

Enhancing Teacher-Student Relationship Through Information and Communication Technology (ICT) Integration

Keziah Mary Sam^{1*}, Alwin Paul Alias²

ABSTRACT

Information and Communication Technology (ICT) presents considerable potential in influencing pedagogical approaches and enhancing scholastic achievements, particularly within the Generation Z cohort. Nevertheless, notwithstanding its advantages, numerous senior academic staff members face obstacles when endeavouring to seamlessly incorporate ICT into their instructional methodologies. This research delves into these impediments and posits resolutions to bolster teacher-student relationships (TSR) via pioneering educational strategies such as ICT amalgamation. It delves into the significance of teacher-student relationships in nurturing an enabling learning milieu and scrutinises the ramifications of ICT on educational methodologies. The investigation adopts a quantitative methodology to delve into the teacher-student rapport and educators' proficiency in ICT. The results elucidate the import of TSR in stimulating student drive and educational outcomes, as well as the necessity of all-encompassing training schemes for educators to proficiently harness ICT resources. The exploration furnishes perspectives on surmounting hindrances to ICT amalgamation and proffers suggestions for augmenting academic accomplishments through inventive pedagogical approaches.

Keywords: *Information And Communication Technology, Teacher-Student Relationship, Innovative Teaching Practice, Achievement, Motivation, Pedagogy*

Educators serve as influential figures in society and have the ability to guide students through their cognitive and socioemotional journeys. The impact of teacher-student relationships (TSR) on students' motivation to learn and their academic accomplishments holds significant importance. The rise of Information and Communication Technology (ICT) has brought about a growing necessity to investigate the potential of innovative teaching techniques that incorporate ICT in enhancing academic results, especially within the digitally native Gen Z demographic.

Educators function as societal influencers and can shape students' cognitive and socioemotional journeys by establishing a classroom environment that fosters students' drive to learn and acquire knowledge, ultimately leading to academic success. In fostering a student's comprehensive development, educators assist in broadening students' perspectives

¹Post Graduate, Montfort College, Bengaluru, Karnataka, India

²Assistant Professor, Montfort College, Bengaluru, Karnataka, India

*Corresponding Author

Received: April 09, 2024; Revision Received: April 21, 2024; Accepted: April 25, 2024

Enhancing Teacher-Student Relationship Through Information and Communication Technology (ICT) Integration

beyond the confines of the classroom, nurturing the socio-emotional well-being of upcoming generations. Effective communication and mutual respect within a conducive environment are key elements in forming a positive and robust bond between students and teachers.

The Teacher-Student Relationship (TSR) functions as a regulatory mechanism for nurturing social, emotional, and academic competencies. A positive TSR cultivates a nurturing learning environment that heightens students' motivation to engage in the learning process. Motivated students demonstrate increased learning outcomes, improved comprehension, and a propensity for self-directed learning (Koca, 2016). Establishing a correlation between educators and students is imperative in fostering an emotionally secure learning environment.

The interaction between educators and students is fundamental to the educational journey as they mould students' educational pathways and impact their cognitive, social, and emotional development (Koca, 2016). These relationships underpin children's academic accomplishments and overall welfare, transcending mere classroom interactions. In addition to the mere dissemination of knowledge, teacher-student relationships encompass a multifaceted interplay of emotions, trust, communication, and mutual respect. The intricate dynamics between educators and students underscore their significance and the substantial impact they have on students' cognitive and personal growth.

Electronic learning, widely referred to as E-learning, has made a significant contribution to enhancing academic performance and enriching the learning experience. The conventional physical classroom setting is no longer a prerequisite for learning, given the continuous evolution of digital technology in our society. Through its innovative integration of technology, E-learning broadens the educational landscape by granting students immediate access to a plethora of information and opportunities for honing their skills. It represents a transformative instructional approach that eliminates geographical barriers, provides diverse learners with unparalleled flexibility, and empowers them. E-learning tools stimulate students' interest in learning content, simplify the learning process, and encourage and incentivize students towards achieving higher academic results. E-learning encompasses a diverse range of tools and platforms, from virtual classrooms to online courses, with the potential to revolutionise education by reshaping the learning process and broadening access to knowledge and skills (Jayanthi et al., 2023).

