The Teaching Feedback Process From Comprehensive Pedagogical Strategies

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ABSTRACT

The research aimed to determine the influence of the comprehensive pedagogical program on the formative feedback of teachers in the Zarumilla district in 2023, using a quasi-experimental design. Pre- and post-tests were applied to an experimental group that received the program and a control group. The sample consisted of 23 teachers (12 in the experimental group and 11 in the control group), selected through non-probabilistic sampling. A 27-item questionnaire was used to collect information, and the Student's T test was applied to compare means. The results indicated a significant improvement (p<0.05) in the experimental group after the application of the program, supporting the study hypothesis. Furthermore, the influence of the program was observed in the descriptive, discovery and evaluative dimensions.

Keywords: Comprehensive pedagogical program, formative feedback, basic education teachers.

I.   INTRODUCTION

At the international level, in the field of education, difficulties are faced in the assessment of competencies due to the persistence of traditional assessments focused on the quantitative and without a didactic approach. Formative feedback, while seen as crucial to improving the teaching-learning process, often falls short of expectations. In Colombia, gamification has been explored as an effective tool, but teachers' limited familiarity with digital strategies has hindered its implementation.

At the national level, the lack of importance attributed to training by teachers and the lack of optimization of information despite the e[1]xistence of various technological tools have contributed to educational problems (Ministry of Education, 2020). In Piura, during the year 2020, teachers reported 35% absenteeism from distance classes, and only 65% of 200 enrolled children completed their training, even more, the lack of feedback during distance classes resulted in poor student performance and limited parental support exacerbated the situation.

From the local level in the District of Zarumilla, teachers did not properly understand the concept of feedback, focusing on the traditional transmission of knowledge, which led to ineffective teaching. The study focused on teachers in early childhood schools in the Zarumilla District, where most focused on passing on knowledge rather than planning

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effective feedback. This resulted in poor and inadequate feedback for students. In response, a comprehensive pedagogical program is proposed to improve formative feedback on teachers in educational institutions in the district of Zarumilla in 2023.

Formulation of the problem

 What influence does the comprehensive pedagogical program have for formative feedback on teachers in educational institutions in the district of Zarumilla, 2023?

Objective

To determine the influence of the comprehensive pedagogical program on the formative feedback in teachers of educational institutions in the district of Zarumilla, 2023.

Justification

The research is convenient because it offered a solution to the lack of effective feedback in early schools in Zarumilla. In addition, the study had a theoretical value by updating the importance of formative feedback in teaching practice, enriching pedagogical strategies with Dewey's educational theory. It presented a practical contribution because significant contributions are highlighted with a reliable instrument that measured feedback during the sessions and a program with a critical-reflective approach.

The research presented a practical relevance because it allowed to solve the identified problem through a comprehensive pedagogical program that strengthened the competencies of teachers in formative feedback strategies, finally, the study is relevant because it benefited the educational community by providing starting points for future research in similar contexts and offered a valuable contribution through a comprehensive pedagogical program aimed at teachers of high level. initial.

Background

Several international and national studies on pedagogical strategies and formative feedback in various educational contexts are highlighted.

In Chile, Navarro et al. (2021) identified deficiencies in teacher-student cooperation in the use of integrated pedagogical strategies (IEPs).

In Spain, Rochera et al. (2021) analysed the positive effects of feedback through a discussion forum.

In the United Kingdom, Mackintosh-Franklin (2020) assessed the significance of formative feedback on students' academic performance. In Pakistan, Javed et al. (2020) found a significant association between teacher feedback and student academic performance.

At the national level, Tarrillo (2022) in Trujillo evaluated pedagogical strategies for the advancement of research competencies, highlighting that greater training in research improves the execution of strategies. In Lima, Dolorier et al. (2022) illustrated the positive effect of feedback on the systematization of successful educational practices. Vásquez (2022) evaluated feedback and learning achievements, finding a high level of feedback rating in early childhood education students. Quiñonez et al. (2021) analyzed the development of the competency approach and formative assessment in an educational institution in Lima, highlighting the increase in student autonomy and confidence. In Piura, Álvarez-Castro et al. (2021) and Gutiérrez et al. (2021) evaluated programs to improve learning assessment and formative feedback in teachers, obtaining positive results. Huayhua et al. (2021) highlighted the importance of formative feedback for the assessment of student achievement in Peruvian schools, emphasizing positive communication between teachers and students

