BEYOND THE PEDAGOGY: ASSESSING THE IMPACT OF SLATE PROJECT ON GOVERNMENT SCHOOL STUDENTS

DISSERTATION

Submitted by

MARIA ANTO PADINJAREKARA

SM22JMC012

Under the guidance of

ANSA JOSE

In partial fulfilment of requirements for award of the degree

Of Master of Arts

St. Teresa's College (Autonomous), Ernakulam

College With Potential for

Excellence Accredited by NAAC with 'A++'

Grade

Affiliated to

Mahatma Gandhi University

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Certificate

I hereby certify that this project entitled **"BEYOND THE PEDAGOGY: ASSESSING THE IMPACT OF SLATE PROJECT ON GOVERNMENT SCHOOL STUDENTS"** by **Maria Anto Padinjarekara** is a record of bonafide work carried out by her under my supervision and guidance.

Ernakulam   Ms. Ansa Jose

March 2024   Department of Communicative English

                                                  St. Teresa's College (Autonomous)

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I take this opportunity to offer my humble prayers and thanks to God Almighty for His mercy and blessings for the completion of this project.

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Maria Anto Padinjarekara

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ABSTRACT

The world is changing rapidly with the rise of innovation and state-of-the-art pedagogies. The paper is an attempt to investigate the effects of a multi-nodal educational project called SLATE, broadened as Sustainability Leadership & Agency Through Education, incubated at St.Teresa's College Ernakulam in Kerala, and its consequent alignment with Education for Sustainable Development and Education 4.0. The study is carried out by examining several key factors, including student attitudes, receptivity to project-based learning methods, and a renewal of approaches with regard to educational outcomes. The project is implemented in a phased manner, wherein the first phase will focus on improving the learning practices of 21 government schools in Kunnathunadu constituency. The fundamental goal of the SLATE project is to effectively bridge the gap between the quality of education provided in private and government schools, thereby establishing a realm of equitable learning.

A qualitative study will be conducted by gathering in-depth interviews with key stakeholders involved in the SLATE project, in addition to observing the best trends and policies adopted by this initiative in fostering a more inclusive curriculum meeting the multi-layered requisites for an effective learning environment. The theoretical foundation used for assessing the impact is technological determinism, where digital technologies become a force to reckon with by spearheading the changes of the times. The study will help to garner insights on sustainable and new-age pedagogical models and how they focus on revamping the current scenario of education to suit the demands of a phygital landscape.

Keywords: SLATE, education, pedagogy, project-based learning

CHAPTER 1: INTRODUCTION

The current study, titled "Beyond Pedagogy: Assessing the Impact of the SLATE Project on Government School Students," evaluates the influence of SLATE (Sustainability Leadership and Agency Through Education) as an educational project within the framework of school education and how it is implemented in tandem with the principles of ESD (Education for Sustainable Development) and Education 4.0. It studies the project's pivotal role in the changing landscape of Indian education, especially in reference to local self-government-supported schools in urban constituencies. The project takes into account a constituency called Kunnathunadu, and the major focus will be on 21 government-aided schools spread across 8 panchayats in the Kunnathunadu assembly constituency. The target segment for this study will be the 8th to 12th-grade students who come under the ambit of this innovative project. The core of the SLATE project is to effectively bridge the gap between the quality of education served in private and government schools, thereby fostering an environment of equitable learning. Unlike the traditional method of teaching and absorbing information, the SLATE model of learning is designed in a creative and inquisitive manner in sync with the times.

1.1 EDUCATION FOR SUSTAINABLE DEVELOPMENT

This initiative put forth by the UNESCO aims to enlighten dwellers across the world to direct their activities in a way that helps our planet thrive, addressing the climate change, inequalities, and other environmental and socio-economic issues at the forefront. Human activities are causing irrevocable damage to nature's ecosystem. A properly laid-out policy framework and educational endeavors are crucial to reviving our ecosystem. Thus, education for sustainable development calls for individual and joint action by learners of all age groups to protect our natural environment to begin with. This includes taking actionable steps and

getting students to monitor what is causing climate change or how pollution in cities can be contained to some extent.

1.2 EDUCATION 4.0

The Education 4.0 framework holistically encompasses a slew of skills, aptitudes, values, beliefs, and thought processes powered by technology that prepare young learners for the wellness of future economies. It is characterized by the adoption of digital technologies, personalized learning approaches, and comprehensive skill sets that equip 21st-century learners to adapt to the multifaceted technological, social, and changing demands of the millennium, unlike the traditional one-size-fits-all approach to dealing with industrial demands.

1.3 KEYWORDS DEFINED

1.3.1 Pedagogy

Pedagogy is a term that is often used as a synonym for teaching. However, the term itself encapsulates a wide assortment of concepts and practices that a teacher uses to help students make the most of their learning expedition. It is an amalgamation of all the interactions, mainly planning, tutoring, and, in addition, assessing the impact of the tutoring through various parameters such as student learning outcomes. More broadly, this concept also covers enrichment programs, relationship building, interference for low-performing pupils, and anything and everything to better the learning prowess of students. It is the way in which the curriculum is dealt with by teachers in class and how students decipher the content that is being taught. While delivering lessons, a teacher will be looking at multiple ways to pass the knowledge, and this practice or methodology will be largely based on their preferences, models of teaching, and the context in which they cater to a pupil's education.

1.3.2 SLATE

Sustainability Leadership and Agency Through Education, abbreviated as SLATE, is an educational project that is based on three pillars: Education 4.0, Education for Sustainable Development, and National Education Policy 2020. The project is poised to revolutionize the education system with its innovative pedagogical approach and project-based learning curriculum that seek to educate, inspire, and embolden students to acquire new knowledge through the application of learned facts and concepts. It espouses a hands-on learning approach and encourages sustainable development.

Fig. 1.3.2.1

Incubated at St. Teresa's College, the project delivers an array of curated programs that will be offered both in offline and online formats. Q Series, an ed-tech platform will act as the

SLATE resource portal. The project will encompass a variety of components serving students, such as English for Communication, Student Entrepreneurship, SDG Microcourses, Effective Citizenship, Empathy and Mental Well-Being, Curiosity-Driven Learning, and Gamified Math. Another critical component of the SLATE Project is RAAR (Review Audit Analysis and Research). The English for Communication component seeks to improve communication skills and boost confidence by looking at English as a medium of speech in diverse contexts. Whereas, the Student Entrepreneurship area focuses on feeding the entrepreneurial spirit in young learners and job seekers alike. Further, the SDG Micro courses component prompts pupils to create short micro courses based on any of the 17 sustainable development goals (SGDs), thus raising awareness about the SDGs and making them proponents of change in an ever-transitioning world. Igniting students' minds with constitutional awareness and improved knowledge of the various acts provisioned in the legal sphere underlines the Citizenship and Civic Responsibility component.