Information and Communication Technology (ICT) refers to computer-based communication technology utilised as a means to disseminate information, encompassing technological applications in educational practices as informational tools. The contemporary global landscape has experienced notable transformations, primarily attributed to the prevalence of information and communication technology (ICT). ICT constitutes a dynamic, interconnected system consisting of hardware, software, data, and communication structures that have integrated into our daily routines (Yousuf, 2023). It transcends mere assemblages of devices or digital instruments. The evolution of artificial intelligence, the widespread adoption of smartphones, the advent of personal computers, and the internet have collectively fueled the information and communication technology (ICT) revolution, significantly impacting educational realms.

The profound impact of ICT on education exemplifies its capacity as a catalyst for progress, equipping individuals with the knowledge and skills necessary to thrive in the knowledge-

Enhancing Teacher-Student Relationship Through Information and Communication Technology (ICT) Integration

based economies of the 21st century. ICT plays a pivotal role in fostering learning and enhancing performance through the development, utilisation, and management of appropriate technological procedures and assets (Kaware & Sain, 2015). The integration of ICT has become ubiquitous in contemporary educational environments. Educational technology, commonly referred to as ICT, encompasses the utilisation of both hardware and software in the transmission of information. ICT denotes the utilisation of technology employing electronic devices and interactive materials, empowering users to access a diverse array of teaching methods. These technologies encompass the utilisation of the Internet, computers, and projectors, among other tools.

REVIEW OF LITERATURE

Previous research emphasises the importance of TSR in creating a conducive learning environment and fostering students' motivation to learn. Additionally, studies highlight the transformative potential of ICT in education, offering opportunities for personalised learning experiences and skill development. However, challenges such as teachers' lack of proficiency in ICT and the need for comprehensive training programs hinder effective ICT integration.

Afzal, Rafiq, and Kanwal (2023) explore the impact of teacher-student relationships on students' academic achievement in higher education. The study collects data through surveys from a sample of 800 students who were conveniently selected. Strong relationships between teachers and students exist and there is a significant impact on students' academic achievement. The study finds that positive teacher-student relationships are associated with higher academic achievement and greater motivation among university students.

Mallik (2023), explores the relationship between teacher-student relationships, student engagement, and academic achievement in higher education. The study collects data through a survey questionnaire from a sample of 157 students from Bangladesh and a semi-structured interview of eight students. The study finds that positive perceptions of TSR improve behavioural engagement, emotional engagement and cognitive engagement in the classroom and in academic achievement. The article emphasises the importance of positive teacher-student relationships in higher education to promote student engagement and academic success.

Gebresilase and Zhao (2022), examine the relationship between teacher-student interactions, self-esteem, and academic achievement among university students in Ethiopia. The study collects data through questionnaires from a sample of 313 students, and the results suggest that positive teacher-student interactions are associated with higher self-esteem, which in turn is associated with higher academic achievement. The study highlights the importance of teacher-student interactions and self-esteem in promoting academic achievement among university students.

Gyeltshen and Gyeltshen (2022), explore the relationship between teacher-student relationships and academic performance among secondary school students in Bhutan. The study adopted a mixed-method research design. The study used 100 students and 40 teachers participated in the survey. The qualitative interview was conducted with 40 teachers. The results showed that there is a positive relationship between supportive teacher-student relationships and students' engagement and motivation which further has a positive effect on students' academic performance. The students take ownership of their tasks and build

Enhancing Teacher-Student Relationship Through Information and Communication Technology (ICT) Integration

learning with curiosity when there is a supportive teacher-student relationship, which is open and friendly among each other.

Lawal and Hassan (2022), investigate the effect of information and communication technology (ICT)-based instruction on the academic achievement of social studies among students in a college of education in Bauchi State. A quasi-experimental design was adopted in the study. The study uses a pretest and posttest design to compare the academic performance of students who received ICT-based instruction with those who received traditional instruction. The study finds that students who received ICT-based instruction had significantly higher academic achievement compared to those who received traditional instruction. The study also reveals that the use of ICT in teaching and learning increases students' motivation, engagement, and interaction in the classroom.

