



Web 2.0 in Education: Studying its impact on Academic Achievement and Interest in Social Studies at Secondary Level

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Abstract: Our study delved into the impact of using modern web tools, specifically Web 2.0, to enhance the learning experience in Secondary School Social Studies. Recognizing the general perception of Social Studies as a less prospective subject, our research aimed to determine if employing various Web 2.0 technologies could make it more engaging for students. To investigate this, we divided students into two groups: one receiving traditional teaching

methods and the other benefiting from Web 2.0-integrated lessons. We conducted both pretests and post-tests to measure students' interest in Social Studies and their academic performance before and after this intervention, aiming to discern whether the use of technology resulted in a positive influence.

Keywords: Web 2.0 technologies, Intervention, Engaging subject, Academic performance, Interest.

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Introduction:

In the contemporary era, technology has become an integral part of our daily lives, significantly impacting how we live, work, and learn. This surge in technological demand has led to increased efficiency and productivity, notably through Web 2.0 – a transformative phase of the internet characterized by interactive and user-generated content. The rise of Web 2.0 can be attributed to factors like the development of technologies such as Ajax and XML, affordable broadband internet, and the growth of social media. Web 2.0's influence extends beyond casual internet use, fostering user-generated content, social networking, collaboration, and interoperability. In education, Web 2.0 introduces new possibilities for collaborative learning, personalized instruction, and multimedia integration, revolutionizing the teaching and learning experience. As this technology evolves, its impact on education and various aspects of modern life remains a subject of ongoing exploration and research.

Social Studies education at the secondary level is pivotal, encompassing history, geography, civics,

and economics. It transcends rote memorization, encouraging critical thinking, empathy, and informed decision-making. History provides insights into the past, geography introduces diverse landscapes, civics imparts knowledge about citizenship, and economics equips students with essential life skills.

Social Studies education aims to create well-rounded individuals capable of navigating the complexities of the world, fostering empathy, and preparing students to be active and responsible citizens. By developing critical thinking skills and promoting cultural awareness, Social Studies education equips students to contribute positively to society.

Interest and achievement in Social Studies form a symbiotic relationship, impacting the overall learning experience. Genuine curiosity acts as a motivator, driving engagement, critical thinking, and cultural awareness. Active participation and deep understanding follow, leading to academic excellence. Conversely, a lack of interest can result in disengagement, limited academic progress, and hindered overall performance.

Educators play a crucial role in fostering interest through innovative teaching methods, connecting concepts to real-world scenarios, and encouraging questions. By creating a culture of curiosity, educators inspire a lifelong love for learning, providing students with valuable skills for understanding and navigating the complexities of the human experience.

The integration of technology, particularly Web 2.0, has reshaped our daily lives and revolutionized education. Social Studies education, with its emphasis on critical thinking and cultural awareness, plays a vital role in shaping well-rounded individuals. The symbiotic relationship between interest and achievement in Social Studies underscores the importance of fostering curiosity to enhance the overall educational experience.

The integration of Web 2.0 technologies with Social Studies education is transformative, offering dynamic and engaging learning platforms. Web 2.0 introduces interactive resources, going beyond textbooks, enabling deeper understanding through multimedia exploration of historical events.

It empowers collaborative learning, fostering cross-cultural awareness among students. The Internet's vast resources enhance research skills and

critical thinking, while educators benefit from professional development opportunities.

Ensuring responsible use and addressing internet safety concerns are crucial, with educators guiding students on source credibility and responsible online behaviour. Emphasizing digital citizenship education teaches ethical online practices and privacy awareness.

Overall, this integration enhances the learning landscape, preparing students for a digitally connected world. Government initiatives, such as the Digital India Initiative, SWAYAM, National Digital Library, E-Pathshala, and PMGDISHA (Subnani & Khatri, 2022), play a pivotal role in digitizing the education system. These efforts focus on enhancing digital infrastructure, providing free online courses, offering vast digital educational resources, and promoting digital literacy, contributing to a more inclusive and efficient education system.

Significance of study:

This study is pivotal for education, aiming to enhance teaching by investigating the impact of Web 2.0 tools on Secondary School students' academic success and interest in Social Studies. The research addresses the diverse needs of secondary-level students, seeking insights into the effective use of technology in the classroom. By examining students' usage of Web 2.0 tools and academic performance, the study provides valuable information for educators to refine their teaching methods. The ultimate goal is to create an engaging and effective approach to teaching Social Studies that ignites students' curiosity and enthusiasm, contributing significantly to their overall academic success. The study aspires to shape an educational paradigm optimizing the learning experience while capturing students' interest in Social Studies.

Research Questions:

1. How does the integration of Web 2.0 tools in education impact students' academic achievement?
2. To what extent does the use of Web 2.0 tools contribute to the development of interest in Social Studies among students?

Statement of the problem:

Web 2.0 in Education: Studying its impact on Academic Achievement and Interest in Social Studies at Secondary Level.

Operational Definitions:

Achievement: Achievement is the act of reaching a goal. In this study, achievement refers to the scores obtained by the students in the Achievement Test prepared by the researcher.

Interest: It refers to the sense of curiosity or concern about something or someone. In this study, interest refers to the scores obtained by the students in the Interest Test prepared by the researcher.

Social Studies: It is a discipline that deals with the societies and relationship among individuals with society.

