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Feedback as a Key Factor in the Development of Teamwork in Undergraduate Students at a Kurdish University

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Abstract

Formative feedback and teamwork should become transversal axes of educational action, generating new ways of learning. The objective of the research was to determine the influence of teacher feedback on the teamwork of undergraduate students at a Kurdish university, and to determine the impact of strategies and content, as dimensions of teacher feedback, on the dependent variable. It followed the positivist paradigm, under the quantitative approach, non-experimental and explanatory design. The sample was defined by 172 undergraduate students from a Kurdish university. The technique was the survey and the questionnaire was used as an instrument. The result of the R-squared value obtained shows that feedback explains with an adjusted percentage of 41.7% (McFadden= 0.417) the level of teamwork evidenced by the students. It is concluded that there is significant influence of teaching feedback and teamwork in undergraduate students of a Kurdish university, contributing to the academic and professional training of students. Formative feedback should become a daily strategy that allows the educational actors involved in the process to learn to unlearn in order to build new knowledge, encouraging teamwork under a systemic vision.

Keywords: *formative feedback, teamwork, university students, reflection, integration*

Introduction

Due to the constant changes marked by uncertainty, the crisis of values, chaos and perplexity, it has led to the need for higher education training to respond to the demands of social environments, in order to train a citizen who, beyond acquiring cognitive or technical skills specific to a specialization, can understand his or her leading role in society. Therefore, knowledge cannot be conceived as something static, parceled, or simplifying of the reality of man, but rather, it must be positioned in the pragmatic, in the reality of human being in the human being, originating new ways of learning to learn from the realities, experiences, and knowledge of man himself.

From this point of view, feedback at the higher education level becomes a dual duality strategy that allows, on the one hand, both the student and the teacher or peers to reflect, analyze and

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understand the multiple realities experienced by the educational actors and, on the other hand, to learn from the questioning of reality, generating meaningful and contextualized learning, contributing to learning communities (Tapia-Ladino and Correa, 2022). In this sense, the teacher must contextualize and personalize teaching according to the social context, needs, potentialities, experiences and previous knowledge of the students, where feedback must be assumed as a central axis that allows the educational actors to deconstruct and construct new knowledge (Heredia-Laura and Sulca-Tapia, 2022).

It is necessary to originate changes at the level of higher education towards a multidimensional, liquid and meaningful learning, having as central axis the student as a generator of knowledge, where he/she recognizes him/herself; and recognizes the other as an enhancer of knowledge, based on the logic of dialogue, criticism, self-criticism, regulated and self-taught learning, contributing to teamwork (Hattie and Timperley, 2007; Hattie and Yates, 2017).

From this perspective, feedback enhances teamwork when it is encouraged, promoted and stimulated from the different learning spaces. This leads to the formation of self-aware citizens who can analyze, reflect, understand and interpret the different social realities, who are self-critical of their own learning, constantly questioning reality and formulating alternative solutions focused on the common good (Wisniewski *et al.*, 2020). Working under this vision implies that the university teacher must internalize feedback as a pedagogical process from the daily life in each learning space. This leads to generate a new learning culture focused on learning to learn among all, generating a synergy of integration in the learning ecosystems.

These approaches imply a reconfiguration of the educational actors involved at the higher education level. Consequently, Contreras (2018), argues that one of the very marked shortcomings is the centrality of the university professor in addressing content and evaluating by results, simplifying feedback to its minimum expression, as a process for learning to learn. This situation is exacerbated when there is no clear teacher training policy on how to provide feedback, in addition to the number of students enrolled for each section, and the extra time that the teacher must dedicate to the feedback (Carless & Winstone, 2020).

These realities seem to limit the effective implementation of feedback in the university context, since it requires a paradigmatic change in the educational task, a new vision of the teacher and a new learning culture, where all the educational actors involved in the process learn to deconstruct and construct new learning.

This problem is exacerbated when university professors understand teaching from the transmission of information, apply routine strategies and minimize student action, reducing their creative capacity to monotonous activities, fragmenting knowledge to its minimum expression. In addition, they do not seem to give importance to getting to know the group of students and promoting teamwork as a strategy to generate new ways of learning (Aparicio-Herguedas *et al.*, 2021).