Youssef, Dahmani, and Ragni (2022), examined the relationship between information and communication technology (ICT) use, digital skills, and academic performance among students. The study was administered to 1323 students and uses data from a survey conducted among French high school students and finds that students who use ICT more frequently tend to have higher academic performance. However, the study also reveals that the relationship between ICT use and academic performance varies according to students' digital skills, with students who have higher digital skills benefiting more from ICT use in their academic performance. The study highlights the importance of digital skills in reducing the digital divide and ensuring that all students can benefit from the use of ICT in education.

Jadoon, Khan, Bukhari, Gilani, Ishfaq, and Ullah (2021), investigate the impact of teacher-student relationships on students' pro-social behaviour and academic achievement in secondary schools. The study uses a quantitative approach to collect data through surveys from a sample of 250 students and their teachers in Pakistan. The study finds that teacher-student relationships have a significant positive impact on students' pro-social behaviour and academic achievement. The study also reveals that the quality of teacher-student relationships is influenced by factors such as the teacher's closeness, friendliness and support for students' development, which leads to adaptation in the school environment and prosocial behaviour. In addition, the study establishes the student-teacher relationship is a profound predictor of academic achievement, indicating that teacher-student relationships are improved and will enhance the academic achievement of the student.

Pervin, Ferdowsh and Munni (2021), examine the relationship between teacher-student interactions and the academic performance of students in Bangladesh. 100 participants, i.e., 50 teachers and 50 students were selected through a purposive sampling technique. The study found that the quality of teacher-student interactions is positively associated with a student's academic performance, with positive interactions leading to better academic outcomes. The study emphasises the importance of developing a positive and supportive learning environment that fosters meaningful interactions between teachers and students to improve academic performance.

Ibrahim and Zaatari (2020), examine the relationship between teacher-student relationships and students' sense of school belonging at the school level in the United Arab Emirates. The participants of the study were eleven female eleventh graders and six of their teachers. The results indicate that positive teacher-student relationships are associated with higher levels of school belonging among high school students. In the study, the teacher-student

Enhancing Teacher-Student Relationship Through Information and Communication Technology (ICT) Integration

relationships were unhealthy and were on the negative side. Students spend much of their time at school interacting with teachers and thus they should be provided with support and care in this environment. They were not receiving the needed psychological and academic support from their teachers. The students found the school frustrating and did not have a high sense of belonging. They experienced disturbances and degradation of self-confidence. The study suggests that teacher training programs should emphasise the importance of building positive teacher-student relationships and creating a positive classroom environment to promote students' sense of school belonging.

Khan, Vivek, Nabi, and Khoajah (2020) explore the perception of Indian students towards e-learning during the COVID-19 pandemic. The study participants included 184 students enrolled in various universities in Delhi. The study finds that students have a generally positive perception of e-learning, finding it effective in facilitating learning during the pandemic. However, the study also reveals that students faced several challenges, such as lack of internet connectivity, inadequate technology access, and difficulty interacting with teachers and peers. The article concludes by suggesting measures to address the challenges faced by students and improve the quality of e-learning in India, including providing access to technology and internet connectivity and enhancing the skills of teachers in delivering online classes.

Kundu, Bej, and Dey (2020) investigated the correlation between teacher efficacy and information and communication technology (ICT) infrastructure in schools. The study included a descriptive survey method within an ex-post facto research design which included 100 purposely selected Indian government-run secondary schools and 400 teachers as participants. The study finds that there is a positive correlation between teacher efficacy and ICT infrastructure, indicating that teachers who have access to better ICT infrastructure feel more confident in their ability to use technology effectively in teaching. The study also reveals that teachers' age, experience, and training in ICT use are significant factors that affect their efficacy in using ICT in teaching.

Dodmani (2019), investigates the impact of using ICT in teaching and learning on students' achievement in science subjects in a primary school in Karnataka. A quantitative approach was adopted in the study. The study uses an experimental group of 100 students and a control group of 100 students. The results of the study reveal that the use of ICT in teaching and learning has a significant positive effect on students' achievement in science subjects. Teachers should also put effort into using ICT in their lessons in order to increase students' achievement. It makes the teaching process interesting, effective and encouraging.