The Empathy and Mental Well-Being segment entails cultivating empathy and promoting teacher training programs in schools to actively understand students and their differentiated learning blocks. The next segment, Curiosity-Driven Learning, employs quizzes as a tool to instill curiosity in school students with a granular mission to make them curious in the long run, in addition to improving observation and effective time management to tackle questions in a time-bound manner. Another interesting segment in this space is the Gamified Math component, which devises games as tools to learn math in a fun and intriguing manner putting a clear emphasis on gamification, thereby turning the process of learning math into an enjoyable and enlivening activity.

The RAAR mainly comprises four key areas: impact assessment plan, informed decision-making, knowledge bank, and policy advocacy. A group of ex-MGNF (Mahatma

Gandhi University National Fellows) are mentoring RAAR for SLATE. The RAAR sector mainly deals with pre-surveys, data collection, and executing a pilot study on the effectiveness of SLATE as an educational project benefiting students from different syllabi.

The first phase of this project's implementation will be carried out in the 21 schools of Kunnathunadu constituency in Ernakulam, Kerala, in collaboration with Kunnathunadu MLA Adv. P.V. Sreenijin's Vidyajyothi Project, which is funded by Bharat Petroleum Corporation Limited as part of their corporate social responsibility. (Refer to Fig. 1.3.2.1)

1.3.3 Project

The word can be referred to as an ephemeral endeavor undertaken to create a distinct product, service, or targeted result. It is characterized by several attributes, such as an allotted time frame, a fixed scope, and a collection of objectives as a useful starting point. It typically comprises a series of coordinated efforts or activities directed at achieving some valuable results within a specified budget or a stipulated time frame. For a project to come to fruition, it is required to ensure that each of the following steps is well taken care of: planning, executing, monitoring and evaluation, controlling, etc.

A project mostly has a limited scope and duration. It involves the application of already-learned concepts in a classroom. Whereas, in project-based learning, students actively learn along with the project execution; the learning will be centered on solving a real-world problem or a question that drives one to explore possible solutions on how one can handle problems concerning humanity like climate change, global warming, population explosion, etc. In the PBL approach, students have a voice of their own and have the opportunity to make choices about how to learn, unlearn, and relearn, thereby improving their critical thinking ability. Furthermore, it embraces a collaborative method, thus reinvigorating their team-building and

leadership skills. They learn about simulation and hyper-realities, becoming experts in confronting a lot of what-ifs, and come up with solutions for a promising future.

1.3.4 Government School Children

They are a group of students studying in educational institutions that are funded or operated by the government. These are mostly known by the name 'public schools' in myriad countries and accommodate children to ensure equitable access to education for all pupils in their area of jurisdiction. It typically has a huge expansion of children from various socio-economic backgrounds, and these institutions are often entrusted with providing subsidized or free education to children seeking knowledge. The Government of Kerala provides midday meals during noontime in government schools as part of their trademark educational scheme to augment the nutritional status of children and also to boost school attendance, thereby enhancing learning exposure.

1.4 OBJECTIVES

- To understand the core principles and pedagogical approaches underlying the SLATE Project that will cover all aspects related to its formulation, policy references, an overview of the current education landscape, and how this project is designed to benefit generations of learners and school goers to act as advocates for social change in future.

- To gauge SLATE's influence on student learning outcomes.

- To understand the perceptions and experiences of key stakeholders involved in the SLATE initiative.

- To address the challenges and opportunities in carrying out the SLATE project.

1.5 THEORIES

1.5.1 Technological Determinism

Thorstein Veblen's theory of technological determinism puts forth the idea that technology has a seminal impact on the way humans perceive the world enveloping them. This is true with innovations such as the steam engine and printing press, after which they changed the course of human history prominently for the better. Currently, we are living in the age of artificial intelligence, where any task from the bottom-line to highly sophisticated can be executed effortlessly with the aid of AI. The evolution of digital technologies has had a profound impact, transforming the way people communicate and interact with each other, as underlined in the concept of 'Media determinism' with a slice of reference to Marhsall McLuhan's 'Medium is the message' idea. In the same manner, the use of audio-visual mediums and innovative pedagogies could influence the student's perception of learning, thereby making education a pursuit of advanced knowledge and enhanced thinking, eventually maximizing its impact. There are two concepts with regard to technological determinism: hard TD and soft TD. The premise of hard TD revolves around the idea that technology is the sole determiner causing and effecting changes in society. On the other hand, the soft TD ideologue argues that technology is one of the many drivers in a society, and other factors like social contexts have a role to play in spurring innovative models in addition to shaping and remodeling the development of technology.

CHAPTER 2: REVIEW OF LITERATURE

The articles synthesized in the literature review are based on the epistemology of project-based learning methods and how they augment the learning process in a holistic manner. It seeks to impart a ground-level understanding of the innumerable benefits of integrating the PBL method into the curriculum and how it translates into bringing about significant changes in the existing framework of education through purpose-driven educational projects like SLATE.

2.1 "The Effectiveness of the Project-Based Learning (PBL) Approach as a Way to Engage Students in Learning" by Mohammed Abdullatif Almulla

The article explores different factors related to learning that contribute to increased collaboration and critical thinking aspects among teachers and teacher-student interventions. Additionally, the study carried out in the year 2020 espoused a quantitative method of analyzing and interpreting data by curating questionnaires dispensed to 124 teachers spread across multiple domains of knowledge. It described five core aspects of the PBL approach: collaborative learning (CL), iterative learning (IL), authentic learning (AL), and disciplinary subject learning (DSL). Further, the study came up with 11 hypotheses to develop a model to uncover how PBL affects student engagement. The learning methods demonstrated a positive correlation between accentuated learning cues and student engagement, thus promoting an overall improvement in student participation and teacher understanding. In a nutshell, the study irrevocably testifies the positive impact of the PBL method on student learning outcomes and the favorable attitude of teachers as well as students, which in turn reiterates PBL's effectiveness as a concept in theory and practice.

This article thus amplifies the idea that the PBL method fosters student engagement and has the potential to bring about a change in the way education is practiced. As it is well acknowledged, education is the pathway to the future of these students, and the right mix of concepts and activities is crucial for student participation in academics. Therefore, it is possible to draw the conclusion that SLATE can revolutionize classroom learning to adapt to contemporary pedagogical demands.