Secondary Education: Secondary education is the second stage of education, traditionally found in formal education, beginning from grade 9 to 12.

Main Objectives:

- O1. To study the impact of Web 2.0 on Academic Achievement of students in Social Studies at Secondary Level.
- O2. To study the impact of Web 2.0 on Interest of students in Social Studies at Secondary Level.

Subsidiary Objectives:

1. To find out the impact of Web 2.0 on Academic Achievement in Social Studies among students with reference to their gender.
2. To find out the impact of Web 2.0 on Academic Achievement among students with reference to their residential background.
3. To find out the impact of Web 2.0 on Interest in Social Studies among students with reference to their gender.
4. To find out the impact of Web 2.0 on Interest in Social Studies among students with reference to their residential background.

Null Hypotheses:

Related to main objective 1, We created the following Hypothesis-

H₀₁ : There is no significant effect of Web 2.0 tools on Academic Achievement of students in Social Studies.

Related to main objective 2, We created the following Hypothesis-

H₀₂: There is no significant effect of Web 2.0

tools on Interest of students in Social Studies.

Related to subsidiary objective 1, We created the following Hypothesis-

H₀₃: Use of Web 2.0 tools produces no significant difference in Academic Achievement of students in Social Studies with reference to their gender.

Related to subsidiary objective 2, We created the following Hypothesis-

H₀₄: Use of Web 2.0 tools produces no significant difference in Academic Achievement of students in Social Studies with reference to their residential background.

Related to subsidiary objective 3 , We created the following Hypothesis-

H₀₅: Use of Web 2.0 tools produces no significant difference in Interest of students in Social Studies with reference to their gender.

Related to subsidiary objective 4, We created the following Hypothesis-

H₀₆ : Use of Web 2.0 tools produces no significant difference in Interest of students in Social Studies with reference to their residential background.

Delimitations:

Due to limited time, resources and other constraints, the study was confined to:

- Students of a single class of a single school only.
- Use of only selected Web 2.0 tools such as YouTube videos , Emaze, Slideshare ,Visme, Prezi, Genial.ly, Zoho, Weebly.

Review of Literature:

A literature review is a cornerstone of the research process. It guides the formulation of research questions, informs methodology, and ensures that the new study builds upon the existing knowledge base, thereby contributing to the advancement of academic understanding in a particular field.

In the present study, the following studies were reviewed in the related field in order to gain more insights:

Rudd and Walker's 2010 study, "Children and young people views on web2.0 technologies," explores the perspectives of 11-19-year-olds on web 2.0 through diverse focus group discussions. It reveals widespread youth use but highlights

affordability challenges for smaller groups. Web tools are mainly used in informed settings, with older professionals more engaged. The study underscores youth confidence in safe web usage, emphasizing accessibility barriers and age-related technology engagement among professionals.

Malhiwsky's 2010 study, "Student Achievement Using Web 2.0 Technologies - A Mixed Method Study," explores the impact on Spanish college students at the University of Nebraska. Quantitative surveys and qualitative online interviews reveal that courses employing diverse technology tools enhance achievement and motivation. Instructors are encouraged to foster collaboration, though challenges like limited access and distractions were noted. Overall, Web 2.0 tools were seen as motivating in language learning, emphasizing both potential benefits and challenges.

Saidon, Bakar, and Sharipudih's 2022 study, "The impact of web 2.0 tools on Economics education," focused on 44 Malaysian students. Using the Gibbs Reflective Model, they found that web 2.0 tools increased student engagement and performance in economics learning. The study suggests that integrating these tools enhances educational experiences, making teaching more effective and interesting compared to traditional methods, ultimately improving outcomes in economic education.

Kirikaya and Yildirim's 2021 study, "Investigating the effect of using Web 2.0 tools on 7th Grade Students," examined 84 seventh-grade students in Izmit, Kocaeli. Using a quasi-experimental design, the study found positive effects on academic achievement in Science courses when integrating Web 2.0 tools. Gender differences did not significantly impact performance or self-directed learning with technology. Integrating these tools positively influenced self-directed learning for both genders, highlighting the potential benefits of technology in enhancing academic outcomes.

Ergul Sonmez and Cakir's 2021 study, "Effect of Web 2.0 Technologies on Academic Performance," analyzes 19 studies using a quasi-experimental approach. The findings show a positive and moderate impact of Web 2.0 technologies on academic performance, with wikis and blogs outperforming traditional classrooms, especially in foreign language teaching. The meta-analysis consolidates evidence supporting the educational benefits of Web 2.0

technologies, emphasizing their positive impact on academic outcomes.

Al-Dheleai and Tasir's 2018 study, "Web 2.0 For Fostering Students' Social Presence In Online Learning-Based Interaction," surveyed 71 postgraduate students in a Malaysian university. Using the Online Social Presence Questionnaire, the study found a high perception of social presence on Web 2.0 tools. It emphasizes that instructors shape the online learning environment, significantly impacting students' social presence. Practical guidelines, including simplicity, clear guidance, and collaborative learning, are recommended to enhance social presence in online education.