Theoretical framework

Formative feedback, focused on the process, contributes to the achievement of learning goals, fosters the teacher's reflective practice, and opens the dialogic capacity between teacher and student (Atkinson et al., 2022; Anijovich, 2019; Hattie and Timperley, 2007;

Olivos, 2003). Formative assessment improves the quality of learning by revealing gaps, being a systematic planning process with assessments made during learning and student feedback (Sri & Candiasa, 2022). Formative feedback and evaluation processes, which are essential in education, must be rooted in pedagogical praxis, incorporating evaluation opportunities and feedback activities (Morris et al., 2021).

Feedback is an active and effective process for decoding information, while formative assessments promote learning focused on information analysis and ensure teaching to meet the needs of learners (Suzanne & Margaret, 2021). Formative feedback, also known as constructive feedback, helps students recognize strengths, identify action plans, and grounds meta-reflection in teaching-learning processes (Mckimm cited in Alirio & Zambrano, 2011; Burga et al., 2022).

Teachers' reflections support findings from formative assessment, contributing to their professional development (Moyo et al., 2022). Therefore, feedback and formative assessment, together, play an intimately linked role in the teaching-learning process (Waskito & Kyaw, 2021; Espinoza, 2021). Under the same approach, it is highlighted that feedback is essential to redirect the student's learning and teaching process, requiring analysis, reflection and appropriate guidance (Alsalhanie, 2018).

On the other hand, the key attributes of formative feedback include personalization, contextualization, objectivity, comprehensibility, relevance, constructiveness, descriptive value, and solution-oriented. Therefore, it is crucial to know when and what type of feedback to use, according to the needs of the educational process (Canabal & Margalef, 2017).

According to the Ministry of Education of Peru (MINEDU, 2018), descriptive feedback provides informative elements to improve student work, although it is noted that the changes are temporary and do not arise from a reflective process of the student. Gaviria (2006) and Shepard (2006) highlight key questions such as "Where do I go?" and "How do I get there?" that focus on learning goals and guidance to provide meaningful information, personalizing the process.

As a second dimension, reflective feedback, also called by discovery, according to MINEDU (2017), is based on guidance, introspection and discovery of the student, allowing them to reflect and analyze problems consistently. Gan and Hayttie (2014), Martinez and Mercado (2015), along with Hattie and Timperley (2007), highlight its importance for students to compare evidence deficiencies, deepen self-development, and associate with levels of self-regulation.

Regarding evaluative feedback, as a third dimension, Ravela (2009) highlights the transmission of information about reviewed activities and the emotional dimension between teacher and student, influencing student motivation. Regarding the motivation that the student should receive when receiving feedback, Chávez (2015), Morris et al. (2021), and Hattie and Timperley (2007) agree on its relevance to motivate students and compete during the process and at the end of the work.

Feedback seeks training in the student, according to various perspectives, this is a short-term educational process that seeks the expansion of knowledge and the improvement of attitudes (Chávez, 2015; Martinez and Martinez, 2009; Chiavenato, 2011). Teaching realization, according to Streck et al. (2015) and Bunge (2007), involves moving from simple awareness to criticism, turning possibility into action. Renewal, according to the Ministry of Public Education (SEP, 2007), is continuous training and professional improvement to keep education professionals up to date with the evolution of educational science, appropriating other elements of a theoretical, methodological, instrumental and academic nature that will result in educational action in the classroom.

The research was based on Vygotsky's (1988) socioconstructivist theory, considering feedback as a process of constructing learning through the interaction between teacher and student. According to this theory, knowledge is collectively constructed from prior knowledge, interaction, and individual experiences. The importance of collaborative work in feedback is highlighted, where psychological content and tools facilitate internalization

and the concept of a zone of proximal development. In addition, he adopted an inductivist (neopositivist) epistemological stance, which focuses on observable and measurable facts, avoiding biases and grounding problematic reality through observation and existing theory. Data measurement is considered valid only when its correspondence with reality is empirically demonstrated, thus providing a secure knowledge base (Vara, 2010).