2.2 "Revisiting the effects of project-based learning on students' academic achievement: A meta-analysis investigating moderators" by Cheng-Huan Chen and Yong-Cih Yang

This 2019 study carried out a meta-analysis to break down existing research that juxtaposed the effects of project-based learning with that of traditional instruction on student achievement in academics. It was conducted to close the void of statistical data in this research domain. For this purpose, it pursued 30 eligible journal articles that marked publications from 1998 to 2017, which represented an overall strength of 12,585 students situated across nine countries in 189 schools. The results solidified the concept surrounding project-based learning as an effective medium of instruction when compared to traditional ways of disseminating knowledge. Particularly, the present study aims to address two questions: What are the holistic effects of PBL study prototype on pupils? How much are these effects influenced by study dimensions of PBL, such as hours of instruction, IT aid, educational stage, subject area, group size, institution location, etc.? To conclude, the study effectively underlines the idea of project-based learning as having the potential, in medium to large volumes, to have a positive effect on student academic achievement compared with traditional teacher instruction, or TI.

The impact of the PBL approach in education is broad, and when compared with traditional methodologies of learning concepts, it vouches to be a novelty and skyrockets

student enrolment and retention. Because learning not only helps them understand subjects but also opens up their world to a set of opportunities that they can seize and leverage, a realm otherwise undiscovered. Therefore, the study advocates the concept of holistic learning, which is one of the objectives of the SLATE program.

2.3 "The Effect of Project Based Learning on Seventh Grade Students' Academic Achievement", by Oktay Kızkapan and Oktay Bektaş

This study, executed in the year 2019, applies the method of quantitative research design, specifically the pretest-posttest control group quasi-experimental method, to closely track the magnitude of the implications of PBL on the academic scores of seventh graders. These project-based methods are shown to be pivotal in exposing them to a myriad of opportunities to enhance their achievement quotient. Moreover, these dynamic tasks enable them to work in tandem with each other in a group to understand what collaboration in a real-world environment looks like. As per the results gathered through a post-performance analysis, there was no measurable relationship between the control group and the experimental group. Although a suggestion was made to incorporate the practical input of pre-learning activities for students to better adapt to the project-based learning curriculum, In addition, PBL has also been proven to boost meta-cognitive abilities and strengthen the individual performance of students across the science stream.

Since this article sheds light on the effect of the PBL method on seventh grade students, highlighting positive benefits such as supercharging meta-cognitive skills and other neurological skills, it can validate the SLATE method, which has a similar set of methodologies and aims. Boosting the thought process in students can help them think critically and find solutions for the problems that unfold in their bandwidth.

2.4 "Digital Technologies in Education 4.0. Does it Enhance the Effectiveness of Learning?" authored by Muhammad Imran Qureshi and et al.

The article, published in 2021, studies the imperativeness of educators to apply digital technologies to improve the learning capabilities of the current generation. It is meticulously designed to keep abreast of the overall progress of such disruptive learning models and their inextricable link with Education 4.0. The concept of Education 4.0 relies on the core discourse that a skill that is indispensable today may not exist tomorrow with the rapid advancement of various digital tools and mountains of databases around the world. The research diligently follows a structured SLS, or systematic literature review approach, utilizing the PRISMA statement 2015 and the scopus database for extracting the requisite literature. After the conceptualization of information, the initial search results revealed 3348 articles, which were further sieved down to 112 using relevant keywords. The disciplines selected for the study comprised business, engineering, computer sciences, and so on and so forth. Consequently, a bombardment in the number of journals and articles in relation to this domain indicates a widening interest in digital technologies, an ongoing publication trend that is likely to continue. The research findings further encapsulate the need for reforms in education to cope with the present demands of Education 4.0, prompting a call for emphasis on digital competencies.

As this study encapsulates a comprehensive data analysis of the broadened impact of digital technologies across a wide range of domains such as computer sciences and engineering, it is applicable to the SLATE modus operandi, which touches upon diverse components such as effective citizenship, student entrepreneurship, etc. According to Education 4.0, technologies such as the more recent Artificial Intelligence can alter the learning curve and translate it into a cosmic occurrence where new models of pedagogies evolve, transcending the

normalities of regular technological devices. It can indeed ignite a revolution in knowledge accumulation, as with the rise of chatbots such as Google's Gemini 4, OpenAI's GPT-4, etc.

2.5 "The Effectiveness of Using Technology in English Language Classrooms in Government Primary Schools in Bangladesh" by Ruxana Hossain Parvin and Shaikh Flint Salam

This article, published in 2015, revolves around a pilot project incubated in Bangladesh as part of a one-year program aimed at enhancing learning outcomes with the prowess of information and communication technologies (ICT) in education. The project called 'Save the Children' was designed to bring about resounding changes in classroom learning and provide first-hand experience of a new model of learning to teachers and students. The pre-intervention survey showed that teachers do not have adequate language competence to expectantly facilitate learning in English classrooms using the CLT, or Communicative Language Teaching framework or approach. The methodology was poised to document the noticeable changes in the English language classrooms in primary standards immediately after the incorporation of audio-visual materials as supplementary aids in tutoring. Interactive multimedia software centered on the National Educational Portfolio of Class 4 English was developed, put into practice in a farrago of 18 government primary schools, and monitored to monitor the effects of audio-visual content on learning new topics.

The findings were based on a comprehensive analysis of school exam results from two categories of schools: information and communication technology-implemented pilot schools and non-implemented schools, in addition to focus group discussions with tutors and pupils and classroom observations. The researchers analyzed the results from mainly two angles: 1) Changes interwoven in teacher development and classroom teaching practices 2) The combined

effect on student learning outcomes. The final outcomes of the study prove that audio-visual content has immense capacity to scale up mundane language lessons into interactive language arenas. On the other hand, the triumph of the project is in close consonance with and in proportion to the extent of the training dispensed to the faculty and how the project is tailored to meet the educational and cognitive demands of the classroom learners.

This study emphasizes how interactivity in classrooms can be a critical component that mediates student participation and knowledge receptivity. One of the core mechanisms of SLATE is learning through activities in real-world scenarios, which would give students valuable insight into the environment that they constitute and make them find answers galore to events and issues that were unknown before. The definition of interactivity should not be merely dedicated to purposeful communication between the speaker and the receiver in an agile manner. Rather, it should be actively contributing to the discourse; understanding each other's role in creating momentum.

2.6 "How will Education 4.0 influence learning in higher education?" by Alan R. Williams and et al.

