

A STUDY ON THE EFFECTIVENESS OF BLENDED PROCESS ORIENTED GUIDED INQUIRY LEARNING ON SOCIAL SKILLS AMONG STUDENT TEACHERS- A MIXED METHOD STUDY

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Abstract:

The study examined the effectiveness of Blended Process Oriented Guided Inquiry Learning (POGIL) on Social Skills among student teachers. For this study, student teachers studying in the first year B.Ed. program were selected. The study adopted a quasi-experimental mixed method approach. Descriptive and inferential analysis were used to analyse the quantitative data while thematic analysis was adopted to analyse the qualitative data. It was found that the blended POGIL intervention improved social skills such as leadership, communicative participation as well as cooperative and structured teamwork.

Keyword: Blended POGIL, Social Skills, Leadership, Teamwork

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Introduction:

With the ever-changing job market, students are expected to think flexibly and creatively (Acharya, K. P., 2017).ⁱ Therefore, it is important for students to try to solve real-world problems by obtaining a deeper understanding of the curriculum. (Wagner et al, 2006).ⁱⁱ As student teachers are at the threshold of entering the teaching field, it is important that they too develop all the necessary skills and use innovative teaching methods to meet the expectations of the 21st century classroom. (Jerslin S, Dr. Devaki N., 2016)ⁱⁱⁱ Blended POGIL (Process-Oriented Guided Inquiry Learning) is one such innovative teaching-learning strategy. (Moog, R. S., & Spencer, J. N. 2008).^{iv} Blended POGIL is a student-centered instructional approach in which students' master concepts by constructing their own understanding as well as improving skills such as problem solving, information processing, critical thinking and communication (Moog, R. S., Spencer, J. N., & Straumanis, A. R., 2006).^v

In this research study, the researcher analysed the effectiveness of Blended Process Oriented Guided

Inquiry Learning on Social Skills among student teachers.

Statement of the Problem:

The problem is stated as "A Study on the Effectiveness of Blended Process Oriented Guided Inquiry Learning on Social Skills among student teachers- A Mixed Method Study"

Significance of the Study:

Modern school environments require student teachers to have social skills such as communication, leadership, teamwork and emotional intelligence (İnce, H., Hevedanlı, M., & Meylani, R., 2025)^{vi} However, in many teacher education programmes in India, there is priority given to mastery of content knowledge rather than the development of interpersonal skills. (Macwan, A. J., 2022)^{vii} This study bridges this gap by exploring how Blended Process-Oriented Guided Inquiry Learning (POGIL), can strengthen the social and interpersonal skills of student teachers within the B.Ed. curriculum by using structured group roles and guided inquiry. (Haryati, S., 2018)^{viii} This study examines how and why social skills may improve in a blended, role-based collaborative learning environment. This

research provides a holistic framework for curriculum planners by integrating structured collaboration into academic learning, thereby embedding social skill development into teacher preparation.

Objectives of the Study:

1. To compare the pre-test scores of the control group and experimental group of student teachers on Social Skills.
2. To compare the pre-test scores and post- test scores of the control group of student teachers on Social Skills.
3. To compare the pre-test scores and post- test scores of the experimental group of student teachers on Social Skills.
4. To study the impact of Blended Process Oriented Guided Inquiry Learning on the Social Skills of student teachers.

Research Questions:

1. Is there a significant improvement in the social skills of student teachers after the implementation of Blended POGIL?
2. How does the implementation of Blended POGIL impact the development of social skills among student teachers?

Hypothesis of the Study:

1. There is no significant difference between the pre-test scores of the control group and experimental group of student teachers on Social Skills.
2. There is no significant difference between the pre-test and post-test scores of the control group of student teachers on Social Skills.
3. There is no significant difference between the pre-test and post-test scores of the experimental group of student teachers on Social Skills.

Research Methodology:

The researcher used a quasi-experimental mixed method approach. This study had three phases: pre-intervention phase, intervention phase and post-

intervention phase. In the pre-intervention phase, for both the control and experimental group, quantitative data was collected using a social skills questionnaire, while open ended responses were collected for the qualitative data. In the intervention phase, the control group had activity-based lectures while the experimental group was taught using blended POGIL-based instruction. The topic for both groups was taken from the Educational Psychology of the B.Ed. curriculum. In the post-intervention phase, for both the control group and the experimental group, quantitative data was collected using a social skills questionnaire, while open ended responses were collected for the qualitative data. The study aimed to infer about the effectiveness of Blended POGIL on the social skills of student teachers using the quantitative data while also examining the in-depth results of their thoughts using the qualitative data and thus understand the research problem in a holistic manner (Johnson, R. B., & Onwuegbuzie, A. J., 2004)^{ix}

Sample of the Study:

The researcher collected data from 50 student teachers for the control and the experimental group respectively. The student teachers were from the first year B.Ed. course.

