- 79% (58 students (48%) and 37 students (31%)) of students agreed or strongly agreed that they could handle two major subjects back-to-back, reflecting strong adaptability. However, 10% of the students were overwhelmed in the process.
- While 46% of students could fully concentrate in their classes, 24% disagreed with the same. 36 (30%) of students neither agreed nor disagreed for the statement which indicated that children's concentration depended the structure of the timetable.

- Only 30% of students felt motivated to study regularly, while a majority of students, 38% (26 students (22%) and 20 students (16%)) either disagreed or strongly disagreed respectively which highlighted a concern on their school timetable.
- A strong majority of students, 65%, agreed and strongly agreed that they were able to actively participate in school contests however, 13% disagreed that their school timetable did not permit them to participate.
- About 65.5% of students felt prepared to face challenges in the classroom however, 12 students (10%) disagreed which indicated the need for additional support in handling classroom challenges.
- It was found that 51 students (42.5%) which was the majority, agreed that they promoted sustainable practices in the classroom. Only 24% responded to the statement as neither agree nor disagree.
- A remarkable 90% of students could contribute to team projects in their classrooms according to their school timetables. Very few students, 4 (3%), disagreed and strongly disagreed that they were able to perform team projects.
- The study revealed that 58 students (48%) could identify and understand their strengths and weaknesses, and only 2% disagreed, which indicated that students were able to comprehend their strengths and flaws.
- A significant proportion of students - 46 (38%) strongly agreed and around 36 (30%) agreed that they could express their opinions confidently in the classroom however, 17% faced hesitation.
- Only 34% of students agreed that their schools organized regular excursions or picnics regularly, however, a significant 44% (23 students (19%) and 30 students (25%)) disagreed, their school timetable did not have regular excursions to provide students with enriching and relaxing experiences.
- It was found that a timetable must contain the following essential elements:
 - a) A proper balance between studies and leisure time by allotting time for short breaks during which students could do some physical exercises and play sports that decreased stress levels and increased productivity.
 - b) The students recommended flexible time tables that encouraged self-directed learning, recapitulation of concepts in frequent time intervals, and time management—all of which fostered self-awareness and self-confidence.
 - c) Dedicated time slots for core subjects, according to the learning demands of students, could help them focus on those subjects where they faced more challenges.
 - d) By setting smaller objectives that were easier to achieve and that allowed students to make consistent progress, the timetable could promote adequate rest and sleep to enhance their day-to-day mood, motivation, and cognitive capabilities.
 - e) Students suggested including extracurricular activities like music, painting, literary clubs, theater clubs, and others that encouraged creativity, social interaction, and personality development.
 - f) Timetables that were designed on an individual basis that included personal learning styles and preferences could inspire students to involve themselves in their learning positively.

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