Hoerunnisa, Suryani and Efendi (2019) investigated the effectiveness of e-learning in multimedia classes in improving vocational students' learning achievement and motivation. The quasi-experiment method was used in this study, with a class sample selected using a random sampling technique. The experiment class consisted of 31 students while the control group class consisted of 33 students. The study finds that the use of e-learning in multimedia classes is effective in improving students' learning achievement and motivation, especially when combined with face-to-face teaching. The study also reveals that students have a positive perception of e-learning and multimedia classes, finding them engaging and interesting. The article recommends integrating e-learning and multimedia classes in vocational education to enhance students' learning experience and performance.

Enhancing Teacher-Student Relationship Through Information and Communication Technology (ICT) Integration

Prewett, Bergin, and Huang (2018), examine the perceptions of both students and teachers on the quality of student-teacher relationships in middle schools. The study collects data through surveys from a sample of 336 fifth- and sixth-grade middle school students with their ten mathematics teachers. Teachers' student relationship perceptions positively predicted their students' perceptions and the students' report of their mathematics interest and self-efficacy positively predicted teacher relationships. The study also reveals that students' perceptions of the quality of student-teacher relationships are positively correlated with their academic motivation and achievement. The strongest predictors of students' views of high-quality relationships with teachers are prosocial classroom behaviours and social-emotional support.

Ganyaupfu (2013), examines the relationship between teaching methods and students' academic performance. The study uses a survey approach to investigate the perceptions of students and teachers in Zimbabwe on the effectiveness of different teaching methods. 109 undergraduate students from the economic and business sciences were used in the study. A combination of both the teacher-centred and student-centred teaching methods in teaching learners is the most effective approach that produces the best result for students. The learning process becomes effective when the students are tasked to perform rather than just asking them to remember some information. The study finds that students and teachers both perceive interactive teaching methods to be more effective in enhancing students' academic performance compared to traditional lecture-based teaching methods.

Teachers' Use of ICT affects teacher-student relationships which could affect the academic performance of the students. It is seen that the teacher's use and knowledge of ICT have a positive relationship with the student's academic performance. Also, provided evidence to support that positive teacher-student relationships have a positive impact on the student's academic performance and motivation in the learning process.

The use of ICT can enhance the student's engagement in a collaborative and interactive way which provides a wealth of information and resources, whereas, on the other hand, the excessive use of ICT can affect the teacher-student relationship where there is reduced human touch and warmth from the teachers. The students require interpersonal relationships and personal attention to fulfil their needs for affiliation and a sense of belongingness, which will motivate their learning process and academic performance. The academic performance of the students can be analysed by the marks scored by the students in the exams.

METHODOLOGY

Objective

To examine the relationship between Teachers' ICT skills and Teacher Student Relationship

Hypothesis

- **H1:** Effective integration of Information and Communication Technology (ICT) into teaching methodologies positively correlates with improved academic performance among Gen Z students.
- **H2:** The use of innovative teaching methods incorporating ICT positively impacts student engagement in the classroom.

Enhancing Teacher-Student Relationship Through Information and Communication Technology (ICT) Integration

Research Design

The study is a correlational study to investigate the relationships among the key variables. The design allows for the collection of data at a single point in time, enabling the assessment of teachers' ICT skills and teacher-student relationships.

Variables

The variables used in the study are

- *Teachers ICT Skills – Independent Variable*

Teachers' ICT Skills are defined as the teachers demonstrating proficiency and efficiency in employing digital tools, technologies, and software applications to enhance educational practices, encompassing teaching, learning, and administrative duties.

- *Teacher-Student Relationship – Dependent Variable*

The 'Teacher-Student Relationship' is the dynamic interplay between a teacher and a student in an academic environment defined by reciprocal esteem, efficient dialogue, reliance, assistance, direction, and a joint dedication to the intellectual, societal, and emotional development and triumph of the learner.

Sample

Seventy-eight female and sixteen male ICSE school teachers from different schools in Bangalore ranging in age from 24 to 58 years old, voluntarily participated in this research. Out of the ninety-four participants, 24 teachers had a working experience of 2-4 years and 70 teachers with 5-8 years experience. Participants had a preference for the English language. Informed consent was obtained from all the participants.

Participant Inclusion Criteria

- Currently employed in an affiliated educational system.
- Schools which use Information and Communication Technology.
- At least 2 years of teaching experience in educational settings.