The article issued in May 2020 discusses how education acted as a steering wheel, providing guidance and direction for people across societies, quoting the example of formal schooling systems stationed in Ancient Greece, where young men were trained to serve in the military. Fast forward a few centuries: the first industrial revolution initiated the role of the populace as factory workers after obtaining compulsory education in schools in the United Kingdom. Further, the second industrial revolution, timed around the 19th century, was based on disrupting electrical power, followed by the third industrial revolution built on the bricks of scientific progress in the aftermath of the Second World War. Well, it is indeed acknowledged

that rapid changes started to occur in the compulsory education system with the advent of modern information and communication technologies and that now we are witnessing the fourth industrial revolution. "Change in compulsory education continues, and Smith (2014, p. 16) suggests that 'the spread of ICT' is arguably one of the greatest changes that compulsory education has witnessed in the last twenty years'."

The article also draws attention to a categorization of generations after World War II into Baby Boomers, Generation X, Generation Y, and Generation Z, or the iGeneration, born in the years 1946, 1965, 1977, and 1995, respectively. According to the scholar, it is Generation Z who received compulsory education in an online world from teachers taught and educated in an offline environment. An analysis of the activities of these online learners revealed mainly three varieties of UK users: Group 1 espousing the information superhighway pathway for education and leisure, Group 2 engaging in recreational activities, and Group 3 primarily exhibiting a sense of non-involvement in using technology in general for any purpose concerning their homework and the like. The article highlights Gen Z pursuing higher education using technology, as their previous generation also considered it to be the norm.

ICT in education has pervasive impacts that not only sparked an upward trend in learning outcomes but also improved the mere prospect of learning in otherwise tedious classrooms. The SLATE strategy is built upon the solid pillar of Education 4.0, which is transdisciplinary and multimodal, covering an entire gamut of skills such as soft skills, interpersonal skills, logical reasoning, and so on and so forth.

2.7 "The Effect of STEM Project Based Learning on Self-Efficacy among High-School Physics Students" by Mohd Ali Samsudin and et al.

PBL in relation to STEM (Science, Technology, Engineering, and Mathematics) and its effectiveness in creating meaningful lessons in addition to influencing the attitudes and self-beliefs of students in order to pursue a particular career in the future is what this article tries to unravel. The study further points out the repertoire of literature comprising different models of incorporation of STEM into a PBL method of learning. The study undertook the path of a quasi-experimental method of exploration by wielding Bandura's social cognitive theory as a tool to assess, compare, and contrast the juxtaposition of STEM PBL with traditional teaching methods. The effect was plotted by observing the individual impact of these distinct pedagogies on the self-efficacy of 100 high school students in learning physics. Bandura proposed four self-efficacy sources for a better grasping of this concept, and that includes mastery experiences demonstrating successful results with higher self-efficacy and bad results with low self-efficacy. On the other hand, vicarious experiences occur when individuals take notice of others and compare the lot regarding a task entrusted to them. The third source of self-efficacy is social persuasions, which are a reflection of verbal suggestions from familiar or anonymous people, mostly relating to stereotypes, prejudices, and biases. The final source of self-efficacy comes from physiological states, which are often labeled as the emotional and physical responses that are elicited from an individual while dealing with a task of any magnitude. This could be in the form of anxiety or stress. Overall, the results confirm that STEM PBL indeed improves a school-going learner's self-efficacy to solve the puzzle of complex physics problems.

At the same time, the study advances a guideline for further research in this domain. Setting the narrative straight, it says that there is a visible link between a student's self-efficacy

and his or her perseverance in career decisions in science or science majors. Students with low self-efficacy are unlikely to attempt to solve a problem when they encounter it in an educational setting. The evidence undeniably supports the indisputable role of self-efficacy in one's learning curve to achieve milestones. The dependency on external factors for the giant push to pursue tasks may not be ideal; albeit intrinsic motivation and self-mastery can truly be wielded by a student looking to shine through the academics.

In many ways, self-efficacy has a role to play when it comes to choosing an area of study in the future with respect to different genders. Consider this statement: "For instance, Liu et al. (2014) showed that STEM self-efficacy is an important factor that would affect girls' intentions in choosing the engineering profession." It presents the idea that there is unarguably a difference in the mean scores of students who followed the PBL with those of those who were undertaking conventional learning. According to the data, the followers of the PBL method demonstrated a slightly higher efficacy than those of traditional learning enthusiasts when it comes to finding solutions for physics problems.

The study hovers around the STEM-based PBL method, where self-efficacy is given strict emphasis. The Slate initiative aims to impart knowledge in a manner that nudges students to think for themselves, confront complex mathematical problems in a gamified manner, and learn through self-monitored strategies, thereby promoting self-efficacy.

2.8 "Learning History in Middle School by Designing Multimedia in a Project-Based Learning Experience" by Pedro Hernández-Ramos and Susan De La Paz

The article delves into a study conducted on eighth grade students who mastered the art of creating multimedia bite-sized documentaries on the 19th-century history of the U.S. in a unit spanning over six weeks. The authors pursued group projects, opinion surveys, and

knowledge tests to evaluate the benefits to students who were part of a technology-assisted project-based program over traditional modes of instruction. The results favored those who opted for a project-based learning condition in contrast to the conventional style of pedagogy. Those pupils exhibited a heightened level of history-thinking prowess in addition to an assimilation of fundamental history by collaborating in internet-based ecosystems. Moreover, the study focuses on the premise of fostering thinking outside of casual textbooks.

This study seeks to bring to light the power of technology-aided PBL in enhancing the learning receptivity of history among middle school students in a setting where most of the organizational factors, such as hours, curriculum, et cetera, remain the same in addition to little variations in instructional strategies. The study also highlights further areas that can be studied in the future. According to this method, researchers may work in tandem with teachers in the history domain to aid students in synergizing technology with learning, foster disciplinary thinking, and forge learning projects that are beneficial to them in the long run as academic enthusiasts.

Incorporating technology systems into learning can be a huge investment when it comes to nourishing the minds of these young learners with new information. Such technology-mediated environments will spur creativity and innovation, which is invariably one of the perks of the student entrepreneurship domain of SLATE. Entrepreneurship is mostly about creative problem solving, and for that area of expansion, creative muscles need a regular warm-up. Thus, education must include exercising this unique set of muscles and ligaments to reap the most benefits from the learning cycle.

2.9 "A qualitative study using project-based learning in a mainstream middle school" by Scott Wurdinger and et al.

The article lists lessons learned through the implementation of PBL methodology in a mainstream middle school in collaboration with the authors who deployed it. The impact of this method was gauged by analyzing parameters such as student engagement and teacher reception of this approach. The procedure proposed that teachers be presented with a diverse portfolio of problems, such as control, fairness, and time. The authors who initiated the study concluded that the engagement was indeed high with regard to teachers as well as students. Consequently, a survey conducted in the U.S. 10 years ago and cited in the work 'Bored of Education' by Wolk (2001) revealed that students selected 'boring' as the top word to attribute to their school experiences and 'nothing' to describe the best about school.