Tools used for the Study:

The tool used in this study was developed by the researcher. It was adopted from the Social Skills Questionnaire authored by Gresham and Elliott (1990)^x and the Group Work Evaluation Questionnaire by Erdem, Aliye. (2009)^{xi}. The questionnaire consisted of 64 items, including the dimensions of social skills namely empathy, self-control, assertion and cooperation. It consisted of a Likert rating scale for quantitative responses and open-ended questions for qualitative responses. The internal consistency of the Likert scale was found to be reliable, yielding a Cronbach's alpha coefficient of 0.742.

Analysis and Discussion:

Quantitative Data Analysis:

Descriptive Analysis:

The statistical techniques used were mean, standard deviation, skewness and kurtosis for descriptive analysis and independent 't' test and paired 't' test was used for the inferential analysis.

Table 1: Descriptive Statistics of pre-test and post-test of Control and Experimental Group on Social Skills of student teachers

Measure	Control group (N=50)		Experimental Group (N=50)	
	Pre-test	Post-test	Pre-test	Post-test
Mean	220.98	222.14	222.76	230.22
SD	8.77	10.40	9.70	10.38
Skewness	0.20	-0.08	0.01	0.13
Z _{skew}	0.61	-0.22	0.02	0.39
Kurtosis	-0.63	-0.71	-0.74	-0.79
Z _{kurt}	-0.95	-1.08	-1.12	-1.19

The standard error of skewness was 0.34 and standard error of kurtosis was 0.66 for all conditions. Table 1 shows that experimental group demonstrated an increase in the mean scores from the pre-test (M= 222.76, SD= 9.70) to post-test (M= 230.22, SD= 10.38). In contrast the control group showed a mean pre-test value of 220.98 and a mean post-test value of 222.14. The Z scores for skewness for all conditions (ranging from -0.22 to 0.61) and Z scores for kurtosis for all conditions (-1.19 to -0.95) fall within the threshold of ± 1.96 . It can be concluded that the pre-test and post-test data for the control group and experimental group were normally distributed.

Table 2: Shapiro-Wilk Test for Normality across Control and Experimental Groups

Group	Control (Pre-test)		Control (Post-test)		Experimental (Pre-test)		Experimental (Post-test)	
	Statistic	p-value	Statistic	p-value	Statistic	p-value	Statistic	p-value
Shapiro-Wilk	0.97	0.18	0.98	0.47	0.97	0.17	0.99	0.49

Table 2 indicates that all the p-values (control pre-test=0.18, control post-test=0.47, experimental pre-test=0.17 and experimental post-test=0.49) were greater than the significance level of 0.05 thus indicating normal distribution across both the control and experimental groups.

Inferential Analysis :

Hypothesis 1: There is no significant difference in the pre-test scores of the Control and Experimental group of student teachers on Social Skills

Table 3: Independent t-test for the Pre-test of Control and Experimental groups with respect to Social Skills

Group	Control (Pre-test)	Experimental (Pre-test)	t-value	df	Sig
Mean	220.98	222.76	0.96	98	p > 0.05
SD	8.77	9.70			

Table 3 shows that the obtained t-value(0.96) is less than the critical t-value at 0.05 level of significance thus, indicating no significant difference between the Control group (M = 220.98, SD = 8.77) and the Experimental group (M = 222.76, SD = 9.70). Hence, the null hypothesis was retained. This indicates that the groups were statistically equivalent at pre-test and differences and improvements in post-test scores can be linked to the experimental intervention.

Hypothesis 2: There is no significant difference between the pre-test and post-test scores of control group of student teachers on Social Skills

Table 4: Paired t-test for the pre-test and post-test of Control group with respect to Social Skills

Group	Control (Pre-test)	Control (Post-test)	Paired t-value	Sig
Mean	220.98	222.14	0.71	p>0.05
SD	8.77	10.4		

The t-value(0.71) in Table 4, which is lower than the critical t-value at 0.05 level of significance suggests that there is no statistically significant difference between the pre-test (M = 220.98, SD = 8.77) and the post-test (M = 222.14, SD = 10.4) of the control group indicating that it remained stable in both pre and post intervention.