A new reconfiguration in higher education, a transcendental change of paradigm that permeates all the educational actors involved in the process and that conceive feedback as a daily practice in educational action, is urgently needed. In which both teacher, student and student-student analyze, reflect, internalize and interpret the socio-educational realities from the dynamics and integration of a teamwork. Therefore, the present research aims to determine the influence of teacher feedback on the teamwork of undergraduate students at a Kurdish university, and to determine the impact of strategies and content as dimensions of teacher feedback on the dependent variable.

Information analysis

Hernández *et al.*, (2018) point out that in order to achieve the knowledge society it is essential to generate training and evaluation environments that take into consideration aspects such as the centrality of the student for the achievement of his/her competencies, the systematization of the evaluation processes, where the student is able to understand the achievements reached, as well as his/her improvement aspects, which favors collaborative work. In this scenario, Anijovich (2020) states that evaluation is inseparable from the teaching and learning process and that feedback allows us to obtain information about the process that will be useful for teachers and students, as it favors the continuous improvement of learning through collaborative, horizontal and reflective work (Dawson *et al.*, 2019).

Feedback from the socio-constructivist approach is understood as a complex social phenomenon that develops in pedagogical and dialogical processes between the teacher - student, focusing on the ways in which students interact, elucidate and wield the feedback information for the construction of their knowledge (Herrera-Araya, 2022). The concept of feedback has advanced in the last decade. It is now understood as an active process that is driven by the student instead of the educator, with the collaboration of several actors, where the student generates the change from an active role (Dawson *et al.*, 2019).

Anijovich (2020) indicates that the strategies for providing feedback are encompassed in four factors. Time, which considers the periodicity and timing of the feedback process, being this immediate or deferred; the first corrects simple errors and the second, those of greater complexity. The number of aspects to give feedback, where the prioritization of two or three is key, focusing on the learning goals. The mode that considers the diversity of styles, rhythms, and experiences that students have when selecting the form in which the feedback will be communicated, which can be oral, written, gestural, among others. The audience involved in providing individual, group or small group feedback, considering fundamental aspects such as the time available, the number of students and accessibility.

As Arcela (2020) argues, discursive constructs such as feedback are not individual, but socially configured practices. Dialogic feedback is a feedback strategy for a sustainable evaluation where three intertwined dimensions converge: the cognitive, related to the content, generating questions and the act of expressing oneself; the socio-affective, which is relational and linked to empathy and active listening; and finally, the structural one, associated with the organization of the curriculum (Ajjawi & Boud, 2018). In the same vein, Steen-Utheim and Wittek (2017) propose a dialogic feedback model of four dimensions: emotional and relational support; sustaining dialogue; expression and contribution to personal growth, these four dimensions converge in the integrality of the human being.

Dolorier *et al.* (2022) stated that feedback has positive effects when it is precise, clear, and coherent with the objectives of the activity and with the learning goals. Therefore, emphasis should be placed on the need for specific training for the professional that offers immediate descriptive feedback, considering some aspects such as a two-way dialogue, a positive climate, self-regulation actions and reflection (Pedroza and García, 2022). It is also worth noting that when feedback is aligned to the perspectives and needs of students, it drives participation, reducing learning gaps (Ajjawi & Boud, 2018).

According to Mollo and Deroncele (2022), feedback focuses on three main purposes, the first one linked to the learning achievement that the student intends to achieve and is aware of it; the second one is the responsibility he/she assumes to identify strategies for his/her training

process; and the third one is linked to the recognition he/she makes between his/her initial learning and the one achieved. These purposes must be achieved under a critical, reflective approach, which is produced by an external agent (external feedback) and then encouraged in the learning process (internal feedback), generating that the student progressively becomes an autonomous learner (Quezada and Salinas, 2021).