With respect to the comprehensive pedagogical program, defined by Sallo (2022), it is conceived as a proposal created to address problems perceived in the educational reality. It is characterized by its innovation, specificity in objectives and themes, pedagogical nature, collective approach, feasibility and relevance. Highlighting its importance in adapting and expanding teaching contexts, it seeks to improve skills and competencies in cognitive, playful and behavioural aspects (Grijalba & Marmolejo, 2018).

For Gómez (2022), the benefits of the pedagogical program for early childhood teachers include facilitating planning, providing a clear guide with objectives and contents, allowing the adaptation of teaching to the needs of children, favoring coherence and continuity in the teaching-learning process, and strengthening pedagogical practice with innovative ideas and strategies. It also highlights its role as a starting point for fostering collaboration between teachers, ensuring quality education for all children.

The comprehensive pedagogical program, from an epistemological perspective according to Zanotto and Gaeta González (2018), promotes feedback from teachers to learners to guide them towards expected levels and make necessary adjustments in teaching. It is highlighted that epistemological beliefs influence cognitive processes, metacognition and promote awareness of one's own beliefs regarding knowledge and the learning process.

Regarding the theoretical foundations of pedagogical strategies, Picardo et al. (2004) propose an approach in which actions follow a logical and coherent sequence to achieve educational objectives. These pedagogical strategies, according to Sierra (2008) and Mockus (1984), are stable principles, contextually real, and recognize potentialities, allowing learning in various areas of knowledge. In addition, they highlight the crucial role of teachers as intermediaries in ensuring and providing engaging, effective and modern forms of meaningful learning.

Pedagogical strategies based on guides or workshops, according to Omar et al. (2021), generate favorable school climates and harmony, improving teacher-student interaction. Hernández et al. (2021) emphasize the importance of promoting teamwork to articulate knowledge, favoring active and participatory roles. Garcés and Mora (2020) highlight that dynamism in the pedagogical act seeks behavioral and cognitive changes through adaptation to changing environments.

In this sense, the following strategies are considered: Metacognitive strategies, evaluated by Meza et al. (2016) and Leighton (2019), are those that intervene in the student's self-regulation, evaluation and reflection on their learning process.

Cognitive strategies, according to Yana et al. (2019) and Otálora (2019), are essential in childhood for academic success, grounding mental processes in the conceptual, procedural, skill, and restrictive (Acuña et al., 2020). These strategies involve organization, self-evaluation, and relationships, reinforced by planned, self-regulating, and evaluative aspects (Barahoma & Aparicio, 2020). Parada et al. (2020) define metacognition as the ability to self-regulate, using strategies to face challenges in teaching, developing control, planning, and evaluation tactics.

Technological strategies, characterized by MINEDU (2018), promote active, cooperative learning, relevant feedback and connection with the real world. As for socio-affective strategies, according to Hortúa et al. (2018), they refer to socio-emotional, moral and social development, influencing personality, self-image, autonomy, self-concept, moral development and social skills, all based on emotional relationships with peers.

II. METHODOLOGY
Type of research

For the present study, Applied research was considered because it will allow solving a problem that directly affects a community, in this case educational, in addition to using the results of previous research (Ñaupas et al., 2019).

Sample

The sample chosen was a census at the convenience of the researcher, so 12 teachers representative of the population will be considered for the experimental group and another 11 for the control group.

Technique & Instruments

The technique used was the survey and the instrument, the questionnaire that measured the formative feedback in the teachers, consisting of 27 items.

Procedure

Information was collected by consulting university repositories, virtual libraries, and scientific articles from indexed journals. Authorization was obtained from the institutions to implement the instruments. The teachers were informed about the objective of the research when applying the instruments. The pedagogical strategies program consisted of 5 workshops, each with 3 learning sessions. The questionnaire used in pre- and post-test was validated and reliable. The collected data was entered into an Excel matrix, coded and processed for descriptive and inferential statistics.