All these point out the fact that there needs to be an alternative and rewarding teaching strategy that gives prominence to a broad, multidisciplinary focus rather than a constricted, discipline-centered focus, emphasizing materials and data curated by students rather than textbooks prescribed by curriculum and teachers. Experiential learning is what SLATE stands for, as it goes beyond prescribed knowledge and instigates out-of-the-box thinking.

3. RESEARCH METHODOLOGY

A research methodology is a framework adopted by researchers to unfurl a phenomenon, discover solutions and gather data in a systematic manner. It is a collection of techniques, strategies, methods and procedures devised by research persons in order to gather, analyse and interpret data in a structured and scientific manner, contributing to the existing fields of knowledge.

3.1 TITLE OF THE STUDY

Beyond Pedagogy: Assessing the Impact of SLATE Project on Government School Students

3.2 RESEARCH QUESTIONS

1. What are the underlying principles and core pedagogical approaches of SLATE covering the diverse aspects circumferencing this initiative from its formulation to implementation?

2. What measurable impact does SLATE have on student learning outcomes?

3. Who are the key stakeholders involved in the SLATE project and what are their perceptions and experiences in relation to the social engineering that SLATE aspires to bring about in a society where traditional methods have long been ingrained?

4. What are the varied set of challenges and possibilities in the implementation of projects like SLATE?

3.3 RESEARCH DESIGN

The research design is mainly characterized by a plethora of qualitative methods that effectively captures the crux of this educational endeavor set to spark a reform benefiting students from across different domains. The process of carrying out the research involves conducting semi-structured interviews with key stakeholders comprising students, teachers, program coordinators, survey conductors etc. to gain understanding on the effectiveness of the project at a large scale. Furthermore, data will be garnered through visiting these schools, observing classroom activities and teacher and student interactions and how the pedagogy is being implemented at these government run institutions.

In order to discover the key components and intricacies of the SLATE project, the research design was formulated through open-ended questions where a primary question centered on the project's influence was identified. The foundational question comprises how effective SLATE can be as a new pathway to holistic education, catering to the needs of 21st century learners. The pilot project is studied by conducting in-depth interviews with key stakeholders and experts in the education and research domain of SLATE and gathered key findings and insight into tools, technologies and practices adopted by developers and investigated the learning outcomes of students from across different constituencies. This data will help in the improvisation of its future implementation, catering to the intellectual and societal needs of new-age learners.

3.4 HYPOTHESIS

Project-based learning methods have positive outcomes on students, cognitively and affectively.

3.5 THEORETICAL ANALYSIS

The medium under study is about a new-age education model that is based on NEP 2020, Education 4.0, Education for Sustainable Development and the principle of project-based learning. Parallelly, the theory 'Technological determinism' is brought under lens to investigate the potential of such novel and innovative praxis of education to bring about social engineering in a tangible manner. The theory posits the idea that technological innovation is the prime driver of social change as seen with the evolution of steam engines, computers and currently AI in a legion of sectors. In a similar manner, digital tools in education characterized by advanced technology have tremendous power to foster collaboration among peers, boost engagement and disrupt the learning ecosystem predominantly as it navigates the complexities of adaptability to the Education 4.0 and Education for Sustainable Development frameworks.

4. ANALYSIS AND INTERPRETATION

The content analysis is mainly done by analyzing data collected from interviews with experts and focus groups. Traditional educational systems have amply focused on cognitive abilities that are pivotal for the student learning curve since a lot of information reception requires cognitive skills to assess and interpret. However, the focus was presumably low on soft skills competency in school education. The data discusses a myriad of lesser charted territories or boundaries with regard to the sustainable model of education and aggregating sustainable development goals proposed by the UN into the present rote-based education system.

4.1 EXPERT INTERVIEWS

Following are the excerpts collated from the interview with experts:

- **Dr. Nithish T. Jacob (Director of SLATE)**

1. **What were the primary goals and objectives of the SLATE project when it was initiated?**

Our conventional education system is solely focused on academic topics. The marks scored in a conventional assessment were not serving the purpose of what education should be in Industry 4.0, a world scenario. There is a visible gap between higher education and industries, as pointed out by many stakeholders. How this gap needs to be filled is what the stakeholders are currently looking to achieve. One way of doing it is by making industry-driven internships part of the learning curriculum so that they get to know what the industry needs. In addition, teachers should have industry knowledge in addition to theory knowledge.

There is a dire need for students to be provided with holistic learning exposure. However, schools are operating under the system, and their perennial demand is to prepare students for

exams. Therefore, the first and foremost objective of SLATE is to create a channel between higher education, school education, and work. Moreover, amalgamating various components such as skilling, innovation, and sustainable cities that are part of the 17 sustainable development goals put forth by the UN into the school ecosystem and bringing forth awareness among students are two of our top priorities. How to negotiate, deal with conflicts, and so on and so forth are not part of the school curriculum. These vital skills that are prerequisites for learning and holistic growth can be benignly referred to as soft skills.

The second aim of SLATE is to bring quality education (Goal Number 4 of the SDGs) to government schools that is equivalent to or on par with education in private institutions. Private schools can afford some of the best programs with regard to skilling and innovation. However, those in government, although they have plenty of educational programs, need to be ignited in order to obtain the necessary outputs. Derived findings like some tangible changes that are manifested or what more can be done to secure the desired level of effectiveness through its implementation, can be summed up as research findings, and policy advocacy, which constitute the third objective of SLATE.

To summarize, SLATE was launched to bring about a change in the learning environment, for policy advocacy, to empower teachers and all the other stakeholders in the education sector, and to bring education on par, at least to some extent, with Industry 4.0 or Education 4.0.

2.   Could you provide an overview of the key components or features of the SLATE project?

We identified some domains focusing on critical thinking and problem solving that are not part of the conventional education system. One domain we curated is gamified math. The whole objective of this domain is to bring gamification into math, which is applicable to all other subjects. Gamification relies on the simple idea of making anything interesting, like sports and games, where people naturally gravitate towards such experiences. Math is deemed one of the more difficult subjects. Again, math and numerical skills are the building blocks of our foundational learning. However, the target student group of SLATE is high school and higher secondary, where they attempt highly competitive exams to advance in their careers.

