



KALPAVRIKSHA
SUSTAINABLE DEVELOPMENT SOCIETY



SPEED BOOTCAMP PROGRESS REPORT (JANUARY 1- 12, 2023)

Prepared by:
Kalpavriksha Sustainable
Development Society

hello@kalpavriksha.org.in
www.kalpavriksha.org.in
Dehradun, Uttarakhand

CONTENTS

01.

Executive Summary

02.

Introduction

03.

Background: The Growing Significance of Digital Literacy in Today's World

04.

Digital Divide and Its Impact in School Education in Uttarakhand

05.

SPEED Bootcamp- Overview and Program Description

06.

Results

07.

Challenges and Future Recommendations

08.

Discussion and Conclusion

EXECUTIVE SUMMARY

This report presents an analysis of the outcomes of the Student Personality and Education Development (SPeED) bootcamp program, which is an innovative technology-led initiative by KSDS to equip socially and economically disadvantaged students with digital literacy, basic English grammar, and lifelong learning abilities. The residential program aimed to enhance the digital literacy, coding, and English-speaking abilities of 34 students over ten days through practical and hands-on experience.

The findings of the study demonstrate that the program was highly effective in significantly improving the participating students' digital literacy, coding, and English-speaking abilities. The average digital literacy score of the students increased remarkably from 21.18% to 75.88%, indicating their increased ability to use digital tools and technology. Furthermore, the students achieved a coding score of 57.35%, which is remarkable, considering that none of them had prior knowledge of coding. Their English-speaking score also showed improvement, increasing from 39.49% to 45.66%, indicating enhanced communication skills in English. The success of the bootcamp can be attributed to the structured curriculum, practical learning, and supportive environment, which motivated the students to actively engage with the learning material.

The report emphasizes the urgent need to address the digital divide in state government schools in Uttarakhand and provide equitable access to digital literacy for all students. It highlights the SPeED bootcamp program's importance as a tool for empowering underprivileged individuals with the skills and knowledge required to thrive in the digital economy. Overall, the report showcases the impact of KSDS's initiative in bridging the digital skills gap and improving the employability of young people.

INTRODUCTION

In today's world, access to digital literacy has become a crucial factor for success in education and employment. However, many students from socially and economically disadvantaged backgrounds are left behind due to the digital divide. The problem is exacerbated in rural areas where students lack access to digital devices, the internet, and quality education.

To address this challenge, the SPeED bootcamp has been designed as an innovative residential program. The program is specifically tailored for students in grades 6th to 8th enrolled in state government schools in Uttarakhand. It aims to provide a strong foundation for digital literacy, basic English grammar, and lifelong learning skills to these students.

The unique aspect of the program is that it focuses on experiential learning and uses Information and Communication Technology (ICT) to enhance learning outcomes. The comprehensive program covers a wide range of subjects including digital literacy, basic English grammar, character education, Yoga and meditation, sports, and personality development. It is delivered in a cost-effective way using a community model, where a residential camp occurs in a private school that provides all the necessary infrastructure for the program.

Moreover, the program addresses the problem of learning loss that students face when teachers go to schools to teach one-hour classes weekly, and students are unable to practice at home due to a lack of access to digital devices and the internet. The SPeED bootcamp aims to bridge this gap and provide students with the necessary digital literacy skills to thrive in today's world.

This report first provides an overview of the growing significance of digital literacy in the digital world before going into detail about the widening digital divide in Uttarakhand. The following section of the study gives a summary of the SPeED bootcamp, its application procedure, and its monitoring and evaluation procedures. The report then presents the outcomes of the bootcamp before concluding with a general discussion and recommendation.

BACKGROUND

THE GROWING SIGNIFICANCE OF DIGITAL LITERACY IN TODAY'S WORLD

Digital literacy has become an essential skill in today's rapidly changing world. It refers to the ability to access, evaluate, and use digital technologies effectively to locate, create, communicate, and share information (UNESCO, 2011). According to Singh (2018), individuals need digital literacy to succeed in their personal and professional lives. The World Economic Forum's (WEF) Future of Jobs Report further highlights the high demand for digital skills, and many of the jobs that will be in demand in the future require some level of digital literacy (WEF, 2020).