Hypothesis 3: There is no significant difference between the pre-test and post-test scores of experimental group of student teachers on Social Skills

Table 5: Paired t-test for the pre-test and post-test of Experimental group with respect to Social Skills

Group	Experimental (Pre-test)	Experimental (Post-test)	Paired t-value	Sig
Mean	222.76	230.22	4.3	p<0.01
SD	9.7	10.38		

In Table 5, The t-value of 4.3, being higher than the critical t-value at 0.01 level of significance suggested a significant difference between the pre-test (M = 222.76, SD = 9.7) and the post-test (M = 230.22, SD = 10.38). This suggests that the social skills of the experimental group improved after the blended POGIL intervention.

Qualitative Data Analysis :

For the qualitative analysis, the data from the open-ended questions was broken into parts and open codes were developed. The codes were organised into broader clusters which led to the development of axial themes. The qualitative analysis revealed a shift in student teacher's perceptions of teamwork from the pre-test to the post-test phase. Based on the qualitative analysis from open questionnaires and discussion, it was found that in the pre-test phase, under the theme 'Role as Task Completion and Deliverable Production', students primarily showed a passive approach towards teamwork and viewed academic group work only to fulfil assigned duties. This was reflected in statements such as *"my role is to do what I have been assigned"*. Under the theme 'Leadership, Initiative, and Coordination,' leadership avoidance was shown by participants, expressing concerns about negative peer dynamics, as stated by the quote, *"I try not to be a leader because it creates a sense of negativity."* Additionally, under 'Learning and Perspective Expansion through Peer Interaction', students acknowledged that learning from peers is to get support from them rather than collaborate with them. The following statement, *"Working in a group makes me learn new things from my friends that I am not aware of,"* revealed this.

In contrast, post-test findings demonstrated that team work is more for active and reflective engagement rather than support. Under the theme 'Role-based and Structured Teamwork Strengthens Participation and Accountability', students emphasised that Blended POGIL-based discussions, provided clarity on roles and collective responsibility in teamwork. The students from the post-test group stated that *"The recorder and reflector listen attentively, and the presenter presents well. Overall, a good experience."*

The theme 'Teamwork Linked with Effectiveness and Leadership' reflected increased confidence and willingness to lead, illustrated by *"I like to be a good leader/representative with public speaking, understanding others and proving myself."* Furthermore, the theme Teamwork Expands Learning through Multiple Perspectives and Shared Sense-Making revealed a shift towards empathetic and reflective collaboration, with participants stating, *"Working in a team helps me to see the situation from various perspectives"* Overall, these findings suggest that student teachers progressed from passive, task-oriented participation to responsible, confident, and socially engaged collaborators following the intervention.

Discussion:

While the experimental group achieved a significant increase in social skills (Mean: 222.76 to 230.22 and $t = 4.3$, $p < 0.01$), the control group showed no significant change (Mean: 220.98 to 222.14 and $t = 0.71$, $p > 0.05$). This confirms that the improvement was specific to the POGIL intervention.

Blended POGIL improved communication skills which can be seen from the transition of backstage preference to the spotlight where specific roles such as presenter were undertaken. Teamwork is now associated with public speaking and listening attentively. Hence, blended POGIL intervention improved the social skills like communication of student teachers by collaborative group work (Hanson, D. M. 2006).^{xii} The assigned roles in blended POGIL improved communication, leadership and accountability. (Johnson, D. W., Johnson, R. T., & Smith, K. A. 2014)^{xiii} Due to mandatory role assignment such the manager role, leadership was not viewed negatively. Role based structured teamwork and role accountability indicate that assigned roles such as recorder and reflector ensure a sense of positive

interdependence rather than just cooperating to get the task done. Peer interaction was no longer viewed as a means to gain knowledge from peers but rather shifted to viewing multiple perspectives thus fostering empathy.

Thus, the effective intervention of Blended POGIL on the development of social skills such as empathy, communication, leadership, indicates that Blended POGIL is an effective academic tool that can also be used to develop social and emotional learning.

Cite This Article:

D'Silva F. (2026). *A Study on the Effectiveness of Blended Process Oriented Guided Inquiry Learning on Social Skills among Student Teachers- A Mixed Method Study.* In **Aarhat Multidisciplinary International Education Research Journal**: Vol. XV (Number I, pp. 123–128) Doi: <https://doi.org/10.5281/zenodo.20542335>

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