

# Evaluating the Role of Teachers' Feedback in Secondary School Students' Academic Achievement: An Empirical Evidence from Jordan

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## Evaluating the Role of Teachers' Feedback in Secondary School Students' Academic Achievement: An Empirical Evidence from Jordan

### Abstract:

The academic achievement of secondary school students in Jordan is evaluated based on the use of feedback-based teaching. The learners are stimulated to correct their areas of weakness through constructive feedback. Therefore, this study presents an investigation of the impact of feedback-based teaching on student's academic achievement. To achieve that, the study involved a total 160 students were involved in the study from 4 randomly selected private schools in Jordan, Irbid Governorate, two English classes were selected randomly from each school. The students were divided into a control group and an experimental one. The control group received regular instruction while the experimental group was taught using feedback-based teaching, where feedback was provided by the teachers in different forms. Consequently, the analysis denotes that frequent and diverse feedback is highly constructive and improves students' achievement compared to feedback that is unstructured. It is clear that feedback has to be effectively structured to ensure that it achieves its objectives in improving students' academic achievement.

**Keywords:** *Academic Achievement; Feedback-Based Teaching; Jordanian Students; Secondary School.*

## تقييم دور آراء المعلمين في التحصيل الأكاديمي للطلبة: أدلة تجريبية من الأردن

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### الملخص:

يتم تقييم التحصيل الأكاديمي لطلبة المدارس الثانوية في الأردن على أساس استخدام التدريس القائم على التغذية الراجعة. يتم تحفيز المتعلمين لتصحيح نقاط الضعف لديهم من خلال التغذية الراجعة البناءة. لذلك، تقدم هذه الدراسة تحقيقاً لتأثير التدريس القائم على التغذية الراجعة على إنجاز الطلاب الأكاديمي. ولتحقيق ذلك، شملت الدراسة مجموعاً من 160 طالباً من 4 مدارس خاصة تم اختيارها عشوائياً في الأردن، محافظة إربد، وتم اختيار صفيين إنجليزيين عشوائياً من كل مدرسة. تم تقسيم الطلاب إلى مجموعتي تجريبية وضابطة. تلقت مجموعة السيطرة تعليماً عادياً بينما تم تدريس مجموعة التجريبية باستخدام تدريس قائم على التغذية الراجعة، حيث قدم المعلمون التغذية الراجعة بأشكال مختلفة. ونتيجة لذلك، يشير التحليل إلى أن التغذية الراجعة المتكررة والمتنوعة ذات فعالية بناءة للغاية وتحسن إنجاز الطلاب بشكل مقارنة بالتغذية الراجعة التي لا تتبع هيكلًا. يظهر بوضوح أن التغذية يجب أن تكون منظمة بشكل فعال لضمان تحقيق أهدافها في تحسين إنجاز الطلاب الأكاديمي.

الكلمات المفتاحية: التحصيل الأكاديمي؛ التدريس المبني على التغذية الراجعة؛ الطلاب الأورديون؛ مدرسة ثانوية

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## Introduction:

Teaching and learning is an active process that require the involvement of the teachers as well as students in order to learn new concepts and master them. Different approaches and methods have been applied in teaching to improve student outcomes in line with the theories on cognitive development and how human beings learn. Feedback from teachers is considered an essential ingredient of teaching and learning process because it provides benefits for both learners and instructors. According to Amadi and Paul (2017), learners are encouraged to correct their tasks because they are made aware of their areas of weaknesses. The teaching-learning process is based on constructive teacher feedback that enhances the students' perceptions of autonomy in the process. This study focuses on the strategies being considered for improving the performance of the education sector in achieving its goal of producing skilled and innovative workers. The research assesses the effectiveness of teachers' feedback in improving academic achievement.

Feedback from the teachers serves a number of purposes such as motivating the student to reach higher levels of performance. It also makes the process more effective because it fosters two ways of communication process, which becomes beneficial after the students perceive it. Feedback based teaching involves incorporating teacher feedback as a key part of the learning process where the teacher provides written feedback to help the students improve (Que & Zhang, 2013). Teacher feedback should not only be motivational, but it should provide actionable information to the student, achievable and provided at the same level as the students' mental ability.