UNESCO and the United Nations recognize the importance of digital literacy and have launched initiatives to promote it globally. The UNESCO Digital Literacy Global Framework (DLGF) provides a comprehensive framework for digital literacy education, outlining key competencies and skills that individuals need to be digitally literate (UNESCO, 2018). The United Nations' Sustainable Development Goal (SDG) 4 also includes a target to promote digital literacy and ensure access to information and communication technologies (United Nations, 2015).

In particular, digital literacy is critical for youth as they navigate an increasingly digital world. As public services and social interactions move online, digital literacy is essential for civic engagement. UNESCO recognizes the importance of digital literacy for building inclusive and sustainable societies, and highlights its potential for promoting social inclusion and reducing inequality (UNESCO, 2018). For disadvantaged youth, digital literacy is particularly crucial. Without access to digital technologies and digital literacy skills, these youth are further marginalized, making it even harder for them to succeed. Therefore, promoting digital literacy among all youth, especially those who are disadvantaged, is essential for creating a more equitable and just society.

To address the growing significance of digital literacy and to promote it among underprivileged students, the Kalpavriksha Sustainable Development Society (KSDS) has initiated the SPeED bootcamp. The bootcamp aims to equip students with basic digital literacy skills, basic English Grammar, and life-long learning skills. The goal is to make Uttarakhand a model state by effectively preparing its youth for future challenges, irrespective of their socio-economic background.

DIGITAL DIVIDE AND ITS IMPACT IN SCHOOL EDUCATION IN UTTARAKHAND

The increasing reliance on digital technology in the globalized world has led to a need for young people to have adequate technology use and development skills. However, not all individuals have equal access to digital resources and opportunities, which is known as the digital divide. This inequality in access to digital resources has become a social issue, as defined by the United Nations, and affects a significant portion of the world's population, around 2.9 billion people, even though 95% of the global population is within a mobile broadband network range (Rastogi, 2022). This demonstrates the severity of the digital divide problem, which exacerbates existing inequalities within society.

Kalpavriksha Sustainable Development Society is working towards addressing the widening digital divide between state government schools and private schools in Uttarakhand to ensure fair and equitable access to digital resources for everyone. To understand the extent of this gap, the organization conducted comparative research and identified three key areas: availability of computer facilities, internet accessibility, and the presence of digitally competent teachers.

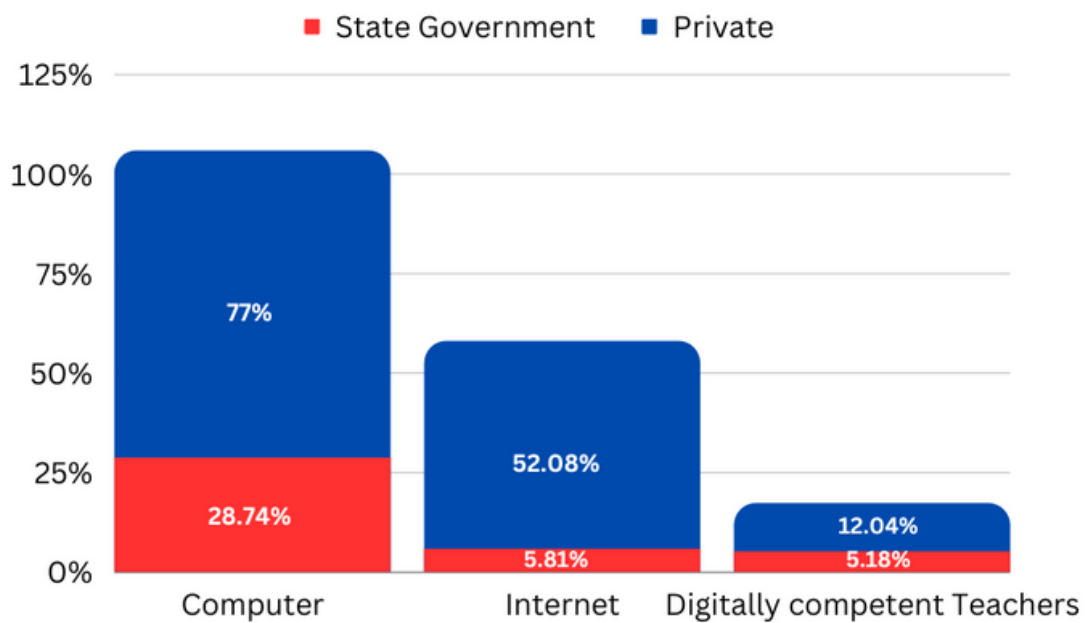
Firstly, it was discovered that 77% of private schools have computer facilities, while only 28.74% of state government schools have access to such resources (Department of School Education and Literacy, 2021). This puts state government school students at a significant disadvantage when it comes to learning technological skills, particularly as many of these students belong to the economically weaker section category and thus, may not have access to desktops or laptops at home.