Darwish and Lakhtaria's 2011 study, "The Impact of the New Web 2.0 Technologies in Communication, Development, and Revolutions of Societies," explores how Web 2.0 supplements communicative practices. Findings emphasize its crucial role in electronic financial services, highlighting flexibility. The study underscores library professionals incorporating Web 2.0 for innovation and meeting information needs. Integrating traditional methods with participatory Web 2.0 tools is identified as powerful for empowering citizens in societal development.

Bassani and Barbosa's 2018 study, "Experiences With Web 2.0 In School Settings," explores Web 2.0 use in Brazilian schools. The study involves 11-13-year-old students, revealing the feasibility and challenges of incorporating social software in education. It emphasizes the crucial role of teachers in guiding effective use of web applications for learning activities, providing insights into complexities and emphasizing the need for supportive frameworks and teacher guidance.

Hassan, Gamji, Nasidi, and Azmi's 2021 study, "Challenges and Benefits of Web 2.0-based Learning among International Students of English during the Covid-19 Pandemic in Cyprus," explores the experiences of 15 international students at Eastern Mediterranean University. Challenges include limited technology knowledge and connectivity issues, while benefits encompass enhanced collaborative learning, flexibility, and technological competence. The study sheds light on the diverse impact of Web 2.0 in the educational experiences of international students, particularly during the challenges of the Covid-19 pandemic.

Critical review of literature:

While lots of researchers worldwide have done many studies, we noticed there weren't many that focused on what we were interested in i.e. studying the impact of Web 2.0 technology on Interest and Academic Achievement of secondary school students in Social Studies. This created a gap in knowledge like a missing piece in a puzzle. So, to fill this gap and add something new to what's already known, we decided to conduct this research work. Our goal was to bring more understanding to our specific topic.

Research Methodology:

Research methodology ensures careful and trustworthy research. Employing a "two group pre-test and post-test" design at DAV Public School, we assessed the impact of Web 2.0 technologies on ninth-grade students' academic performance and interest, using tests to measure changes in both aspects.

Research Design:

In our school-based Social Studies research, practical challenges led us to choose a quasi-experimental design. Unlike true experimental setups with randomization, our circumstances ruled out such randomness due to the impractical disruption of school activities. Social Studies constraints further made true experimental design unfeasible. Opting for quasi-experimentation allowed us to study an independent variable within the complexities of social settings, offering valuable insight.

The non-equivalent pre-test post-test design, while not as strict, proved practical for understanding real-world social dynamics and the intricate nature of social interactions.

The specific design used in this research is non-equivalent pretest post-test design-

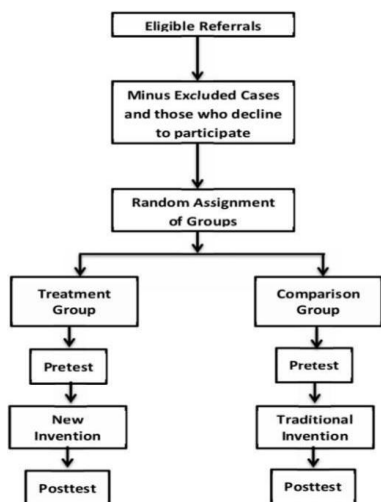


Fig. 1. The above figure shows two group pretest post-test design

Area of study:

'Area of Study' is the specific subject researchers focus on, providing clarity and focus. Ours was Web 2.0 in education, exploring its impact on academic achievement and interest in social studies at the secondary level in Bihar, contributing to knowledge and facilitating clear communication of findings.

Population:

In research, the population is the entire group being studied. Defining it precisely is crucial for study focus. This ensures findings can be applied to a larger context and guides representative sampling decisions. In our study, the population consisted of all private secondary school students of Bihar, emphasizing the importance of clarity in specifying the group under investigation.

Sample:

A sample is a smaller, representative group chosen from a larger population for efficient research. Studying the entire population is often impractical due to time and cost constraints. Working with a sample allows researchers to draw meaningful conclusions about the whole population, making the research process more feasible. In our study, class 9 students at DAV Public School in Patna served as the sample, providing valuable insights efficiently. The sample was selected through Purposive Sampling technique.

Table 1. Sample Details

Boys	Girls	Total Students
50	30	80

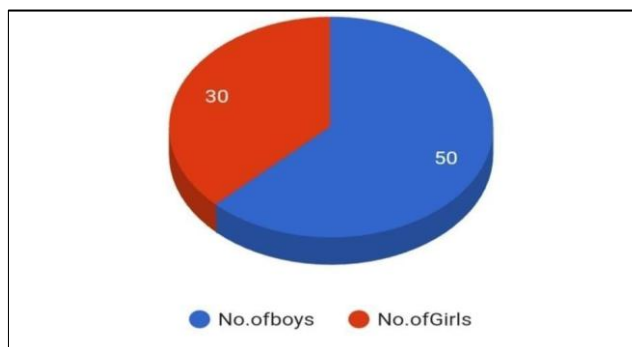


Fig. 2. Sample Details

Table 2. Treatment Group sample details

Boys	Girls	Total Students
26	14	40

Table 3. Control Group sample details

Boys	Girls	Total Students
24	16	40

Tools and techniques:

Interest test: An interest test assesses preferences and inclinations. In our study, a tailored interest test for class 9 students focused on key Social Studies chapters. It included positive and negative items to gauge motivation and challenges. Ensuring validity, we conducted background studies and sought supervisor feedback, while split-half reliability assessed consistency. Administered with an emphasis on confidentiality, the test used a Likert scale for scoring, providing insights into attitudes and preferences with respect for participants' privacy. This approach strengthened the research's robustness.