Participant Exclusion Criteria

- Individuals who have been clinically diagnosed with psychiatric and psychological conditions or difficulties.
- Inability to read and understand English.

Instruments

Two measures were used in this study,

1. **STRS (Student - Teacher Relationship Scale):** STRS short form is a 15-item self-report instrument that uses a 5-point Likert-type rating scale, from 1 (definitely does not apply) to 5 (definitely applies) to assess a teacher's perception of his or her relationship with an individual child in their classroom. The scale has internal consistency from 0.86 - 0.89 and predicts children's classroom behaviour, school retention and academic outcomes (Hamre & Pianta, 2001). It is a reliable and valid measure.
2. **TICTS (Teachers' ICT Skills Scale)-** TICTS is an 18-item scale based on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree) to measure teachers' skills in using information and communication technologies. The reliability of the scale was found to be 0.91, which is considered good reliability.

Enhancing Teacher-Student Relationship Through Information and Communication Technology (ICT) Integration

Procedure

The participants were briefed about the study, then informed consent was obtained from all participating teachers to ensure their voluntary involvement and compliance with ethical guidelines. Participants were given individual questionnaires to assess their ICT skills, the quality of their teacher-student relationships and accordingly how much the teachers perceived the students to perform academically. These questionnaires were completed by each teacher independently. The completed questionnaires were collected and reviewed for accuracy and completeness. Any missing or incomplete responses were addressed through follow-up with the respective participants to ensure data integrity.

Data Analysis

The data collected was entered into the Statistical Package for Social Sciences (SPSS) tool. The entered data was checked for missing values and outliers, which was subjected to the data cleaning process. Descriptive statistics was run using SPSS to get information about the distribution of the data.

The data was subjected to the Shapiro-Wilk test for normality and Levene's test for homogeneity of variances. If the test is not significant, then data was subjected to Pearson correlation. If the test is significant, and the assumptions are violated, a non-parametric test such as the Spearman correlation was considered.

RESULTS AND DISCUSSION

Table No. 1 Sociodemographic details of the participants

		N	Percentage
Gender	Male	15	16.7
	Female	75	83.3
Years of Experience	2-4 Years	23	25.6
	5-8 Years	67	74.4
Socioeconomic Status	Lower	9	10.0
	Middle	76	84.4
	Upper	5	5.6

Table 1 shows the sociodemographic details of the participants. It is seen that the males in the study are N = 15, with a percentage of 16.7 and females in the study N = 75 with a percentage of 83.3. The number of participants who belonged to the 2-4 years of experience N = 23, with a percentage of 25.6 and 5-8 years of experience N = 67, with a percentage of 74.4. The participants belonged to lower socioeconomic status, N = 9, with a percentage of 10.0, middle socioeconomic status, N = 76, with a percentage of 84.4 and upper socioeconomic status, N = 5, with a percentage of 5.6.

Table No. 2 Descriptive statistics of Teacher's Ability to use ICT and Teacher-Student Relationship

		Teacher's ICT Skills	Teacher-Student Relationship
N		90	90
	Missing	0	0
Mean		63.3444	46.0556
Std. Error of Mean		0.8839	0.14492
Median		65.00	46.50

**Enhancing Teacher-Student Relationship Through Information and Communication Technology
(ICT) Integration**

	Teacher's ICT Skills	Teacher-Student Relationship
Std. Deviation	8.38560	1.37482
Skewness	-.104	1.805
Kurtosis	-1.124	6.502

The scores of the sample (N=90) on Teacher's ICT Skills and Teacher-Student Relationships were subjected to descriptive statistical analyses.

The mean scores were found to be 63.34 in Teacher's ICT Skills and 46.05 in Teacher-Student Relationship. The mean for Teacher's ICT Skills was found to be higher than Teacher-Student Relationship.

The standard error of mean was reported to be 0.88 in Teacher's ICT Skills and 0.14 in Teacher-Student Relationship indicating that the sample mean for Teacher's ICT Skills is more varied from the population mean.

The median was found to be 65.00 in Teacher's ICT Skills and 46.50 in Teacher-Student Relationship, which shows the midpoint.

The Standard Deviation for Teacher's ICT Skills is 8.385 and Teacher-Student Relationship is 1.374, which shows that there is a relatively large spread in the Teacher's ICT Skills.