Secondly, when it comes to internet accessibility, only 5.81% of state government schools have access to the internet, compared to 52.08% of private schools. Without access to the internet, disadvantaged pupils are unable to take full advantage of the wealth of information available online, hindering their ability to learn and compete in the digital age (Department of School Education and Literacy, 2021).

Finally, the organization compared the number of digitally competent teachers in private schools versus state government schools. Of the total 67,637 teachers employed in private schools, 8,142 are considered digitally competent. By contrast, out of 61,964 teachers employed in state government schools, only 3,210 possess digital literacy skills (Department of School Education and Literacy, 2021). This highlights the urgent need to provide digital literacy training for teachers in state government schools, so that they can effectively equip students with the skills necessary to succeed in the digital age.

In conclusion, the comparison of digital resources in private schools and state government schools in Uttarakhand highlights a significant disadvantage for state government school students in acquiring vital technological skills. The number of students enrolled in state government schools is so high, almost 8,57,746 students (Department of School Education and Literacy, 2021, pp. 63-65), that if immediate actions are not taken it could worsen the current situation. Therefore, it is imperative to bridge the rapid widening gap in the availability of computer facilities, accessibility to the internet, and availability of digitally competent teachers in state government schools. KSDS has prioritized this concern and initiated an innovative community-driven education program called SPeEd bootcamp to promote digital literacy among students enrolled in state government schools in Uttarakhand.

Comparison of Digital Infrastructure in State Government and Private Schools



A visual representation contrasting the computer facilities in state government schools and those in private schools

SPEED BOOTCAMP: OVERVIEW AND DESCRIPTION

SPeED bootcamp is a transformative residential program designed to provide a strong foundation for digital literacy, basic English grammar, and lifelong learning skills to socially and economically disadvantaged students. Specifically tailored for students in grades 6th to 8th, enrolled in state government schools in Uttarakhand, the program provides a unique opportunity to learn using interactive classroom activities and Information and Communication technology. The comprehensive program focuses on a wide range of subjects, including digital literacy, basic English grammar, character education, Yoga and meditation, sports, and personality development.

SPeED Bootcamp Building a Foundation for Lifelong Learning



The digital literacy curriculum, designed by IT experts, follows the Digital Literacy Global Framework by UNESCO and is divided into two parts: basic digital literacy skills and coding. The basic digital literacy skills curriculum aims to equip students with fundamental computer skills, such as creating files and folders, understanding file types, using email as a professional communication tool, and working on MS Word. It covers several competence areas as per DLGF, including physical operations of digital devices (0.1), software operations in digital devices (0.2), interacting through digital technologies (2.1), sharing through digital technologies (2.2), collaborating through digital technologies (2.4), and developing digital content (3.1). The coding curriculum uses the MIT app inventor web application to teach core programming concepts, such as variables, operators, if-else blocks, lists, and loops, with a focus on the DLGF's competence area of programming (3.4) (UNESCO, 2018).

Language could be a barrier to utilizing digital technologies. In many technology devices, such as laptops and computers, English is the primary language for operations. Moreover, more than half of the web content is in English. Therefore, gaining digital literacy skills has also become dependent on learning and comprehending the English language. To address this issue, the SPeED bootcamp offers a basic English grammar curriculum designed by professional English trainers. This curriculum aims to teach fundamental English skills to underprivileged students starting from the very basic. The English grammar curriculum includes topics, such as CVC words, sight words, framing sentences, building vocabulary, subject-verb agreement, tenses, using adjectives and adverbs, and speaking drills.