The second domain is curiosity-driven learning. Curiosity is very inherent, and it is because of this distinctive quality that humans have spearheaded many innovations. A toddler will be curious during its incipient stages of growth and keep asking questions. Albeit, curiosity seems to wane as it grows up because of conventional schooling methods where every student will be streamlined to align with their peers, curtailing their individual perceptions. Overall, education should be in sync with the times. The crux of this domain is to instill curiosity through quizzes. These quizzes are formulated in a way wherein the question itself holds the cues that direct one to the answer. It appears like a puzzle to be solved. Another unique characteristic is that it could be linked to any subject, making it multidisciplinary. It acts as hook material for the teachers as well.

The third component is effective citizenship. It looks at how a student can enshrine the salient features of the Constitution right from school. This domain aims to raise awareness of all acts that are important to the target audience, such as the IT Act, the POCSO Act, the Cybersecurity Act, and others.

The fourth component, i.e., student entrepreneurship is empowered not just to create entrepreneurs but also for students to be able to identify a problem, look for a possible solution, practice design thinking, manage resources, find capital, and overcome failures. Technology is currently embedded in all the major sectors, and it can be used as an effective tool to scale the reach of solutions while decreasing the cost of a particular solution so that it becomes democratized. The fifth domain, SDG awareness, is to make the 17 SDGs part of the learning curriculum. The next domain, English for Communication, emphasizes the importance of language as a tool, as a channel, and as a global currency. It is an effective medium that can be wielded by the disadvantaged sections of society to go higher up the ladder. It also broadens to other activities such as student-led theater production, workshops, etc. (Refer to Fig. 4.1.1).

Another crucial domain of SLATE is Empathy and Mental Well-being. Even when you are building a product or a website, you should keep the end user in mind, which is one of the core concepts of design thinking. Is it user-friendly? Is it complex? All these questions need to be addressed. Another aspect of this, with regard to the COVID scenario, is the importance given to mental health. A lot of adolescents at this age will be fraught with a slew of familial and peer-related problems, and a heap of these issues could be solved at the school itself. A teacher's role goes beyond academic goals and extends to building a relationship with the student and preparing them for life. Is the system creating an environment for teachers to act in such a manner, or how can they be trained to do so by offering teacher-training programs in these government-supported schools? As first responders, are they equipped to deal with multiple sets of challenges present before them in relation to the student population? This is a perennial question that needs to be tackled.

Lastly, the online resource portal of SLATE, Q Series, provides a trusted digital passport for learners that showcases their achievements beyond academics, like community

work and panchayat volunteering tasks. It is a comprehensive portfolio that can be verified by anyone; it could be a university or government entity. In addition, all the digital content on SLATE domains is hosted by this platform.

Fig 4.1.1

3. What challenges or obstacles has SLATE encountered during implementation and how have these been addressed?

We envisioned many challenges as we got SLATE on the launchpad. One of the many was the system's resistance to change and the friction that comes along with the change foreseen. The perspective and work culture of stakeholders in government schools, as well as making the students understand the long-term vision of SLATE, were also deemed impediments. The other confrontation was the financial liability, as in the support from government ministries. So, the mission was to figure out how to pilot this and show its effectiveness as a fruitful educational initiative.

Another dilemma we faced was how to incorporate, or rather accommodate, it into the existing working hours of schools. There were logistical issues as well, including how to complete the requisite needs of each domain and how to impart offline sessions during school

hours. Technically, there is no digital divide in Kerala; however, one difficulty that we encountered was that during the online classes at the time, children misused these devices, which was stated as a reason for not giving online access to students. So, all that data, including mail IDs and credentials of students, was not maintained in a centralized manner. So, we had to clear the misconception among stakeholders and authorities that online things are bad and give more emphasis to good over bad. Albeit, over screen exposure is one of the side effects of online usage, and that further needs to be addressed.

Fig 4.1.2

4.   How does SLATE collaborate with government agencies, educational institutions, or other stakeholders to ensure its success? Can you describe any partnerships or collaborations with private sector organizations or non-governmental organizations (NGOs)?

BPCL, or Bharat Petroleum Corporation Limited, is the Maharatna company that provides financial assistance for SLATE in its first round of implementation as part of their corporate social responsibility undertaking. Then, we have each domain collaborator. They could be startups or firms that have a track record of implementing these domains in the majority of private schools. We have also partnered with organizations like Rotary Greater Cochin and not-for-profit projects of MLAs such as the Vidyajyothi Project of P.V. Sreenijin MLA, which is our ongoing partner for the first phase, and the Unnathi Project by Dr. M.K. Muneer MLA, for which we recently secured approval under Education and Skilling. We also had an exploratory meeting with Azim Premji University and have signed an MoU with Sophia University, Japan. (Refer to Fig. 4.1.2)

Another MoU was signed between SLATE and the University of Helsinki, specifically for teacher training. SDG 17 is collaboration with all partners to achieve common goals, and that is what SLATE is aiming for. Additionally, we have a partnership with the Global Shapers Community in Kochi, which is the youth wing of the World Economic Forum. We are envisaging more such dynamic collaborators, like YIP, or Young Innovator Programme, a wing of K Disc. Since we have good collaborators, we could achieve a considerable amount of growth and limelight within a short span of time.

5.   How do you evaluate the feedback received from various other stakeholders such as teachers?

We received overwhelmingly positive responses from teachers. Their feedback has been very encouraging. "The class was an enriching experience that has added substantial value to understanding critical thinking and test-taking strategies. The emphasis on lateral thinking sparked creativity and encouraged students to explore innovative approaches to problem

solving. Your engaging and instructive sessions have undoubtedly enriched our students' critical thinking skills and their ability to approach assessments with a more analytical mindset." We got really good comments from the student community. There were a lot of positive responses like these, in addition to a number of teachers asking for more hours or sessions starting right from the start of the academic year. One comment we got was to start early and phase it out in a structured manner, requiring more hours.

6.   What lessons or insights has the SLATE project generated across this one year and what lies ahead?

There must be a cross-section of knowledge sharing between different entities in order to gather comprehensive research findings and build a knowledge base. We need to discover more domains, skills, and collaborators. Further, we plan to identify our shortcomings, ensure that they are improved in the next phase of implementation, and share this information or learning with the teacher or HM community. We are currently holding meetings with varied institutions and governments and have foreseeably gained momentum.

- **Gowtham Kumar RG (Co-founder, Nayaneethi Policy Collective; RAAR Component of SLATE)**

1. What metrics or indicators are being used to measure the impact of the SLATE project on government school students?

For each component, we identified different matrices. For example, in Gamified Math, we identified two main question papers: aptitude and attitude. So, the aptitude one will measure their mathematical skills. The attitude one is where we will be measuring the perspective change towards mathematics as a subject. Moving on to the indicators, we identified the level of mathematics a student has to achieve at a particular standard. For that, we used a framework known as "PISA". In that framework, it is given that a student of a particular age in a class has

to understand such and such concepts. We took that as a reference and we collaborated with our collaborator for the math component i.e. Funmiyo. We gave them instructions and they created questions based on those. We divided it among geometry, basic arithmetic, etc. The attitude part was more interesting; we made a custom questionnaire and in that we measured indicators like how gender is affecting their attitude towards mathematics. We also asked about their cultural background and the circumstances they come from. Similarly, their attitude towards the kind of teaching methodology used. These are the kind of indicators that we used for mathematics.