The skewness was found to be -0.104, which shows that the data is slightly negatively skewed in the Teacher's ICT Skills, and 1.805, depicting that the data is positively skewed in the Teacher-Student Relationship. The Kurtosis were found to be -1.124 in the Teacher's ICT Skills, which indicates that the peak is platykurtic distribution and 6.502 in the Teacher-Student Relationship, indicating that the peak is leptokurtic distribution.

Table No. 3 Tests for normality for Teacher's ICT Skills and Teacher-Student Relationship

Shapiro-Wilk			
Variables	Statistics	df	Sig.
Teacher's ICT Skills	0.932	90	.000
Teacher-Student Relationship	0.805	90	.000

Table 3 shows the tests of normality for Teachers' ICT Skills and Teacher-Student Relationships using the Shapiro-Wilk test. The results were found to be $W (df = 90) = 0.932$, $p = 0.000$ in Teacher's ICT Skills and $W (df = 90) = 0.805$, $p = 0.000$ in Teacher-Student Relationship. The results confirm that the population is not normally distributed for Teachers' ICT Skills and Teacher-Student Relationships. Thus, the null hypothesis is rejected. The data is subjected to non-parametric tests.

Enhancing Teacher-Student Relationship Through Information and Communication Technology (ICT) Integration

Table No. 4 Tests for normality for Teacher’s ICT Skills and Teacher-Student Relationship

Variables		Teacher’s ICT Skills	Teacher-Student Relationship
Teacher’s ICT Skills		1.000	-.325**
	Sig. (2– tailed)	.	.002
Teacher-Student Relationship		-.325**	1.000
	Sig. (2– tailed)	.002	.

***Correlation is significant at the 0.01 level (2-tailed)*

Table 4 shows Spearman’s Correlation on Teacher’s ICT Skills and Teacher-Student Relationship. The results were found to be $\rho = -.325$, and $p = .002$ for the Teacher’s ICT Skills and Teacher Student Relationship, which indicates that there is a statistically significant negative correlation between the Teacher’s ICT Skills and Teacher Student Relationship.

The findings of this study shed light on the challenges faced by teachers in effectively integrating Information and Communication Technology (ICT) into their teaching practices to enhance teacher-student relationships (TSR) and further academic outcomes. Despite the recognized potential of ICT in shaping teaching methodologies and improving student performance, barriers such as lack of proficiency, inadequate training, and technological challenges hinder its effective integration.

One significant finding of this study is the crucial role of teacher-student relationships (TSR) in fostering a conducive learning environment and promoting student motivation and academic achievement. The research underscores the importance of comprehensive training programs for teachers to develop their ICT skills and effectively utilise ICT tools to enhance TSR and student engagement. Moreover, the study highlights the need for ongoing professional development opportunities to support teachers in overcoming barriers to ICT integration and promoting innovative teaching methods.

The research design employed in this study allowed for the simultaneous assessment of teachers' ICT skills and teacher-student relationships, providing valuable insights into the interplay among these variables. However, the non-normal distribution of data necessitated the use of non-parametric tests, which may have limitations in generalizability.

In summary, this study underscores the importance of addressing challenges in integrating ICT into teaching practices to enhance teacher-student relationships and academic outcomes. Recommendations include the implementation of comprehensive training programs, ongoing professional development opportunities, and strategies to promote innovative teaching methods that leverage ICT effectively. Future research should focus on longitudinal studies to explore the long-term effects of ICT integration on teacher-student relationships.

Suggestions

- Longitudinal studies to explore the long-term effects of ICT integration on teacher-student relationships and further on the student’s academic performance.

Enhancing Teacher-Student Relationship Through Information and Communication Technology (ICT) Integration

- Examine the impact of ongoing professional development opportunities on teachers' ICT skills and integration of ICT into teaching practices.
- Conduct comparative studies across different educational settings to identify best practices for ICT integration and enhancing teacher-student relationships.