In the 21st century, where technology is ubiquitous, character education has become more important than ever. As digital citizens, we have access to a wealth of information and technology, which can be used to benefit society or for nefarious purposes. Thus, it is essential to equip our youth with a strong moral compass and ethical values to ensure that they use technology in a responsible and ethical manner. The Indian values system, which has a rich tradition of moral and ethical values, can play a significant role in building the character of students. SPEEd bootcamp recognizes the importance of character education and has included moral values as a key component of its curriculum. Through interactive sessions, students learn about gratitude, self-discipline, humility, honesty, justice, service, determination, character, and motivation. Storytelling sessions are a powerful tool used to teach these values as stories have a unique ability to engage and connect with children. By using Indian stories, which are replete with moral messages, students not only learn the values but also get a glimpse into the rich cultural heritage of India. This holistic approach to education not only helps students in their personal growth but also empower students to become responsible and ethical digital citizens who use technology to enhance their lives and contribute positively to society.

Apart from the academic and character-building programs, the SPEEd bootcamp also focuses on sports activities to build essential skills such as teamwork, leadership, and resilience. The program introduces students to indigenous sports such as Kabaddi and Kho-Kho, which not only help them develop physical fitness but also teach them important life skills. These sports require players to work together as a team, communicate effectively, and demonstrate leadership qualities. Moreover, they also

help students develop resilience by teaching them to persevere through challenges and failures. By participating in sports activities, students learn to manage their emotions, work collaboratively with others, and develop a strong sense of determination that can help them succeed in all areas of life.

In addition to sports and physical activities, the SPeED bootcamp program also places emphasis on the mental and spiritual development of the students. Suryanamaskar, a sequence of yoga postures, is practiced daily to promote physical fitness and flexibility while meditation sessions are held to improve mental health and emotional well-being. These sessions provide an opportunity for students to learn how to cope with stress, anxiety and develop mindfulness. They also learn how to concentrate and focus better, which helps in improving academic performance. By incorporating such practices, the program aims to promote holistic development among students, ensuring that they are not only physically fit but also mentally resilient.

The personality development sessions provided a platform for students to develop and showcase their talents in public speaking and various cultural activities, such as singing, and dancing. Students were encouraged to express themselves freely and build their confidence in front of an audience. The sessions aimed to develop essential life skills, such as effective communication, creativity, and self-expression. Through these activities, students learned to work in teams, take initiative, and develop leadership skills. The personality development sessions were a crucial component of the SPeEd bootcamp, as they helped to build well-rounded individuals who are not only digitally literate but also socially and emotionally intelligent.

Self-practice sessions allow students to apply their acquired skills and knowledge, experiment with different programs, and build self-confidence. These sessions foster independence, confidence, and self-directed learning in students, allowing them to take ownership of their learning, identify areas for improvement, set goals, and become self-directed learners. Overall, self-practice sessions are a critical aspect of the SPeED bootcamp.

The table in the next page shows the total learning time for each session of the SPeED bootcamp, ranging from 7 to 30 hours. With a total of 110 learning hours in just 10 days, the intensive learning process has greatly contributed to the students' enhanced abilities and improved understanding in their respective areas.

To conclude, SPeED bootcamp empowers socially and economically disadvantaged students in Uttarakhand by providing them with a transformative residential program. With a focus on digital literacy, basic English grammar, and lifelong learning skills, students in grades 6th to 8th are exposed to interactive classroom activities and information and communication technology. Through an intensive and comprehensive curriculum that includes coding, character education, sports, yoga and meditation, and personality development, the program aims to build well-rounded individuals who are not only digitally literate but also socially and emotionally intelligent. By promoting holistic development, the program equips students with essential life skills that will help them succeed in all areas of life.

Learning Time for Each Component of the SPeED Bootcamp

SESSIONS	TOTAL LEARNING TIME (IN HOURS)
Digital Literacy (Theory)	7
Coding	23
English Grammar	30
Yoga and Meditation	10
Sports Activities	10
Storytelling (Character Education)	10
Personality Development	10
Self-Practice	10
Total learning time for all sessions	110

SELECTION PROCESS AND PARTICIPANTS OF THE SPEED BOOTCAMP

The inaugural SPeED bootcamp was conducted from January 1st to January 11th in Subhash Chandra Bose Academy, a private school. The SPeED bootcamp focused on six school clusters in Raipur and Doiwala block. The KSDS team personally visited eight schools (seven Government Inter colleges and one Upper primary School) and provided registration manuals to the school principals, which contained eligibility criteria and the registration process. A total of 42 male students from five schools registered for the bootcamp, and the selection process was based on recent average marks in English and Mathematics. Out of the registered students, only 35 students were selected for the program, and the selection process aimed to create a diverse group of students. Group 1 (G1) consisted of 11 students with an average score of more than 80%, Group 2 (G2) included 15 students with an average score between 60% and 80%, and Group 3 (G3) comprised 9 students with an average score less than 60%. All 35 selected students participated in the program, except for one student who left after the first day, resulting in an impressive retention ratio of 97.14%.