Ibanéz *et al.* (2022) three conceptual moments for feedback. The first is directed at the product; the second is directed at the subject, highlighting negative aspects or aspects of improvement to his personality or behavior; and the third is evaluative, where the teacher makes use of instruments to evaluate. In this same perspective, Yáñez (2022) mentions that it is important to generate contexts for students to reflect on the meaning and general purpose of their assignment, how necessary it is to pose questions generated by the teacher and the way in which the trainees' answers are interpreted.

Nowadays, labor trends demand that students acquire certain skills, abilities, and capacities during their training process, in order to prepare them to face complex situations that arise in a globalized and highly competitive environment (Ruiz-Campo *et al.*, 2022). As the importance of job competencies has skyrocketed, multidisciplinary teamwork is increasingly valued as an attractive approach, as it can help reduce differences between team members, facilitate information exchange and allow for mutual adaptation as needed (Kerrissey *et al.*, 2023).

In the educational context, the concept of teamwork and active participation is used to describe individuals who collaborate flexibly and dynamically within an organized group (Domínguez *et al.*, 2019). Team members are expected to contribute critical perspectives, communicate fluently in a second language and have advanced technology skills (Soria-Barreto & Cleveland-Slimming, 2020). In view of the above, it is crucial for educational institutions to reinforce teamwork-related competencies.

In this regard, Cannon-Bowers *et al.* (1995) state that this competency incorporates "accurate and shared mental models" (p.340) on the part of each team member, as well as the ability to work effectively in the team. In addition, members must have a clear understanding of the team's goals and objectives, skills to overcome obstacles, and an accurate understanding of their roles and responsibilities in achieving the team's proposed goals. On the other hand, Villa and Poblete (2007) consider that team members must have the capacity for integration and active collaboration in the fulfillment of common goals with team members (Soria-Barreto & Cleveland-Slimming, 2020).

A study by Hebles and Yániz-Álvarez-de-Eulate (2020) found that team permanence, functional diversity, team skills, team leadership, internal and external communication, clarity of objectives and results are the eight variables that affect teamwork. In this sense, the time dedicated to teamwork is a factor that allows knowing the skills of each of the members and contributes to the coordination of actions.

It is critical to understand the roles that each team member plays, as well as their cognitive abilities and experiences, as these factors are crucial to effective team decision-making. However, it is essential to have a leader who possesses good self-awareness and a balanced ability to process information in work teams (Conejero-Pérez *et al.*, 2022). The success or failure in the fulfillment of the team's goals will depend on it. Therefore, it is important to maintain fluid communication between each of the members and also with people outside the team to optimize its efficiency and effectiveness (Heredia-Laura y Sullca-Tapia, 2022). Likewise, it is essential that each work team manages an adequate level of consensus that promotes a

cooperative attitude, given the importance of cohesion among members through coordinated effort (Johnson *et al.*, 2016).

Each team member has unique skills, perspectives and experiences, so it is critical that they are willing to learn and adapt individually to ensure the long-term success of the team as a whole (Rehder *et al.*, 2023). Individual learning in the work team is a constant process that involves reflection and action on the part of its members. To achieve this, opportunities must be provided to learn about all aspects of their work, improving communication and the formal or informal exchange of knowledge among team members (Lutete *et al.*, 2020). In other words, "the person enables his or her knowledge, skills, and abilities for a common purpose" (Aparicio-Herguedas *et al.*, 2021, p. 49). Consequently, internal learning in the work team involves the active transfer of ideas, interaction, contribution, and dialogue among its members, with the objective of improving individual and collective performance in the team (Asún *et al.*, 2019). Self-awareness of individual strengths and weaknesses is crucial to improve team performance.

In the context of teamwork among university students in a Kurdish university, it is clear that feedback plays an essential role in team dynamics, since it allows enhancing the synergy and effectiveness of work teams in an academic context. Effective feedback, based on respectful and transparent communication, can contribute significantly to the improvement of collaboration and decision making in the team (Valdivia, 2014). It is worth mentioning that when team members receive accurate and constructive feedback on their performance, students can better understand their roles, identify areas where they can improve and thus adjust their contributions in order to achieve the established goals (Quezada Cáceres and Salinas Tapia, 2021). Likewise, feedback promotes an active learning environment, in which students are provided with spaces for reflection on their actions and experiences, which contributes to their personal and collective development by learning from mistakes with a view to improving their performance.