Achievement test : An achievement test measures knowledge or skills in a subject under standardized conditions for reliability and validity. For class 9 students, we created a specialized test focusing on "Poverty as a Challenge" and "Food Security in India," aligning with curriculum objectives. Our systematic preparation process emphasized relevance, ensuring a tailored evaluation tool for more precise educational outcomes.

Achievement test blueprint and rigorous development : Crafting our achievement test involved a strategic organization of content, considering curriculum chapters and questions per chapter for balanced coverage. Meticulous design resulted in a robust assessment tool aligned with instructional goals. Focused on key Economics themes, our blueprint ensured precision and consistency, contributing to a thorough student performance evaluation.

Educational websites: We designed and developed an educational website and other e-content for exposing students to Web 2.0. An Educational websites are dynamic digital platforms which transform learning with accessible and interactive content. Beyond information, they offer self-paced modules and assessments, enhancing the educational experience. These platforms supplement traditional instruction, providing resources and support globally. Breaking from constraints, they foster flexible learning, democratizing education. Cost-effective and emphasizing practical skills, they align with workforce needs. Our 'Weebly' platform created a dedicated website for class 9 political

science and Economics, offering curated resources, interactive features, and support for a deeper understanding of the subjects.

Procedure: In our research at DAV Public School, class 9 students were divided into control and treatment group using the Coin-toss method in order to minimize any bias in grouping to study the impact of instructional techniques on interest and achievement.

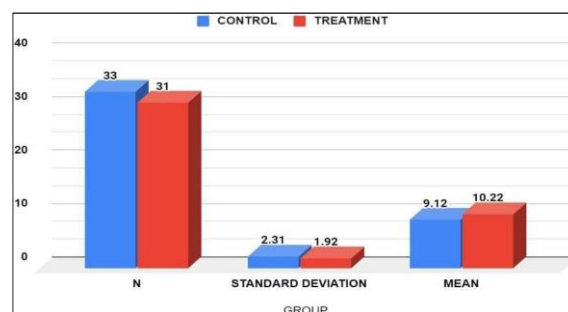
It was decided beforehand that the group getting Head will be designated as the Treatment Group and the other one will be taken as the Control Group. Accordingly, IX "HH" emerged as the Treatment Group and IX "SB", the Control Group.

A baseline pretest gauged initial understanding. The control group had conventional teaching, while the treatment group used innovative web 2.0 tools. Post-intervention, a post-test assessed academic differences and interest shifts. This research goes beyond traditional assessments, exploring the intricate relationship between instructional techniques, learning outcomes, and participant engagement, aiming to contribute meaningful insights to education.

Collection of data: To enhance result accuracy, we carefully matched treatment and control groups using pre-test marks records, minimizing external influences. We included only students who were present on the day of the study and conducted post-tests after a one-month intervention, and analyzed the collected data meticulously. This design strengthens the reliability of our study, contributing to its robustness and trustworthiness.

Table 4. Comparison of both groups on the basis of Pretest (Achievement)

Group	No. of student	Mean	Standard Deviation	t-Value	P-Value	Remark
Control	33	9.12	2.31	2.079	0.142	Non-Significant
Treatment	31	10.22	1.92			

**Fig. 3 Comparison of both groups on the basis of Pretest (Achievement)**

The pretest data comparison between the control and treatment groups for academic achievement in Social Studies reveals that, before the intervention, there was no significant difference between the two groups. The mean pretest score for the control group was 9.12 with a standard deviation of 2.31, while the treatment group had a mean pretest score of 10.22 with a standard deviation of 1.92. The t-test results, indicating a t-value of 2.079 and a p-value of 0.1426, suggested no statistically significant distinction between the two groups. This implies that both groups had similar academic achievement levels before any intervention, establishing a baseline equivalence for subsequent assessments.

Table 5. Comparison of both groups on the basis of Pretest (Interest)

Group	No. of student	Mean	Standard Deviation	t- Value	P- Value	Remark
Control	33	44.94	9.41	1.782	0.162	Non-Significant
Treatment	31	49.29	10.06			

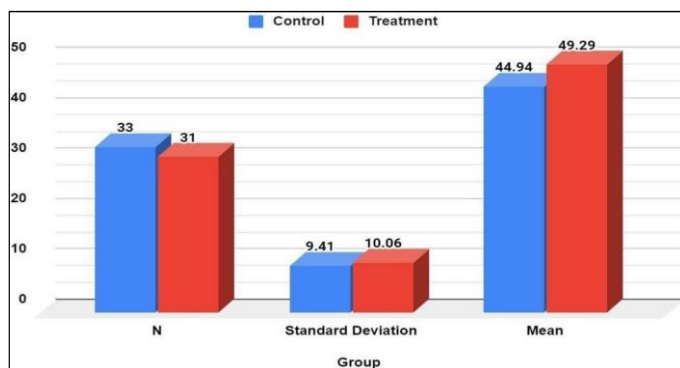


Fig. 4. Comparison of both groups on the basis of Pretest (Interest)

The pretest data comparison between the control and treatment groups to analyze interest levels in Social Studies among students reveals that there was no significant difference between the two groups. The mean pretest score for the control group was 44.94 with a standard deviation of 9.416, while the treatment group had a mean pretest score of 49.29 with a standard deviation of 10.060. The t-test results, indicating a t-value of 1.782 and a p-value of 0.162, suggested no statistically significant distinction between the two groups. This implies that both groups had similar interest levels before any intervention, establishing a baseline equivalence for subsequent assessments.