MONITORING AND EVALUATION METHODS

The progress of the students in the SPeED bootcamp was carefully monitored and evaluated through a combination of formative and summative assessments. The trainers administered two tests throughout the course of the program. The first was a

pre-bootcamp test that helped assess the students' initial level of digital literacy and English grammar. Finally, a final test was conducted on the last day to measure the overall progress made by the students. In addition to the tests, the students' progress was assessed through formative assessments. The trainers were given specific criteria for their English and Digital Literacy classes and evaluated the students' performance in three-day intervals, categorized as day 2-4, day 5-7, and day 8-10.

To measure the impact of the bootcamp on each group, we calculated the percentage improvement in learning outcomes for digital literacy, coding, and spoken English skills. This involved calculating the average initial and final scores for each group, and then subtracting the initial score from the final score for each subject. The resulting difference was divided by the average initial score and multiplied by 100 to get the percentage improvement.

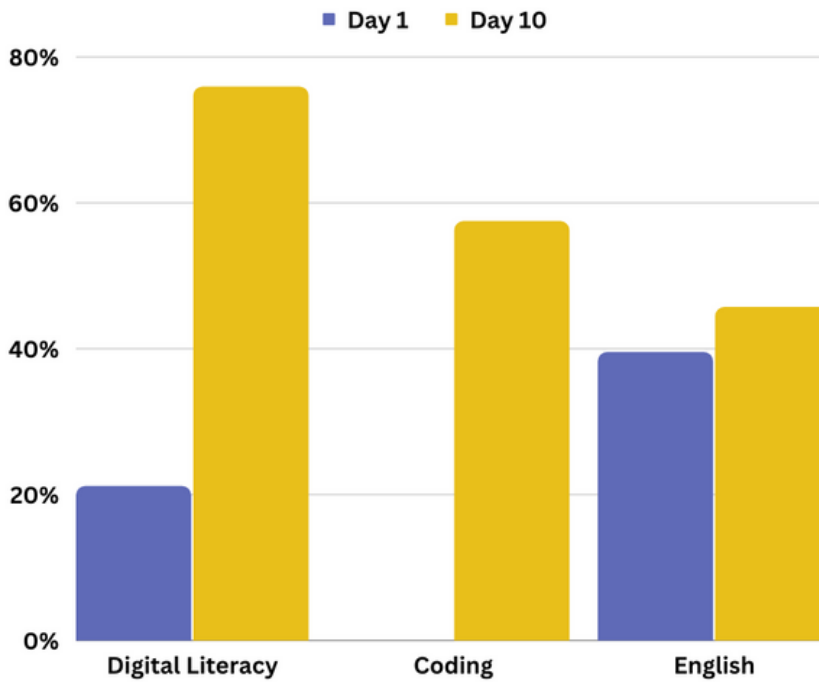
To motivate and encourage the students, various reward and recognition techniques were employed. The top three performers in digital literacy and English were awarded prizes at the beginning of the next assessment cycle. By using a combination of tests, class evaluations, and recognition techniques, the progress of the students in the SPeED bootcamp was closely monitored and evaluated.

RESULTS

The results of the bootcamp indicate a noteworthy enhancement in digital literacy, coding, and English-speaking skills. According to the graph, the average score for digital literacy among the 34 students prior to the bootcamp was only 21.18%. However, by the end of the program, the average score increased substantially to 75.88%. While there was no pre-assessment for coding skills as the students had no previous knowledge of coding, they were required to develop a mobile application on the final day and were evaluated based on their ability to complete the task, demonstrate creativity, and apply problem-solving and logical reasoning skills. The final average coding score after the assessment was 57.35%. As for English speaking skills, the pre-bootcamp speaking test score was 39.49%, which showed a significant improvement to 45.66% after the program. The students' performance was evaluated based on their pronunciation, grammar, and ability to think critically.