III.   RESULT

Table 1 Descriptive Statistics for Formative Feedback in the Pretest (Experimental and Control Group)

Dimensions	Experimental					Control				
	M	Md	M0	OF	% Achievement	M	Md	M0	OF	% Achievement
R. descriptive	37,42	36,50	36	6,082	67	35,82	38,00	38	7,859	64
R. by discovery	23,33	23,50	26	3,892	83	21,18	21,00	18	3,945	64
R. Appraisal	23,58	23	22	4,209	42	24,91	26,00	24	3,270	82
R. Formative	84,33	88,50	88	11,460	75	81,91	87,00	65	12,470	64

Table 3 shows the descriptive statistics in pretest for the EG and CG, it can be seen that the formative feedback reached the highest percentage value 75% (for a mean of M= 84.33), and the CG reached 64% (for a mean of M=81.91). The lowest values obtained by the dimensions were for the EG evaluative and descriptive feedback. And for the CG, the descriptive and discovery feedback dimensions reached the same value. It should be noted that the arithmetic means had very close values in both the experimental and control groups, especially in the experimental group.

The medians also showed values relatively close to their corresponding arithmetic means.

Table 2 Descriptive Statistics for Post-Test Feedback (Experimental and Control Group)

Dimensions	Experimental					Control				
	M	**Md**	**Mo**	**OF**	**% Achievement**	**M**	**Md**	**M0**	**OF**	**% Achievement**
R. descriptive	52,25	53,00	53	1,865	100	35,64	38,00	38	5,904	64
R. by discovery	32,17	32,00	31	2,290	100	21,00	21,00	21	3,317	64
R. Appraisal	34,25	35,00	35	1,913	100	24,45	26,00	26	2,945	73
R. Formative	118,67	118,00	117	3,055	100	82,09	85,00	85	10,849	73

The descriptive statistics for Formative Feedback in the post-test (GE and CG) are appreciated. It can also be seen that, for the experimental group in all dimensions: descriptive, by discovery and evaluative, the maximum value was the same 100%, with their means being M= 52.25, M=32.17 and M=34.25 respectively. And in the control group, the maximum value was 73% for the assessment dimension, however, the dimensions: descriptive and by discovery, obtained a similar value of 64% for means of M=35.64 and 21.00 respectively.

In all the dimensions belonging to the experimental group, they show the highest values compared to the control group.

The medians show values very close to the arithmetic mean and the mode.

It can also be seen that the dispersion levels in the EG are lower than those in the CG.

Taking advantage of the data from descriptive statistics, normality was performed from inferential statistics, for which the Shapiro-Wilk Normality Test was used for Formative Feedback (pre and posttest) in experimental and control groups

Table 3 Normality test, Shapiro-Wilk, for Formative Feedback (pre and posttest) in experimental and control groups

Dimensions	Group	Pretest		Post-Test	
		Shapiro-Wilk	p	Shapiro-Wilk	p
R. Descriptive	Experimental	0,977	0,966	0,905	0,183
	Control	0,932	0,428	0,916	0,285
R. by discovery	Experimental	0,914	0,241	0,883	0,096
	Control	0,953	0,680	0,971	0,899
R. Appraisal	Experimental	0,984	0,996	0,913	0,231
	Control	0,920	0,317	0,903	0,198
R. Formative	Experimental	0,852	0,052	0,934	0,420
	Control	0,853	0,050	0,838	0,300

*$p \leq .05$

**$p \leq .01$

Table 5 shows the results of the Shapiro-Wilk normality test and its levels of significance for the formative feedback dimensions.

It can be seen for the descriptive feedback that, in the experimental group, both in pretest and posttest, the p values (Sig = 0.183 and Sig=0.285, respectively) were greater than 0.05, that is, they followed a normal distribution.

For the control group, p values were also greater than 0.05 in both tests (Sig = 0.428 and Sig = 0.899), indicating that the data in this group also followed a normal distribution.

In Reasoning by Discovery, similarly, for the experimental group in both tests, the p-values are greater than 0.05 (Sig = 0.241 and Sig = 0.096), suggesting a normal distribution. For the control group, the p-values are greater than 0.05 in both phases (Sig = 0.680 and Sig = 0.899), indicating a normal distribution.

Regarding Evaluative Reasoning, in the experimental group, the p-values were greater than 0.05 in both tests (Sig = 0.996 and Sig = 0.231), which suggested normality in the distribution of data. For the control group, the p values were also greater than 0.05 in both tests (Sig = 0.317 and Sig = 0.198), indicating normality in the data distribution.