Method

The research carried out was framed within the quantitative approach with a non-experimental design, since the study variables were not altered in any way (Hernández-Sampieri y Mendoza, 2018). As for the type, this was explanatory (Ñaupas *et al.*, 2018), being its purpose to know the incidence of the feedback provided by teachers on the quality of teamwork of the student body.

The setting for the present research was a public Kurdish university, the units of analysis being students of both genders and enrolled students in their last two years of studies, for a total of 172 students in the selected sample. Ordinal logistic regression was used for the study, which allows modeling an ordinal response variable as a function of one or more explanatory variables (Croux *et al.*, 2013).

In this research a model of an independent variable was constructed, teacher feedback, which was constituted as an ordinal variable with three levels in ascending order, classified as low, regular and high. Its influence was analyzed, as well as that of its dimensions such as strategies and content, on the students' high capacity for teamwork, also considered as an ordinal variable with three levels, beginning, process and achieved. McFadden's R² coefficient was used to interpret the percentage of explanation of the variance of the adjusted model.

In reference to data collection, this was done through the online survey technique and through two questionnaires validated by expert judgment and with a reliability above 0.8 in both cases,

values obtained in the Cronbach's Alpha of the pilot test. The feedback instrument consisted of 15 items, and the teamwork instrument consisted of 19 items, all distributed according to their component dimensions.

Data processing was carried out using SPSS v26, with frequency tables and the ordinal logistic regression test to test the hypothesis. During the fieldwork, respondents were informed of the purposes of the study so that they could give their consent to participate in the research. In addition, the data obtained were used only for the purposes proposed in this study; the identity of the participants was protected, since the instruments were answered anonymously. Finally, no experimentation on humans or animals was performed due to the nature of the study.

Results

The inferential results are presented below according to the variables under study.

General hypothesis

The feedback used by the teacher has a significant impact on the students' level of teamwork.

Null Hypothesis

The feedback used by the teacher does not have a significant impact on the level of student teamwork.

Table 1: General hypothesis model fit information

Model	Log Likelihood -2	Chi-square	gl	Sig.
nly intersection	182,297			
Final	114,834	67,463	7	,000
Liaison function: Logit.				

The value of the empirical model is close to the likelihood ratio of 67.463 with 7 degrees of freedom and a significance of 0.00, which is less than the value of $\alpha=0.05$, so it is established as fully significant. This shows that the present model predicts the probability of occurrence of teamwork; also the H_0 that the coefficients are 0 is rejected, except for the constant.

Table 2: General hypothesis pseudo-R-squared

Cox and Snell	0,70
Nagelkerke	0,582
McFadden	0,417
Liaison function: Logit.	

According to the R-squared values obtained, feedback explains with an adjusted percentage of 41.7% (McFadden= 0.417) the level of teamwork evidenced by students.

Table 3: General hypothesis parameter estimates

	Estimate	Desv. Error	Wald	gl	Sig.	95% confidence interval	
						Lower limit	Upper limit
Threshold	[NIV Team_work = 1]	7,762	1,862	17,378	1	,000	4,113 11,412
	[NIV Team_work = 2]	1,886	1,565	12,453	1	,028	1,181 4,952
	[NIV Feedback=1]	-4,463	3,478	31,647	1	,000	-11,280 2,354
	[NIV Feedback=2]	-2,998	,557	28,931	1	,000	-4,091 -1,906
	[NIV Feedback=3]	0 ^a	.	.	0	.	.
Liaison function: Logit.							

a. This parameter is set to zero because it is redundant.

Regarding feedback, students who receive low quality feedback from their teachers tend to have a starting level in teamwork. A similar situation, but with less impact, is evidenced by those who receive regular quality feedback. This is in contrast to the students whose teachers give them high quality feedback.

Specific hypotheses

The feedback strategies employed by the teacher have a significant impact on the level of student teamwork.