## Statement of the Problem

Based on past research on the practice of feedback-based teaching, it is expected that its application produces better academic performance for students. The critical issue is whether the practice is applied in Jordan and whether it produces the expected outcomes in terms of academic achievement.

## Research Objectives

The main aim of this study is the application and effectiveness of feedback-based teaching in Jordan. It evaluates the association between teachers' feedback on students' performance. The objectives of this study are:

1. To identify moderating factors of the relationship such as the effect of diversity, and frequency on the level of learning engagement.
2. To investigate the impact of teacher feedback on students' academic achievement on students' academic achievement

To achieve these objectives, the study used a set of primary data that is collected from secondary school students in Jordan. The study involves assessment of the impact that teacher feedback has on student outcomes in Jordan.

## Literature Review

Educators for a long time regarded feedback as an important part of learning because it provides learners with information about their academic performance. It tells them how well they have performed and how to improve their performance. However, research has shown that the effect of feedback on student performance is complex because it depends on different factors such as the quality of feedback, learners' goals, and the learning context. Feedback is an important part of learning theory and it has been studied by psychologists for more than 100 years. One of the earliest works on feedback in learning was undertaken by Thorndike in 1913 titled "the law of effect". In the book, it was found that feedback is defined as an individual's knowledge of performance (Al Maharma & Abusa'aleek, 2022).

Being aware of one's performance has been shown to improve motivation and learning. In a historical overview of the research, Kluger and DeNisi (1996) evaluated the support for feedback as a key aspect of learning performance. They found studies presenting different findings on the significance of feedback on performance. With both positive and negative effects of teacher feedback on performance, the feedback intervention theory was developed. It integrated the existing theories with cognitive and motivational effects of feedback. In line with this research, Vollmeyer & Rheinberg (2005) developed the cognitive-motivational process model. According to the model, initial motivation is a function of four factors (anxiety, interest, challenge, and probability of success). This affects learning through mediating variables of motivational state during learning and strategy systematicity. The theory posits that individuals with favorable initial motivation apply more systematic strategies in learning and more positive motivational states.

In a study focusing on students in higher education, Cheah and Li (2020) found that the attitudes towards feedback had significant effect on performance. They also found that the performance of the students was influenced by the supervisor's structured feedback as well as the perceived usefulness of the feedback. In this case, the perceptions of the students regarding the usefulness of the feedback was also identified as a significant factor in its impact on student performance. In a similar study involving college students, Wang & Zhang (2019) evaluated the impact of the assessment characteristics and learning engagement on academic performance arising from teacher feedback. The study undertaken in Mainland China showed that perceived teacher feedback produced a positive impact on the academic performance of students. Learning engagement was found to have a mediating effect on the association. Furthermore, they concluded that assessment feedback, diversity and

difficulty had a moderating effect on improving the students' learning engagement. Interestingly, they found that feedback without these factors had a nil or negative effect on students' learning engagement. This presents the first principal hypothesis:

***H1.1: Teacher feedback is significantly influencing student's performance indirectly through frequency and diversity of feedback.***

Teachers are cognizant that feedback promotes learning in their classrooms. However, the teaching and learning process encounters multiple obstacles. One of the key issues is that teacher feedback has to be personalized to cater to the specific needs of the student. The impact on the performance of the students depends on its type, when it is used and how it is applied. It provides a practical way for teachers to help the students in understanding their progress as they go through the feedback loop. They are informed of their progress, gauge their performance against peers, and achieve their learning goals (Selvaraj, Azman, & Wahi, 2019). However, for the feedback to be effective and beneficial in achieving the goals of the students, it has to be acted upon with the goal of self-improvement. This means teacher feedback has the potential to influence student outcomes if it is applied effectively. This presents the following second hypothesis:

***H1.2: Teacher feedback is significantly affecting students' overall academic achievement***

In conclusion, the application of teacher feedback in the learning process in high school has been evaluated and shown to have a positive and significant effect on student outcomes and performance. A critical aspect of the findings is that students' academic achievement does not happen in a vacuum and the feedback has to be mediated by factors such as learning engagement, the types of feedback and perceptions about self-improvement.