After successful matching of the groups, we implemented the intervention over a one-month period. After the intervention, a post-test was administered to both the groups. The collected during the post-test phases were then utilized for further analysis.

Data Analysis: The researcher tested formulated hypotheses using achievement and interest tests as data collection tools for both treatment and control groups. Statistical methods, including mean and standard deviations, were employed for meticulous data analysis. The t-test, chosen as the primary tool, effectively compared means between groups, assessing the statistical significance of observed differences. The formula involves calculating mean differences and dividing by the standard error, with comparison to a critical value or P-value to determine significance.

Hypothesis - 01

H₀₁ : There is no significant effect of Web 2.0 tools on Academic Achievement of students in Social Studies.

Table 6. Impact of Web 2.0 on Academic Achievement of Students in Social Studies

Group	No. of student	Mean	Standard Deviation	t- Value	P- Value	Remark
Control	27	11.88	1.36	1.661	0.172	Non-Significant
Treatment	33	12.69	2.35			

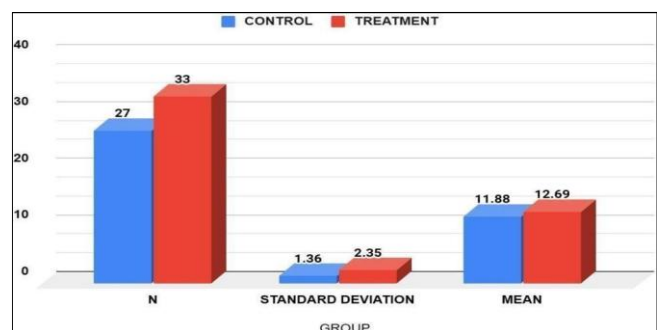


Fig. 5 Impact of Web 2.0 on Academic Achievement of Students in Social Studies

It is inferred from the Table 6, that the intervention employing Web 2.0 tools did not produce a statistically significant impact on the academic achievement of students in Social Studies. The control group, consisting of 27 students, exhibited a mean score of 11.88 with a standard deviation of 1.36. In contrast, the treatment group, comprising 33 students, had a mean score of 12.69 with a standard deviation of 2.35. The t-test results, specifically a t-

value of 1.66 and a P-value of 0.172, indicate that the observed differences between these groups are not statistically significant. Therefore, the acceptance of the null hypothesis implies that there is no meaningful effect of Web 2.0 tools on students' academic performance in Social Studies.

Hypothesis - 02

H₀₂ : There is no significant effect of Web 2.0 tools on Interest of students in Social Studies

Table 7. Impact of Web 2.0 on Interest of students in Social Studies

Group	No. of student	Mean	Standard Deviation	t- Value	P- Value	Remark
Control	27	45.62	6.88	8.375	0.001	Significant
Treatment	33	60.21	6.48			

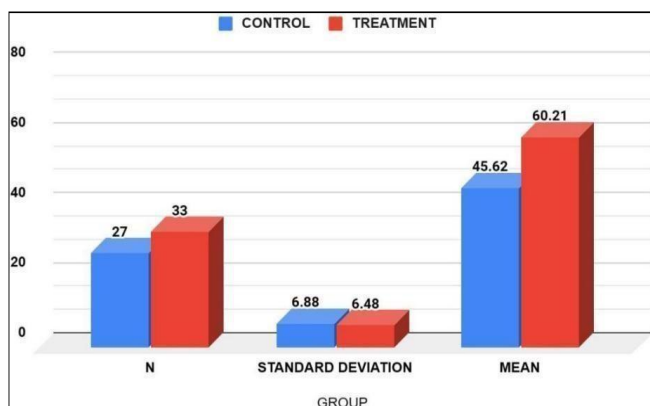


Fig. 6. Impact of Web 2.0 on Interest of students in Social Studies

It is inferred from Table 7, that the intervention using Web 2.0 tools has a notable impact on students' interest in Social Studies. In the control group comprising 27 students, the mean interest score was 45.62, with a standard deviation of 6.88. Conversely, in the treatment group consisting of 33 students, the mean interest score significantly increased to 60.21, with a standard deviation of 6.48. The application of a t- test resulted in a substantial t- value of 8.375, indicating a statistically significant difference between the two groups. Consequently, the null hypothesis is rejected, supporting the conclusion that there is a significant effect of Web 2.0 tools on the interest of students in Social Studies.

Furthermore, the mean score of Treatment Group (60.21) is significantly higher than that of the Control Group (45.62). Therefore, it can be concluded that the students of the Treatment group

showed higher interest in Social Studies than those of the Control Group. This indicates that the use of Web 2.0 tools for teaching Social Studies had a positive effect on their Interest towards the subject.

Hypothesis - 03

H₀₃ : Use of Web 2.0 tools produces no significant difference in Academic Achievement of students in Social Studies with reference to their gender.