Null Hypothesis

The feedback strategies used by the teacher do not have a significant impact on the students' level of teamwork.

Table 4. Specific hypothesis 1 model fit information

Model	Log Likelihood -2	Chi-square	gl	Sig.
Only intersection	65,922			
Final	10,860	55,062	2	,000

Liaison function: Logit.

The value of the empirical model approaches the likelihood ratio of 55.062 with 2 degrees of freedom and a significance of 0.00, which is less than the value of $\alpha=0.05$, so, it is established as fully significant. This evidences that the present model predicts the probability of occurrence of students' teamwork; likewise, the H_0 that the coefficients are 0 is rejected, except for the constant.

Table 5: Specific hypothesis pseudo-R-squared 1

Cox and Snell	,414
Nagelkerke	,510
McFadden	,359

Liaison function: Logit.

According to the R-squared values obtained, the model (feedback strategies) explains 35.9% of the students' level of teamwork (McFadden= 0,359).

Table 6: Specific hypothesis parameter estimates 1

							95% confidence interval	
		Estimate	Desv. Error	Wald	gl	Sig.	Lower limit	Upper limit
Threshold	[NIVTeam_work = 1]	8,543	1,456	34,439	1	,000	5,690	11,396
	[NIVTeam_work = 2]	2,996	1,025	8,547	1	,003	,987	5,004
Location	[NIVStrategies=1]	-3,645	3,244	14,263	1	,001	-10,002	2,712
	[NIVStrategies=2]	-,380	,475	25,137	1	,000	-3,311	-1,450
	[NIVStrategies=3]	0 ^a	.	.	0	.	.	.

Liaison function: Logit.

a. This parameter is set to zero because it is redundant.

It is observed that feedback strategies are significant as they possess a p-value less than the proposed level. The feedback strategies show a p less than the $\alpha=0.05$ in its three levels.

Consequently, the null hypothesis is rejected and the alternative hypothesis that feedback strategies significantly influence students' level of teamwork is accepted.

Teachers who have a low command of feedback strategies, i.e., who do not consider timing, mode, amount, and audience as key aspects when giving feedback, have students with a beginning level of teamwork; in contrast to those teachers who have a high command of feedback strategies.

Specific hypotheses

The feedback content used by the teacher has a significant impact on students' teamwork.

Null Hypothesis

The feedback content used by the teacher does not have a significant impact on students' teamwork.

Table 7: Specific hypothesis 2 model fit information

Model	Log Likelihood -2	Chi-square	gl	Sig.
Only intersection	41,466			
Final	14,152	27,314	2	,000

Liaison function: Logit.

The value of the empirical model approaches the likelihood ratio of 27.314 with 2 degrees of freedom and a significance of 0.00, which is less than the value of $\alpha=0.05$, so it is established as fully significant. This evidences that the present model predicts the probability of occurrence of students' teamwork; likewise, the H_0 that the coefficients are 0 is rejected, except for the constant.

Table 8: Specific hypothesis pseudo-R-squared 1

Cox and Snell	,271
Nagelkerke	,222
McFadden	,228

Liaison function: Logit.

According to the R-squared values obtained, the content of teacher feedback explains 22.8% (McFadden= 0.228) of the level of student teamwork.

Table 9: Specific hypothesis parameter estimates 2

							95% confidence interval	
		Estimate	Desv. Error	Wald	gl	Sig.	Lower limit	Upper limit
Threshold	[NIVTeam_work = 1]	-8,201	1,444	32,260	1	,000	-11,031	-5,371
	[NIVTeam_work = 2]	-2,996	1,025	8,547	1	,003	-5,005	-,987
Location	[NIVContent=1]	-4,546	1,229	13,684	1	,000	-6,954	-2,137
	[NIVContent=2]	-3,074	1,042	8,698	1	,003	-5,117	-1,031
	[NIVContent=3]	0 ^a	.	.	0	.	.	.
Liaison function: Logit.								
a.		This parameter is set to zero because it is redundant.						