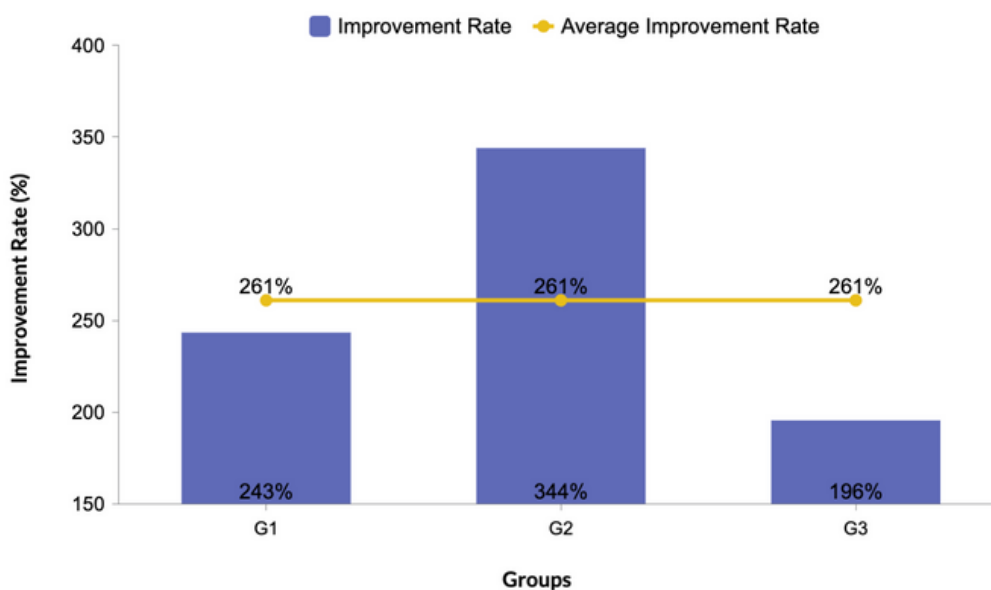


Comparison of Students' Average Percent Score from Day1 to Day 10

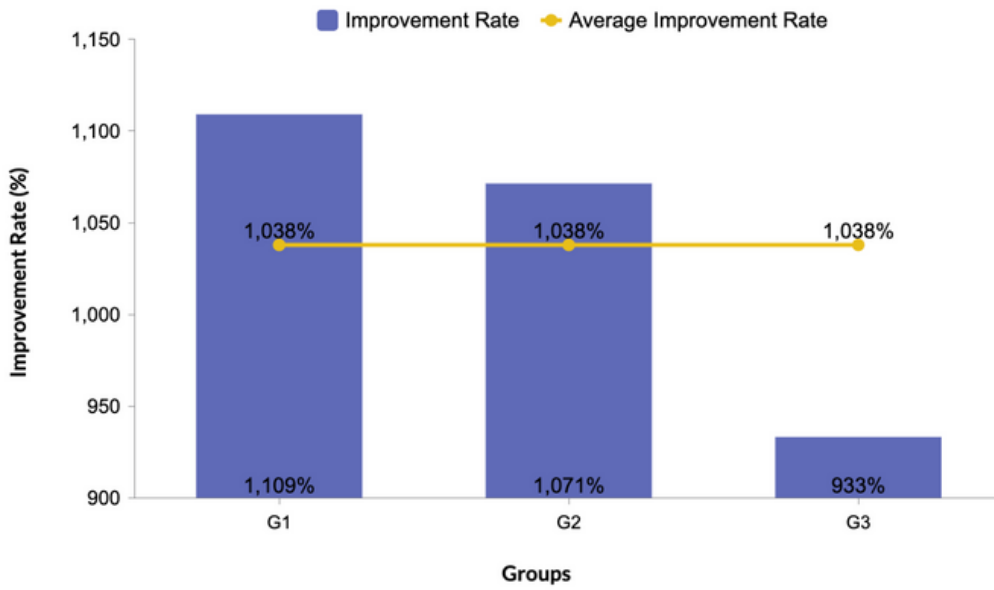


Furthermore, in order to assess the effectiveness of the SPeED bootcamp for each group, the improvement rate of digital literacy, coding, and Spoken English Skills was calculated. Graph 1 illustrates that all three groups displayed enhancement in digital literacy skills, with the highest improvement rate of 344.00% demonstrated by group G2. In terms of coding skills (graph 2), all groups made significant progress, with group G1 exhibiting the highest improvement rate of 1109.09%. Likewise, all groups showed progress in spoken English skills (graph 3), with group G3 showing the highest improvement rate of 20.41%.