Mirroring this, for each of the components, it is fairly different. For example, there is a rubric that we used for the entrepreneurship component which is done by Brahma, our collaborator. In entrepreneurship, they will be looking at how effectively you can communicate an idea or if they can persist through failures. These are some of the criteria based on which we prepared our question papers. Each component has a unique set of indicators that we identified based on our rigorous research.

2. Can you share any preliminary findings or results regarding the effectiveness of the SLATE project in achieving its objectives?

The objective of SLATE is to bring about structural and systemic changes in the education sector. As any seasoned expert could tell you, these kinds of changes are incremental; they cannot be brought forth in a single cycle. We can only talk about long term changes that could be made after running multiple cycles. Social engineering is being targeted as are the structures of institutions and behavioral relations; these have to be reconstructed and cultural transformation has to happen. That is the long term goal of SLATE or its objectives.

The interventions have not been completed; any sort of findings we cannot share because we have not done a detailed analysis of them. From the qualitative interactions that I have had with students, say for Funmiyo interventions, they told us that it is very different from

the mundane way in which they learn mathematics. They found it helpful and interesting. Another student after the Curiosity-driven Learning intervention told us that she was not really interested before. However, collaborators taught them in a way that was very engaging.

Imparting confidence to students is one of the objectives of the English component. The SLATE-RAAR student team and other collaborators have helped them learn a sentence in English and speak it out. These are some of the very qualitative findings aligned with SLATE objectives that I have observed. For hard or quantitative data, we have to run it multiple times instead of just one cycle and compare it over a period of time, say four or five years to see if SLATE as a project or program is achieving its objectives.

Fig 4.1.3

4. How does the SLATE project align with the principles and practices of project-based learning?

One of the core ideas of the SLATE project itself is project-based learning. It is the practice or pedagogy where students learn from existing or real-world challenges or problems. I can answer this from two different perspectives. There is something known as an intended or unintended consequence. The intended consequence is basically for our beneficiary students. Some of the examples that I can give are the Funmiyo kits. Through these kits, children are

learning through activities (Refer to Fig. 4.1.3). I have sat through some of the demonstrations, and I found it very engaging, where kids are encouraged to learn math by gamifying it, and they can look at real-world things.

Another example could be the English component, where students are very encouraged to talk by actually tapping into their own emotions and experiences. They are able to gain confidence by actively participating in the process, using drama as a tool to learn English and channel their confidence. Another good example would be the entrepreneurship component, where they have this concept of selecting the ten best ideas from students across the Kunnathunadu constituency and encouraging them to create pitch decks and present them. The entrepreneurship competence framework is used by the RAAR team to measure how good these pitchdesks are. We are trying to understand if they are able to replicate ideas in the real world.

Empathy collaborator Rasha is teaching experiential learning, and their books contain activities. Every component is based on the fact that the students have to learn from real-world problems or challenges that they encounter. Almost all the components are very novel in their approach in such a way that it is challenging the normal way of teaching. There is also an unintended consequence where the students of St. Teresa's College are learning a lot by going out in the field and helping the collaborators deliver the component, in addition to learning about social realities that exist at the ground level. Their perspectives are being changed by their experiences out in the field.

- **Anamika Lami (RAAR student volunteer)**

1. Briefly describe your roles and responsibilities as an active volunteer for SLATE.

My roles and responsibilities mainly correspond with the coordinating work. I have to be in contact with the teachers, HM, visit the schools, arrange SDG sessions and drama workshops, as well as coordinate the surveys. I will also be planning out the logistics.

2. What challenges have you encountered in the pre-survey segment?

We were not given the information that we had to sort it out according to different schools. Unfortunately, in the survey parameter, the school name was not given. We had quite a bit of trouble figuring out the schools and grades. Thankfully, we had a sampling plan. However, there were certain divisions that coincided, like 8A, 10A, etc. Those were unidentified, but the rest was sorted out.

3. What skills or competencies have you developed during this phase?

I am an introvert. But after joining SLATE, I have developed quite a bit of people management skills because I have to be in constant touch with teachers and HMs of government schools. Also, not all teachers are receptive for some reasons. So I have dealt with many issues on that front as well.

4.2 FOCUS GROUP INTERVIEWS

Following are the excerpts consolidated from the interview with focus groups:

PRINCIPAL

- **Alex Paul (Rajarshi Memorial HSS, Vadavucode, Ernakulam)**
1. **What is your evaluation of the SLATE pedagogy in classrooms? What are the challenges of adding SLATE as part of education?**

There is a slight problem with regard to the receptivity of the knowledge and practices of SLATE when it comes to higher grades where it is implemented. Here, the field or conveyance

needs to be clear for students to gain an acute understanding of varied topics. The student fraternity is grappling with a lot of subjects themselves, and incorporating SLATE into the existing curricula in addition to accommodating it to the regular schooling hours could be challenging. With that being said, if functioning in a proper manner, SLATE can be treated as a good initiative in fostering education.

TEACHER

- **Jisha Paul M. (Bethlehem Dayara HS Njarallor, Ernakulam)**

1. **The SLATE theater workshop has been conducted recently at the school. What were the student responses and how do you evaluate the effectiveness of such sessions?**

The student responses were fair and positive. It was giving them exposure akin to international standards. Moreover, it aided in raising their confidence level and their ability to open up. Some students even inquired about the next session. Overall, it was good and currently we are anticipating more such sessions to be delivered to the student cohort.

STUDENT

- **Farhan (8th grade, St. Mary's HSS Morakkala)**

Fig. 4.2.1

1. What sessions were you part of? Does the SLATE method of teaching interest you?

I was part of both the quiz component and the drama. What I liked most about the drama or theater workshop was the buzz and dance rehearsals, in addition to the clown role I got to enact. Also, SLATE teachers are training us in an excellent manner. Moreover, what we study at school may help us score good marks, but when we apply for a job, what really matters is the knowledge we accumulate outside of textbook knowledge.