The homogeneity of the variance was also determined through the equality of variance test in the respective data distributions for both the plents and the post-test

Table 4 Levene Variance Homogeneity Test, for Formative Feedback (pre and posttest) between experimental and control groups

Dimensions	Pretest		Post-Test	
	Levene	P	Levene	P
R. Descriptive	0,774	0,389	18,038**	0,000
R. by discovery	0,013	0,911	1,090	0,308
R. Appraisal	0,937	0,344	1,938	0,178
R. Formative	0,219	0,645	13,760**	0,001

***p≤ 0.05

The results of Levene's test of homogeneity of variances for the dependent variable are observed both in the pre- and post-test between the control and experimental groups. These results allow us to deduce from the pretest that all the dimensions of the formative feedback, the Levene statistic was not significant, it is assumed that there is a homogeneity of variances. In the post-test results, it can be seen that only the descriptive dimension is significant at 0.01, from this result a homogeneity of variances would not be assumed. The discovery feedback and assessment dimensions had values of 1.090 (Sig=0.308) and 1.938 (Sig= 0.178), which is equivalent to saying that they presented homogeneity of variance.

Effects of the Program on Formative Feedback

The influence of the comprehensive pedagogical program on the formative feedback in teachers of educational institutions in the district of Zarumilla, 2023, was determined.

Table 5 Comparison of the formative feedback of the experimental group-control group, in pre-test

Dimensions	Experimental		Control		t	p
	M	OF	M	OF		
R. descriptive	37,42	6,082	35,82	7,859	0,548	0,589
R, by discovery	23,33	3,892	21,18	3,945	1,316	0,202
R. Appraisal	23,58	4,209	24,91	3,270	-0.838	0,412
R. Formative	84,33	11,460	81,91	12,470	0,486	0,632

Note: t = t for student

It can be seen that in the t-test, there was no significant difference in the scores obtained, both in the experimental group and in the control group for all dimensions, as well as in the formative feedback variable in the pretest (p> 0.05).

These results indicate that teachers in the experimental and control groups entered the experiment with similar arithmetic means.

This result suggests that prior to the intervention of the program, no substantial differences were observed, as shown by the means of the dimensions for the two groups of teachers.

Table 6 Comparison of the formative feedback of the experimental-control group, in post-test

Dimensions	Experimental		Control		t	p
	M	OF	M	OF		
R. descriptive	52,25	1,865	35,64	5,904	9,274**	0,000
R, by discovery	32,17	2,290	21,00	3,317	9,467**	0,000
R. Appraisal	34,25	1,913	24,45	2,945	8,569**	0,000
R. Formative	118,67	3,055	82,09	10,849	11,225**	0,000

Note: t = t for student
*p≤ 0.05
** p≤ 0.01

Values for both the "t" test are shown here. These results indicate that there were significant differences between the scores found in both the experimental and control groups in the three dimensions and in the variable (formative feedback). In this research context, the significant difference suggests that the program had a measurable and statistically relevant impact on teachers. The application of the program was unique to the experimental group. It is noteworthy that after the program was applied, there was a difference of 36.58 that favored the experimental group. It should also be noted that the experimental group had an increase of 34.34 points, and the control group had a very small value of 0.18 points.

Based on these results, the influence of the comprehensive pedagogical program on descriptive, discovery, and evaluative feedback in teachers of educational institutions in the district of Zarumilla, 2023, is confirmed.

Table 7 Effects of the Comprehensive Pedagogical Program

Variable	t	P
Formative Feedback	11,225**	0,000

Note: t = t for student
*p≤ 0.05
** p≤ 0.01

It is shown that in the formative feedback variable the comprehensive pedagogical program had a significant influence (p< 0.05), which means that the experimental group has had a significant improvement due to the application of this program in relation to the control group. The result was able to provide evidence that the intervention with the program generated a change in the score measured for each teacher. In addition, the validity of the causal relationship between the program and the difference found in the results is reinforced.

Therefore, the general hypothesis The application of the comprehensive pedagogical program has a significant influence on the formative feedback in teachers of educational institutions in the district of Zarumilla, 2023 was accepted or confirmed, therefore, the H0 was rejected and the affirmative was accepted.