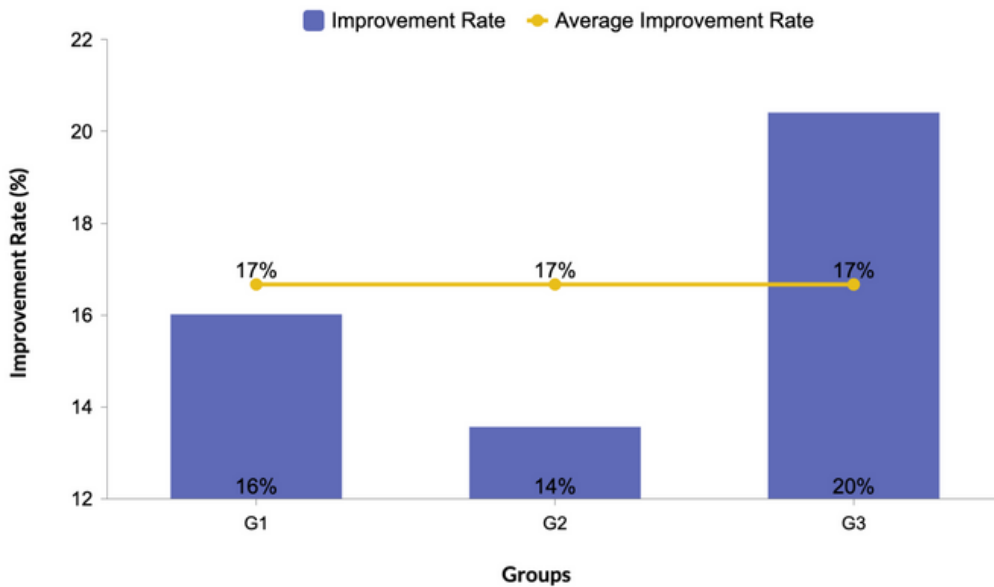
Learning Outcome Improvement by Group for Digital Literacy Skills



Learning Outcome Improvement by Group for Coding Skills



Learning Outcome Improvement by Group for Spoken English Skills



CHALLENGES AND FUTURE RECOMMENDATIONS

Despite the positive outcomes of the SPeED bootcamp in promoting digital literacy and lifelong learning skills, there are some challenges that need to be addressed to ensure the effectiveness and sustainability of the program..

One of the main challenges is the focus on promoting English communication skills at the expense of other important skills, such as reading and writing comprehension. According to UNICEF, to enhance students' digital literacy, teachers must improve students' written-language abilities, including reading comprehension, word processing, and writing. (UNICEF, 2019). During the pre-bootcamp assessment, it was found that many students lacked basic English grammar concepts, which not only hindered their progress in learning digital skills but also hindered their English Speaking skills . To address this challenge, the program should include more activities that focus on improving listening, reading, and writing skills, as well as providing additional resources to help students master the basics of English grammar and vocabulary.

Another challenge is the limited exposure to IT and the lack of role models in the field. Although the SPeED bootcamp provides hands-on training in digital skills, it could benefit from the presence of successful IT professionals who can inspire and guide the students in their learning journey. Inviting guest speakers or organizing field trips to IT companies or startups could expose the students to different career paths and help them understand the real-world applications of digital skills.

Furthermore, after the bootcamp, students face the challenge of limited access to digital devices and internet connectivity, hindering their ability to practice and advance their digital skills. To overcome this challenge, the Kalpavriksha Sustainable Development Society could explore different options such as providing low-cost devices, partnering with local organizations to offer free or subsidized internet access, or creating community-based learning centers.

To ensure the program's sustainability and impact on the community, the Kalpavriksha Sustainable Development Society could engage students after the bootcamp by organizing follow-up sessions or mentorship programs. Students could receive feedback and guidance on their projects and share their progress with peers. The program could also encourage students to become digital ambassadors and help other community members acquire digital literacy skills.