REFERENCES

- Afzal, A., Rafiq, S., & Kanwal, A. (2023). The Influence of Teacher-Student Relationships on Students' Academic Achievement At The University Level. *Gomal University Journal of Research*, 39(1), 55-68. DOI: 10.51380/gujr-39-01-06
- Ben Youssef, A., Dahmani, M., & Ragni, L. (2022). ICT use, digital skills and students' academic performance: Exploring the digital divide. *Information*, 13(3), 129. <https://doi.org/10.3390/info13030129>
- Bryman, A. (2003). *Research methods and organization studies* (Vol. 20). Routledge.
- Courtney, M., Karakus, M., Ersozlu, Z., & Nurumov, K. (2022). The influence of ICT use and related attitudes on students' math and science performance: multilevel analyses of the last decade's PISA surveys. *Large-scale Assessments in Education*, 10(1), 1-26. <https://doi.org/10.1186/s40536-022-00128-6>
- Díaz, L.M. B., & Cano, E. V. (2019). Effects on academic performance in secondary students according to the use of ICT. *IJERI: International Journal of Educational Research and Innovation*, (12), 90-108. <https://doi.org/10.46661/ijeri.4045>
- Dodmani, S. B. (2019). The Effects of ICT Use in Teaching and Learning on Achievement of Students in Science Subject in a Primary School in Karnataka. *International Journal for Research Trends and Innovation*, 4(7). DOI: 10.1007/s10639-022-11431-8
- Ganyaupfu, E. M. (2013). Teaching methods and students' academic performance. *International Journal of Humanities and Social Science Invention*, 2(9), 29-35. DOI: 10.12691/education-8-2-3
- Gebresilase, B. M., & Zhao, W. (2023). The Mediating Role of Self-Esteem on the Relationship between Teachers Students Interaction and Students Academic Achievement of Wolaita Sodo University Students. *Open Journal of Social Sciences*, 11(1), 243-269. DOI: 10.4236/jss.2023.111019
- Gopal, R., Singh, V., & Aggarwal, A. (2021). Impact of online classes on the Satisfaction and Performance of Students During the Pandemic period of COVID-19. *Education and Information Technologies*, 26(6), 6923-6947. <https://doi.org/10.1007/s10639-021-10523-1>
- Gyeltshen, S., & Gyeltshen, N. (2022). The Impact of Supportive Teacher-Student Relationships on Academic Performance. *Asian Journal of Advanced Research and Reports*, 16(12), 15-34. DOI: 10.51380/gujr-39-01-06
- Hajovsky, D. B., Mason, B. A., & McCune, L. A. (2017). Teacher-student relationship quality and academic achievement in elementary school: A longitudinal examination of gender differences. *Journal of School Psychology*, 63, 119-133.
- Hashemi, A. (2021). Effects of COVID-19 on the academic performance of Afghan Students and Their Level of Satisfaction with online teaching. *Cogent Arts & Humanities*, 8(1), 1933684. <https://doi.org/10.1080/23311983.2021.1933684>
- Hoerunnisa, A., Suryani, N., & Efendi, A. (2019). The effectiveness of the use of e-learning in multimedia classes to improve vocational students' learning achievement and motivation. *Kwangsan: Jurnal Teknologi Pendidikan*, 7(2), 123. DOI:10.31800/jtp.kw.v7n2.p123--137

Enhancing Teacher-Student Relationship Through Information and Communication Technology (ICT) Integration