Table 8. Impact of Web2.0 on Academic Achievement of students on the basis of their gender

Group	No. of student	Mean	Standard Deviation	t- Value	P- Value	Remark
Female	12	14.25	0.45	4.282	0.073	Non Significant
Male	21	11.80	2.54			

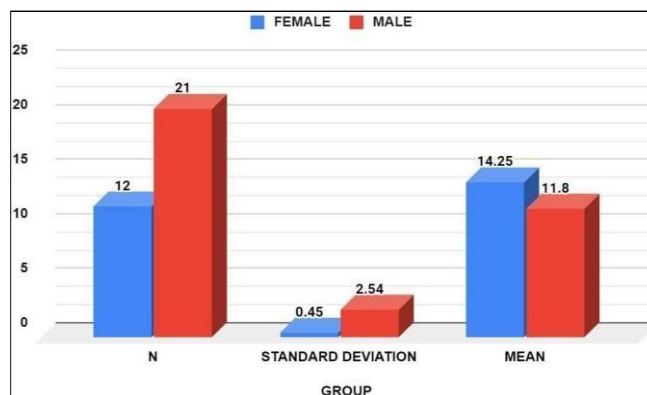


Fig. 7 Impact of Web2.0 on Academic Achievement of students on the basis of their gender

It is inferred from the analysis of Table 8, that the intervention utilizing Web 2.0 tools did not yield a statistically significant impact on the academic achievement of students in Social Studies concerning their gender. The Treatment Group, divided by gender, comprised 12 female students with a mean score of 14.25 and a standard deviation of 0.45, while the 21 male students had a mean score of 11.80 with a standard deviation of 2.54.

The results of the t-test, revealing a t-value of 4.282 and a P-value of 0.073, indicate no significant difference between the female and male groups. Consequently, the acceptance of the null hypothesis suggests that the use of Web 2.0 tools does not result in a meaningful difference in academic achievement among students in Social Studies when considering their gender.

Hypothesis – 04

H₀₄ : Use of Web 2.0 tools produces no significant difference in Academic Achievement of students in Social Studies with reference to their residential background .

Table 9. Impact of Web 2.0 on Academic Achievement of students on the basis of theirresidential background

Group	No. of student	Mean	Standard Deviation	t- Value	P- Value	Remark
Urban	25	12.72	2.31	0.091	0.470	Non-Significant
Rural	8	12.62	2.61			

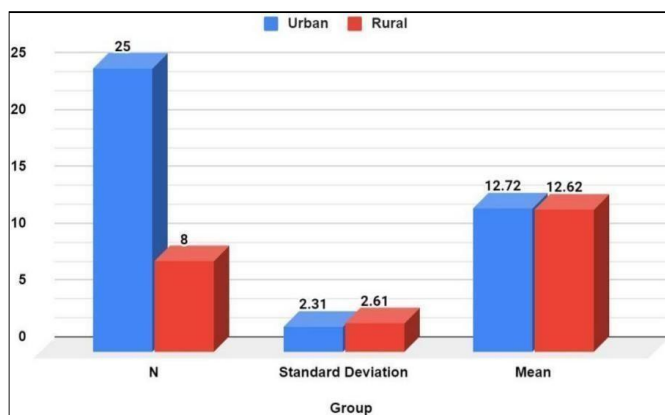


Fig. 8 Impact of Web 2.0 on Academic Achievement of students on the basis of theirresidential background

It is inferred from the analysis of Table 9, that the intervention focusing on residential background within the Treatment Group did not result in a statistically significant difference in academic achievement among students in Social Studies. The urban group, consisting of 25 students, exhibited a mean score of 12.72 with a standard deviation of 2.31, while the rural group, comprising 8 students, had a mean score of 12.62 with a standard deviation of 2.61.

Upon conducting a t-test, the obtained results revealed a t-value of 0.091 and a P-value of 0.470, indicating no significant difference between the urban and rural groups. Consequently, the acceptance of the null hypothesis is warranted, suggesting that the use of Web 2.0 tools does not yield a noteworthy difference in academic achievement concerning residential background among students in Social Studies.

Hypothesis - 05

H₀₅ : Use of Web 2.0 tools produces no significant difference in Interest of students in Social Studies with reference to their gender.

Table 10. Impact of Web 2.0 on Interest of students on the basis of their gender

Group	No. of student	Mean	Standard Deviation	t- Value	P- Value	Remark
Female	12	60.33	4.61	0.090	0.471	Non-Significant
Male	21	60.14	7.45			

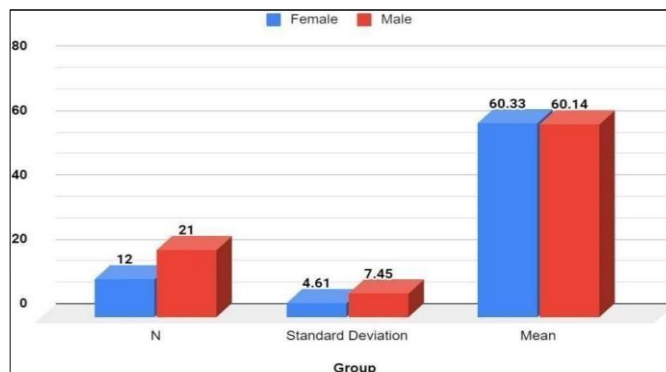


Fig. 9. Impact of Web 2.0 on Interest of students on the basis of their gender

It is inferred from the analysis of Table 10, that the intervention focusing on students' interest within the Treatment Group did not result in a statistically significant difference in interest among students in Social Studies with respect to their gender. The female group, comprising 12 students, demonstrated a mean interest score of 60.33 with a standard deviation of 4.61, while the male group, consisting of 21 students, had a mean interest score of 60.14 with a standard deviation of 7.45.