In conclusion, recognizing and addressing challenges that hinder the effectiveness and sustainability of the SPeED bootcamp is crucial. The program can overcome these challenges by adopting a holistic and learner-centered approach and engaging stakeholders and partners at different levels. This will empower underprivileged youth in Uttarakhand with the skills and knowledge needed to succeed in the digital age.

DISCUSSION AND CONCLUSION

The SPeED bootcamp was designed to improve the digital literacy, coding, and English-speaking skills of the participating students, and the results have shown that it was a resounding success. The significant improvements in these areas were demonstrated through pre and post bootcamp tests, which showed substantial progress in all three subjects. The improvement rates were calculated using specific formulas and were measured for each group, with all groups showing notable progress.

In particular, the improvement in digital literacy skills was remarkable, with an average score increase of over 50%. Similarly, the coding skills of the students were evaluated through a task-based assessment, which showed an impressive average score of 57.35%. Finally, the English-speaking skills of the students showed an improvement of over 6%. These improvements are a testament to the effectiveness of the SPeED bootcamp in enhancing the students' knowledge and skills in these areas. The results speak volumes about the effectiveness of the SPeED bootcamp in nurturing a generation of tech-savvy and confident learners.

Moreover, the SPeED bootcamp's comprehensive curriculum went beyond English and technical skills and included components such as sports, yoga and meditation, character education, and personality development. These activities aimed to foster a holistic approach to education and promote physical and mental well-being among the students. The sports activities not only provided a much-needed break from the rigorous academic schedule but also helped to develop teamwork and leadership skills. The yoga and meditation sessions helped the students to develop mindfulness and focus, which can enhance their learning capabilities. The character education and personality development sessions focused on instilling values such as integrity, empathy, and responsibility, which are crucial for personal and professional growth. The inclusion of these components in the curriculum helped to create a well-rounded and confident group of learners, who are not only proficient in technical skills but also possess a strong character and a positive mindset. Overall, the SPeED bootcamp's structured curriculum and diverse components have proven to be highly effective in improving the students' skills and fostering a holistic approach to education.

To summarize, the SPeED bootcamp proved to be an effective program for improving the digital literacy, coding, and English-speaking skills of its participants. The practical and hands-on learning approach, combined with a supportive environment, yielded significant improvements in a short period of time. This program serves as a model for future educational and training programs to address the digital skills gap and prepare young people for the modern workforce. By focusing on practical skills, providing a supportive environment, and incorporating a holistic approach to education, similar programs can help improve employability and meet the needs of students in the 21st century.

REFERENCES

Department of School Education and Literacy (2021) Report on Unified District Information System For Education Plus (UDISE+). Available at: <https://udiseplus.gov.in/#/page/publications>.

Rastogi, V. (2022) This is how to counter the global digital divide | World Economic Forum. Available at: <https://www.weforum.org/agenda/2022/05/how-to-counter-the-global-digital-divide/> (Accessed: 16 August 2022).

Singh, M. (2018) Digital Literacy: an Essential Life Skill In the Present Era of Growing and Global Educational Society - Ignited Minds Journals, Digital Literacy: an Essential Life Skill In the Present Era of Growing and Global Educational Society - Ignited Minds Journals. Available at: <http://ignited.in/a/57868> (Accessed: March 26, 2023)

UNESCO (2011) UNESCO ICT Competency Framework for Teachers. Available at: <https://iite.unesco.org/pics/publications/en/files/3214694.pdf> (Accessed: March 26, 2023).

UNESCO (2018) A Global Framework of Reference on Digital Literacy Skills for Indicator 4.4.2. Available at: <http://www.uis.unesco.org>.

UNICEF (2019) Digital literacy for children: exploring definitions and frameworks. Available at: <https://www.unicef.org/globalinsight/media/1271/file/%20UNICEF-Global-Insight-digital-literacy-scoping-paper-2020.pdf> (Accessed: March 26, 2023).

United Nations (2015) Transforming our world: the 2030 Agenda for Sustainable Development | Department of Economic and Social Affairs, Transforming our world: the 2030 Agenda for Sustainable Development | Department of Economic and Social Affairs. Available at: <https://sdgs.un.org/2030agenda> (Accessed: March 26, 2023).

WEF (2020) The Future of Jobs Report 2020, World Economic Forum. Available at: <https://www.weforum.org/reports/the-future-of-jobs-report-2020/> (Accessed: March 26, 2023).