IV. DISCUSSION

In the research on the comprehensive pedagogical program to improve formative feedback, the descriptive results presented in Tables 3 and 4 reveal a percentage of achievement of 75% in the pretest and 100% in the posttest for the experimental group. These findings indicate a positive influence of the program on formative feedback, supported by previous research (Atkinson et al., 2022; Vasquez, 2022; Gutiérrez et al., 2021).

Feedback stands out as an effective tool to promote active student participation and improve the learning process (Suzanne & Margaret, 2021). The results also suggest the importance of deepening the optimization of teacher-student interaction to develop formative feedback as a self-assessment skill (Alsalhanie, 2018).

Regarding the feedback dimensions, the descriptive dimension obtained 67% in the pretest and 100% in the posttest for the experimental and control group. This highlights the effectiveness of the program's pedagogical strategies and the importance of cooperation between students and teachers. Discovery feedback showed 83% in the pretest and 100% in the posttest, highlighting its value as an educational strategy that encourages self-reflection and active student participation (Huayhua et al., 2021).

Evaluative feedback saw a significant increase from 42% in pretest to 100% in posttest for the experimental group. Their approach beyond the performance description, incorporating value judgments about student work, is recognized. However, the need to provide this feedback constructively to avoid negative emotional impacts and focus on stimulating continued growth is highlighted (Quiñonez et al., 2021; Rochera et al., 2021; Tarrillo, 2022; Javed et al., 2020).

The study on the effects of a comprehensive pedagogical program on formative feedback reveals significant results. According to Table 6, the program has a significant influence on teachers' formative feedback. Table 7 confirms the significant difference, supported by previous studies, such as that of Navarro et al. (2021). It is emphasized that teachers, by implementing pedagogical strategies, can contribute to the development and motivation of students.

Formative feedback is conceptualized as a procedure-centered assessment that allows for the collection of differentiated information about the individual's thinking and behavior. Its role in the development of a reflective practice from teaching praxis is emphasized, supported by theorists such as Anijovich (2019), Hattie and Timperley (2007), and Olivos (2003).

From Vygotsky's socioconstructivist theory, it is argued that formative feedback benefits from social interaction and support, as well as from the mediation of language. The Proximal Development Zone (ZDP) is presented as a valuable tool to identify and guide the advancement of learning with appropriate support.

The comprehensive pedagogical program designed by Sallo (2022) emerges as a crucial factor in the results. According to the dimensions of descriptive, discovery or reflective, and evaluative feedback, significant improvements are evidenced in the assessment of learning.

Descriptive feedback excels at providing detailed and specific observations without subjective evaluations, allowing for a clear understanding of performance and underpinning continuous improvement. Discovery feedback, associated with metacognitive strategies, is linked to the student's self-reflection, promoting autonomy and constant analysis.

Evaluative feedback, addressing emotional aspects, demonstrates a significant statistical difference. The importance of considering the emotional dimensions in the feedback is emphasized, connecting with the student's motivation and competence with others.

The comprehensive pedagogical program benefits teachers by developing observation skills, motivating descriptive feedback, focusing on effective communication, addressing the Zone of Proximal Development, encouraging self-evaluation and self-reflection, promoting collaboration among teachers, and proposing mechanisms for continuous evaluation.

The comprehensive pedagogical program proves to be an effective strategy to improve teachers' formative feedback, with positive impacts on various dimensions and significant contributions to the educational process.

V.   CONCLUSIONS

The implementation of the comprehensive pedagogical program in teachers in the district of Zarumilla in 2023 had a significant impact on formative feedback. The experimental post-test group showed substantial improvements compared to the control group, evidenced by a probability value (P) of less than 0.05.

The effective design of the program made it possible to address the training needs of early childhood teachers. The implementation of innovative pedagogical strategies and varied educational resources proved beneficial, supporting the observed improvement.

In addition, the program's influence extended to the specific dimensions of formative feedback. The experimental post-test group experienced significant improvements in the dimensions of descriptive, discovery, or reflective, and evaluative feedback, with probability values less than 0.05. This suggests that the program was specifically designed to address each aspect of formative feedback, improving teachers' ability to provide effective feedback and use it more effectively.

The research contributes with a comprehensive pedagogical program of formative feedback for teachers based on constructivism to strengthen teaching competencies in feedback, which can be applied to educational institutions that have the same problem and adapted to other realities that seek quality in the teaching-learning processes.

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