It is observed that the feedback content is significant since it has a p-value lower than the proposed level. The feedback content shows, in its three levels, a p lower than the $\alpha=0.05$. Consequently, the null hypothesis is rejected and the alternative hypothesis that feedback content significantly influences students' level of teamwork is accepted.

Teachers who do not provide feedback taking into account students' attitude, performance, and learning process (feedback content) have students with beginning level teamwork; compared to those teachers who have a high management of feedback content.

Discussion

When analyzing feedback strategies in the teaching-learning process of university students, it is evident that they have a significant impact on the high level of student teamwork performance. Feedback is perceived as a complex social phenomenon that generates knowledge through dialogic activity (Herrera-Araya, 2022). It is an active process that allows students to improve their performance in collaboration with their peers and the educator (Dawson et al., 2019). The horizontal dialogue generated in the feedback process between lecturers and teachers is substantial for the performance of teamwork, since it optimizes its efficiency and effectiveness (Heredia-Laura and Sullca-Tapia, 2022).

It is important to note that these strategies for providing feedback (timing, modes, amount, and audience) are not offered in isolation, but are worked as a miscellany in the feedback process. In this regard, Anijovich (2020) points out that the periodicity and timing of feedback, depending on the complexity, can be immediate or deferred. The strategy of the amount of feedback offered should be adjusted to the learning goals and how important it is for the teacher to manage the mode and audience. In this vein, Ajjawiy and Boud (2018), pointed out that the dialogic mode is key in feedback because the cognitive and socio-affective dimensions that contribute to collaborative work converge. Fluid communication optimizes the efficiency and effectiveness of the group (Heredia-Laura and Sullca-Tapia, 2022), as well as the cohesion among its members (Johnson et al., 2016).

Anijovich's (2020) audience strategy states that collective and group feedback allows the identification of common aspects to be improved, but requires greater commitment from the group. This feedback strategy strengthens the capacity for integration and active collaboration to achieve common goals (Soria-Barreto & Cleveland-Slimming, 2020).

In this sense, the way in which the teacher provides feedback to students, either focusing on personal aspects, performance or learning processes, has a significant impact on the level of teamwork that students can achieve. Therefore, according to the results obtained, it can be stated that the fitted logistic model is significant and has a good fit to the data. In addition, the model predicts the probability of occurrence of students' teamwork. Also, the statistical significance of the content of feedback at the three levels analyzed suggests that it is important for teachers to focus not only on assessing students' performance, but also on providing effective and specific feedback on their attitude and learning process (Anijovich, 2020). It is worth mentioning that feedback contents that address performances and productions, as well as learning processes, are more effective than those that focus on evaluations about the person (Hernández et al., 2018). In this sense, the results suggest that teachers who provide feedback focused on performances and productions, as well as on learning processes, have students with a higher level of teamwork compared to those teachers who focus on assessments of the person.

In this way, feedback becomes an essential factor to promote changes in the development of teamwork, leading to generate autonomy in students from critical, reflective and self-learning thinking, contributing to the constant questioning between theory, lived reality and students' previous knowledge, contributing to meaningful learning, knowledge management and learning communities that learn from their own reality.

Conclusions

Feedback should be reflected in learning environments as a daily strategy of educational action, where all the educational actors involved in the process lead to generate learning communities based on dialogue where student-student and teacher-student construct knowledge from reflective, critical and self-critical processes of what they learn. In this way, chain learning is generated, with the student as the central axis, as the protagonist of his own reality and promoting the integration of teamwork, as a way in which everyone learns to learn.

Therefore, the study concluded that there is a significant influence between the feedback they receive and the quality of teamwork evidenced by students in a Kurdish university, contributing to the students' academic and professional training. Feedback should be a strategy that generates the development of critical, reflective and self-critical thinking of the reality that the student lives, leading to the contextualization of knowledge and fostering collaborative learning through teamwork. In this sense, it is necessary that universities guarantee the feedback process within the educational act, establishing it in their educational model and ensuring its adequate application through their quality control systems and management bodies responsible for the evaluation of teaching performance.

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