Upon conducting a t-test, the obtained results revealed a t-value of 0.090 and a P-value of 0.471, indicating no significant difference between the female and male groups in terms of interest.

Consequently, the acceptance of the null hypothesis is warranted, suggesting that the use of Web 2.0 tools does not yield a noteworthy difference in the interest of students in Social Studies concerning their gender.

Hypothesis – 06

H₀₆ : Use of Web 2.0 tools produces no significant difference in Interest of students in Social Studies with reference to their residential background.

Table 11. Impact of Web 2.0 on Interest of students on the basis of their residential background

Group	No. of student	Mean	Standard Deviation	t- Value	P- Value	Remark
Urban	25	62.28	4.43	2.915	0.105	Non-Significant
Rural	8	53.75	7.88			

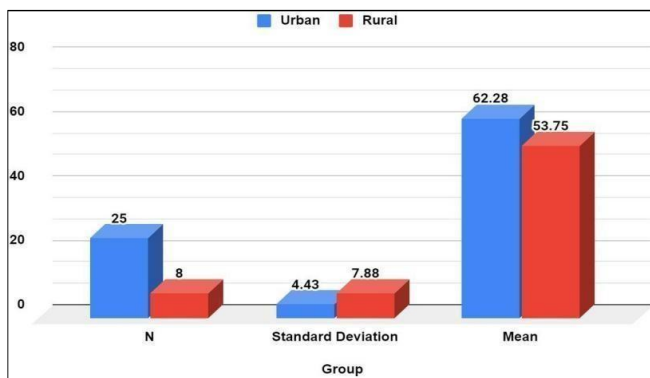


Fig. 10 Impact of Web 2.0 on Interest of students on the basis of their residential background

It is inferred from the analysis of Table 11, that the intervention, examining students' interest within the Treatment Group, did not reveal a statistically significant difference in interest among students in Social Studies concerning their residential background. The urban group, consisting of 25 students, demonstrated a mean interest score of 62.28 with a standard deviation of 4.43, while the rural group, comprising 8 students, had a mean interest score of 53.75 with a standard deviation of 7.88.

Upon conducting a t-test, the obtained results revealed a t-value of 2.915 and a P-value of 0.105, indicating no significant difference between the urban and rural groups in terms of interest. Consequently, the acceptance of the null hypothesis is warranted, suggesting that the use of Web2.0 tools does not yield a noteworthy difference in the interest of students in Social Studies concerning their residential background.

Findings:

1. There is no significant effect of Web 2.0 tools on Academic Achievement of students in SocialStudies.
2. There is a significant positive effect of Web 2.0 tools on Interest of students in Social Studies.
3. Use of Web 2.0 tools produces no significant difference in Academic Achievement of students in Social Studies with reference to their gender.
4. Use of Web 2.0 produces no significant difference in Academic Achievement of students in Social Studies with reference to their residential background.

5. Use of Web 2.0 tools produces no significant difference in Interest of students in Social Studieswith reference to their gender.
6. Use of Web 2.0 tools produces no significant difference in Interest of students in Social Studies with reference to their residential background.

Conclusion:

In conclusion, this study highlights the significant impact of Web 2.0 tools on Social Studies education at the Secondary school level. The flexibility and interactive nature of these tools, exemplified by the 'Weebly' platform, showcase a transformative potential in reshaping traditional educational approaches.

The comparison between traditional teaching methods and the integration of Web 2.0 tools revealed no improvement in academic achievements but heightened interest levels among students. The study emphasizes the pivotal role of Social Studies education in shaping informed and responsible citizens.

Furthermore, it underscores the importance of genuine curiosity, demonstrating that students who are genuinely interested in Social Studies topics tend to perform better academically. Rigorous testing methods were employed, ensuring the reliability of the study's findings.

The creation of an educational website tailored for 9th-grade students exemplifies the practical application of Web 2.0 tools, addressing contemporary educational challenges and fostering global access. The study's insights contribute significantly to the ongoing dialogue in educational research, emphasizing the potential of Web 2.0 tools in creating engaging, collaborative, and personalized learning experiences.

As we move forward, this research encourages further exploration and discussion in the broader landscape of educational research and practice. In essence, the study unveils a realm of possibilities, shaping the discourse on the future of learning in the digital age.

Suggestions:

1. Nationwide initiative for Web 2.0 integration in Secondary Education.
2. Ongoing professional development for educators on Web 2.0 technologies.

3. Redesign curriculum for interdisciplinary learning with Web 2.0 tools.
4. Parental awareness campaigns on Web 2.0 benefits and safety.
5. Establish a monitoring framework for ongoing impact assessment.
6. Encourage other schools to adopt the research model on Web 2.0 impact.
7. Improve technology infrastructure in schools for effective Web 2.0 implementation.
8. Develop student-centric learning platforms using Web 2.0 technologies.
9. Promote research replication and comparative studies on Web 2.0 impact.
10. Advocate for inclusive education policies addressing technology disparities.