- Ibrahim, A., & El Zaatari, W. (2020). The teacher–student relationship and adolescents’ sense of school belonging. *International Journal of Adolescence and Youth*, 25(1), 382-395. <https://doi.org/10.1080/02673843.2019.1660998>
- Jadoon, A. I., Khan, F., Syeda Tehmina Naz Bukhari, N. T. S., Gilani, S. Z., Ishfaq, U., & Ullah, M. (2022). Effect of Teacher-Student Relationship on Pro-Social Behavior and Academic Achievement of Secondary School Students. *Indian Journal of Economics and Business*, 21(1), 331-337. DOI: 10.1111/bjep.12378
- Jayanthi, K., Priya, M. S., Saranya, S., Gomathi, R., & Sam, D. (2023). E-Learning as a Desirable Form of Education in the Era of Society 5.0. In *Advances in Distance Learning in Times of Pandemic* (pp. 23-51). Chapman and Hall/CRC.
- Kaware, S. S., & Sain, S. K. (2015). ICT application in education: an overview. *International Journal of Multidisciplinary Approach & Studies*, 2(1), 25-32. DOI: 10.4236/ahs.2022.111002
- Khan, A. A., & Golder, P. (2021). Factors affecting the academic performance of students: a reality of higher education level in Bangladesh. *Int J Trade Commerce-IIARTC*. <https://doi.org/10.46333>.
- Khan, M. A., Nabi, M. K., Khojah, M., & Tahir, M. (2020). Students’ perception towards e-learning during COVID-19 pandemic in India: An empirical study. *Sustainability*, 13(1), 57. <https://doi.org/10.3390/su13010057>
- Knoell, C. M. (2012). *The role of the student-teacher relationship in the lives of fifth graders: A mixed methods analysis*. The University of Nebraska-Lincoln.
- Koca, F. (2016). Motivation to Learn and Teacher-Student Relationship. *Journal of International Education and Leadership*, 6(2). DOI: 10.31004/obsesi.v6i2.1366
- Kundu, A., Bej, T., & Dey, K. N. (2020). An empirical study on the correlation between teacher efficacy and ICT infrastructure. *The International Journal of Information and Learning Technology*, 37(4), 213-238. DOI: 10.1108/IJILT-04-2020-0050
- Lawal, S., & Hassan, A. (2023). Effect of ICT-based Instruction on the Achievement of Social Studies in College of Education in Bauchi state. *ATBU Journal of Science, Technology and Education*, 10(4), 322-334. DOI: 10.13140/RG.2.2.15965.77286
- Ma, L., Liu, J., & Li, B. (2022). The association between teacher-student relationship and academic achievement: The moderating effect of parental involvement. *Psychology in the Schools*, 59(2), 281-296. <https://doi.org/10.1002/pits.22608>
- Mallik, B. (2023). Teacher-student relationship and its influence on college student engagement and academic achievement. *Anatolian Journal of Education*, 8(1), 93-112. DOI: 10.29333/aje.2023.817a
- Narad, A., & Abdullah, B. (2016). Academic performance of senior secondary school students: Influence of parental encouragement and school environment. *Rupkatha Journal on Interdisciplinary Studies in Humanities*, 8(2), 12-19. DOI:10.21659/rupkatha.v8n2.02
- Pervin, M. M., Ferdowsh, N., & Munni, I. J. (2021). Teacher-student interactions and academic performance of students. *Dhaka University Journal of Biological Sciences*, 30(1), 87-93. DOI: 10.3329/dujbs.v30i1.51812
- Pervin, M. M., Ferdowsh, N., & Munni, I. J. (2021). Teacher-student interactions and academic performance of students. *Dhaka University Journal of Biological Sciences*, 30(1), 87-93. DOI: 10.3329/dujbs.v30i1.51812
- Pianta, R. C., & Nimetz, S. (1992). Student-teacher relationship scale. *Journal of Psychoeducational Assessment*.

Enhancing Teacher-Student Relationship Through Information and Communication Technology (ICT) Integration

- Prewett, S. L., Bergin, D. A., & Huang, F. L. (2019). Student and teacher perceptions on student-teacher relationship quality: A middle school perspective. *School Psychology International*, 40(1), 66-87. <https://doi.org/10.1177/0143034318807743>
- Spivey, C. S. (1985). Interpersonal interactions in student-teacher relationships: types and effect on student achievement. DOI: <https://digitalcommons.unf.edu/etd/708>
- Türel, Y. K., Özdemir, T. Y., & Varol, F. (2017). Teachers' ICT Skills Scale (TICTS): Reliability and Validity. *Cukurova University Faculty of Education Journal*, 46(2), 503-516.
- Yousuf, F. (2023, June 30). Role of Information and Communication Technology (ICT) in Education. *International Journal for Research in Applied Science and Engineering Technology*, 11(6), 3415–3417. <https://doi.org/10.22214/ijraset.2023.54269>

Acknowledgment

The author(s) appreciates all those who participated in the study and helped to facilitate the research process.

Conflict of Interest

The author(s) declared no conflict of interest.

How to cite this article: Sam, K.M. & Alias, A.P. (2024). Enhancing Teacher-Student Relationship Through Information and Communication Technology (ICT) Integration. *International Journal of Indian Psychology*, 12(2), 482-494. DIP:18.01.047.20241202, DOI:10.25215/1202.047