Through the strategic components of SLATE, the endeavor seeks to emphasize the importance of learning through real-world experimentation instead of sole theoretical understanding. The interviews conducted primarily point out the nuances of the SLATE project in all its complexities and its utility in an education system characterized by homogenization in lieu of looking at each individual as a learner with multiple skill sets that may or may not align with the stream of thought or flow of information that seeps into the classroom. In order to ascertain the impact of SLATE on students as well as teachers, a feedback form was curated by the SLATE team and as briefed by the Project Director of SLATE in the interview, it was

largely positive and in the long run, the stakeholders do expect such initiatives to be part of the norm.

An analysis of the digital divide report collated by the SLATE RAAR in their pre-survey report submitted to BPCL revealed that almost 66% of students have access to smart devices. This shows that students indeed have access to devices, so technology integration into the learning ecosystem is comparatively seamless with regard to other states in India. SLATE uses a mixed method to tap into a student's potential by using textbooks as seen in the case of Effective Citizenship where rights and duties are listed in a comprehensive manner in a way that makes these pupils equipped to voice for themselves when their rights are compromised and disruptive technology for an interactive learning experience as seen in Q series where each student is presented with a digital passport that they can show off as a badge signaling their achievements.

Fig. 4.2.2

One example of how SLATE employs practical methods to instill confidence in students to learn the language of currency, English, is by scheduling theater workshops in

schools that will be guided by English-domain students of St.Teresa's College who have been tutored by international and national theater artists to train these kids in different institutions.

The trajectory of the workshop began with an introduction where mixed circles of girls and boys, barring gender separation, were formed, followed by a warm-up where they moved around freely, symbolizing the idea of autonomy and mobility, and further, they were divided into different groups based on what they were good at, emboldening mastery; it could be singing, dancing, writing poetry, acting, etc. The workshop was not just rooted in honing skills; there was this round of sharing one's personal experiences about each of these emotions, such as anger, love, fear, joy, etc. (Refer to Fig. 4.2.2). This act of being vulnerable has a huge impact, unlike the narrow band of methods devised by traditional models.

The outcomes of SLATE are multi-faceted spanning from making holistic learning accessible for all to bridging the gap between school, industry and work thereby promoting an environment where learning is attributable to participating in varied activities and looking at subjects not as roadblocks but as building blocks to a career they envision. The collectivistic education system needs to be more inclusive to make way for individuals whose learning goals are different. The pedagogy needs to witness a novel transgression where students are taught to think more critically, be more proactive and rise above the hurdles of self-doubt and set a clear path ahead not just to achieve academic freedom but to thrive incessantly with continuous learning and innovation.

The project joins hands with collaborators who know exactly how to fulfill the explorative side of these students who want to broaden their horizons. Located at the heart of this transformative pedagogy is learning through practical methods and game-based experiences. Going beyond the traditional classroom norm, SLATE seeks to establish a flexible framework that is holistic and in sync with the cognitive and creative demands of the children. Critical thinking and creative problem solving abilities are such underrated skills and the

Education 4.0 prescribes that these are the essential life skills that our education should underline.

Moreover, as the Director of SLATE refers to 'teachers are primary responders', their roles often shrink to navigating subject related queries; however they adorn a multi-dimensional hat embodying empathy and understanding the crises of students in their day-to-day activities. Thus, the Empathy component of SLATE implemented in collaboration with Rasha Kutty, founder of Empathy University, aims to empower teachers through empathy workshops and training programs to facilitate greater student-teacher interactions in a classroom setting.

The findings from the interaction with the Co-founder of N-Poc executing the SLATE component RAAR have shed light on the slew of meticulously crafted pre-surveys and how they acted as a window to profiling the socio-economic background of students and how these components can have a measurable impact on students especially with regard to their meta-cognitive abilities as in the case of the Curiosity-driven learning component, constitutional awareness as with the Effective citizenship component and each of the individual components that deftly uses activities in lieu of theory lessons.

The subsequent interaction with the SLATE volunteer, a principal, a teacher and a student also contributed to further gauging the counterintuitive impact of SLATE as in how it benefited not just the beneficiaries of this project, but also those who were part of it as shared by the SLATE volunteer who has widened her circle and learned to look beyond the traditional curriculum and the potential of digital technologies in the knowledge sphere to tackle real-world problems.

4.3 LIMITATIONS

- The study accounts only for the behavioral change among students and reflects the prospective changes it can bring about in government schools in a span of a few years.

- The qualitative nature of the study does not take into account the numerical data or the accurate number, as with the involvement of students.

- The duration of the project for a study to be performed is minimal. In order for tangible outcomes to be gathered, multiple cycles of intervention need to take place.

5. CONCLUSION

The SLATE project has thus been a significant leap in the education sector by equipping students with the skills necessary to succeed in the current globalized world. The project, curated in line with Education 4.0 proposed by the World Economic Forum and Education for Sustainable Development proposed by the UN, seeks to reduce, or rather diminish, the disparity between education in government and private schools, thus making education more democratic and sustainable. The endeavor was able to spark a positive improvement in student lives and has built a holistic learning environment for them in an appropriate manner.

According to the interim project report prepared by RAAR of SLATE to BPCL, the generous contributor of the first phase of this initiative, teachers as well as other faculty members of different institutions testified that SLATE sessions ignited curiosity in young minds and considerably boosted their confidence to solve puzzling questions. Moreover, the online and offline sessions provided them with newly minted learning experiences by opening their worlds to a snapshot of actualities through real-world problem-solving exercises and project-based learning methods that catered to their emotional, psychological, and intellectual quotients in a considerable manner. The theory of technological determinism seeks to shed light on how, with the advent of technology, a new revolution takes birth, as with the SLATE resource portal acting as a digital portfolio that tracks individual student engagement and speaks volumes about their work outside of academic and co-scholastic venturing.

As with any other robust initiative, SLATE also faced challenges, as the implementation period was not ideal, there was a lack of student IDs and credentials after the lockdown period, the associated ineffective use of these digital tools for educational purposes, and finally, the incorporation of more hours into academia for SLATE sessions as requested by teachers, headmasters, headmistresses, and principals.

Assessing the impact of this educational project can shed light on several key findings about project-based learning methods since these patterns of teaching modules can improve the retention power of students and increase their curiosity to learn more. In this age of personalized learning, it is essential for projects like SLATE to be part of the curriculum so that they meet the holistic purpose of education, which is not just to be literate in one dimension but in multiple dimensions and with diversified skill sets to become proactive youth.

Therefore, the way forward is to address these changes, maximize learning outcomes, collaborate with stakeholders, and transform the current learning environments conducive to student growth and the diverse learning requirements of learners in these government schools. In a nutshell, the SLATE initiative has been a pioneering one with regard to education, championing sustainability and leadership through new ways, reflecting the ethos of our current times.

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