Recommendations:

1. **Curriculum Integration and Teacher Training:** Integrate Web 2.0 tools into curriculum with comprehensive teacher training for effective use.
2. **Flexible Pedagogical Approaches:** Encourage adaptable teaching methods based on evolving Web 2.0 technologies for a relevant and engaging learning experience.
3. **Policy Advocacy for Technology:** Collaborate with policymakers for supportive policies, emphasizing infrastructure, accessibility, and funding for widespread adoption of Web 2.0 in schools.
4. **Replication in Diverse Contexts:** Replicate the study in diverse settings to validate findings across varied populations, considering regional, cultural, and socioeconomic factors.
5. **Feedback Mechanism and Continuous Improvement:** Establish a dynamic feedback loop involving students, teachers, and parents to refine strategies and ensure responsiveness to evolving needs and challenges.

Educational Implications

1. **Awareness Boost through Web 2.0 Tools:** Web 2.0 tools play a vital role in spreading awareness about their functionalities and advantages within educational settings.

2. **Interest Development and Student Engagement:** The integration of Web 2.0 tools fosters interest and engagement among students, contributing to a more dynamic learning environment.

3. **Cost-Effective Solutions for Institutions:** Web 2.0 tools offer a practical and cost-effective alternative for institutions that may face financial constraints, providing valuable technological resources without high expenses.

4. **Accessibility Amplified:** The user-friendly nature of Web 2.0 platforms ensures easy accessibility, making them suitable for educators and students alike.

5. **Freely Available Platforms for Widespread Adoption:** The availability of these tools on freely accessible platforms promotes their widespread adoption, facilitating their use across diverse educational settings.

Limitations:

1. **Quasi Experimental Design:** The use of quasi-experimental design may limit the ability to establish a causal relationship between Web 2.0 tools and academic achievement, compared to a randomized controlled trial.
2. **Short Intervention Period:** A one - month intervention might not fully capture the lasting impact of integrating Web 2.0 tools into education possibly missing sustained effects.
3. **Quantifying Website Visit -** The frequency of visits and its use by students could not be quantified in the present study.

References:

- Al-dheleai Y., & Tasir Z. (2019). Web 2.0 for fostering students' social presence in online learning-based interaction. *Journal of Technology and Science Education*, 9(1), 13-19. doi: <https://doi.org/10.3926/jotse.552>.
- Bassani, P.B.S., & Barbosa, D.N.F. (2018). Experiences With Web 2.0 In School Settings: A Framework To Foster Educational Practices Based on A Personal Learning Environment Perspective. Retrieved from: EXPERIENCES WITH WEB 2.0 IN SCHOOL SETTINGS: A FRAMEWORK TO FOSTER EDUCATIONAL PRACTICES BASED ON A PERSONAL

LEARNING ENVIRONMENT PERSPECTIVE
(redalyc.org).

- Darwish, A., & Lakhtaria, K.I. (2011). The Impact of the New Web 2.0 Technologies in Communication, Development, and Revolutions of Societies. *Journal of Advances In Information Technology*, 2(4), 204-216.20141222022423136.pdf (jait.us)
- Ergul Sonmez, E., & Cakir, H. (2021). Effect of Web 2.0 technologies on academic performance: A meta-analysis study. *International Journal of Technology in Education and Science (IJTES)*, 5(1), 108-127. doi: <https://doi.org/10.46328/ijtes.161>
- Hassan, I., Gamji, M.B., Nasidi, Q.Y., & Azmi, M.N.L. (2021). Challenges and Benefits of Web 2.0-based Learning among International Students of English during the Covid-19 Pandemic in Cyprus. *Arab World English Journal (AWEJ) Special Issue on Covid 19 Challenges* (1), 295-306. doi: <https://dx.doi.org/10.24093/awe/covid.22>.
- Kirikkaya, E.B., & Yildirim, I. (2021). Investigating the Effect of Using Web 2.0 Tools on 7th-Grade Students' Academic Achievements in Science and Self-Directed Learning with Technology. *Journal of Turkish Science Education*, 18(3), 439-460. doi: 10.36681/tused.2021.83. EJ1325565.pdf (ed.gov)
- Malhiwsky, D.R. (2010). Student Achievement Using Web 2.0 Technologies: A Mixed Methods Study. Retrieved from: STUDENT ACHIEVEMENT USING WEB 2.0 TECHNOLOGIES: A MIXED METHODS STUDY (unl.edu)
- Rudd, P., & Walker, M. (2010). Children and Young People's Views on Web 2.0 Technologies. (LGA Research Report). Slough: NFER. Retrieved from: Children and young people's views on web 2.0 technologies (ed.gov)
- Saidon, R., Bakar, J.A., Sharipudin, M.N.S., & Zainal, Z. (2022). The Impact of Web 2.0 Tools on Economics Education. *Journal of Advanced Research in Applied Sciences and Engineering Technology*, 28(3), 287-298. doi:<https://doi.org/10.37934/araset.28.3.287298>
- Subnani, H. & Khatri, M. (2022). E-learning Initiatives of Indian Government. *International Journal of Creative Research Thoughts (IJCRT)*, 10(4), 459-466. Retrieved from: <https://ijcrt.org/papers/IJCRT2204514.pdf>