## **Previous studies**

Al Maharma and Abusa'aleek (2022) titled "**Teachers' Feedback and Students' Academic Achievement**" study assess the impact of teachers' feedback during classes, an observation card was employed for data collection. The researchers scrutinized twenty classes to observe the potential effects of this feedback on students' performance. The study involved 50 tenth-grade male students from a public school in Jordan. The results indicated that students' performance, especially in tests, is objectively evaluated. Additionally, the analysis revealed that offering precise and detailed feedback contributes to a reduction in discouragement among students.

Ahmed et al. (2021) study titled "**The Impact of Teacher Feedback on Students' Academic Performance: A Mediating Role of Self-efficacy**" explored the impact of teachers' constructive, corrective, and evaluative feedback on

students' academic performance, with self-efficacy acting as a mediator. Employing the stratified sampling technique, data was collected through a structured questionnaire from 336 participants enrolled in the Bachelor of Science (BS) and the Bachelor of Education, Honors (B. Ed, Hons) programs in higher education institutions in Turbat, Pakistan. The findings illuminated that teachers' constructive, corrective, and evaluative feedback significantly influenced students' academic performance. Additionally, the results indicated that students' self-efficacy played a noteworthy mediating role between teachers' constructive and evaluative feedback and students' academic performance.

Burns et al. (2021) study titled "**The role of teacher feedback–feedforward and personal best goal setting in students' mathematics achievement: A goal setting theory perspective.**" (conducted with 362 Australian students) employs structural equation modeling to investigate two main aspects: (a) whether teacher feedback–feedforward and PB goal setting can predict achievement in mathematics, and (b) whether PB goal setting mediates the relationship between teacher feedback–feedforward and achievement. The results reveal that mathematics teacher feedback–feedforward predicts PB goal setting, PB goal setting predicts achievement and PB goal setting serves as a full mediator in the connection between feedback–feedforward and achievement. The research's findings carry implications for interventions related to mathematics teacher feedback–feedforward and goal-setting practices.

Gan et al. (2021) study titled "**Teacher Feedback Practices, Student Feedback Motivation, and Feedback Behavior: How Are They Associated With Learning Outcomes?**" investigated the perceived teacher feedback practices and feedback experiences of 308 university students in an English Studies course context at both a key and non-key university. The research aimed to understand how teacher feedback, student feedback motivation, and feedback behavior correlated with students' course satisfaction and exam performance. Results indicated that students from the key university reported higher levels of teacher feedback utilization, as well as greater motivation and behavior related to student feedback. Utilizing Structural Equation Modeling (SEM), the study found that for the non-key university, student feedback behavior significantly predicted course satisfaction and exam results. Teacher feedback also indirectly influenced both course satisfaction and exam results. In contrast, for the key university, while both teacher feedback and student feedback behavior significantly influenced course satisfaction, student feedback behavior did not exhibit a direct significant effect on exam results. Moreover, teacher feedback did not exert a significant indirect influence on exam results.

Gentrup et al. (2020) study titled "**Self-fulfilling prophecies in the classroom: Teacher expectations, teacher feedback and student achievement**" explored the relationship between teacher expectations and student learning, utilizing longitudinal data from 64 classrooms and 1026 first-grade students in Germany.



Within a subsample of 19 classrooms comprising 354 students, the study investigated the mediating role of three aspects of teacher feedback assessed in video-recorded school lessons. The findings revealed that teacher expectations were inaccurate and did not entirely align with students' current achievement, general cognitive abilities, and motivations. Moreover, this inaccuracy in teacher expectations emerged as a significant predictor of students' end-of-year achievement. This remained true even after accounting for prior achievement, general cognitive abilities, motivation, and student background characteristics. Specifically, inaccurately high teacher expectations were linked to higher achievement in reading and mathematics, while inaccurately low teacher expectations were associated with lower achievement in reading exclusively. Additionally, the study observed significant variations in teacher feedback corresponding to inaccurate teacher expectations. However, despite these variations, teacher feedback did not substantially mediate the effects of teacher expectancy on students.

These studies shed light on teacher feedback's multifaceted nature and its implications for students' academic performance. Al Maharma and Abusa'aleek's (2022) study in Jordan emphasized objectivity in evaluating students' performance, underscoring the significance of precise and detailed feedback in mitigating discouragement. Together, these studies offer diverse perspectives on the role of teacher feedback in different educational settings, emphasizing its impact on student outcomes, the mediating influence of factors like self-efficacy and goal setting, and the complex dynamics involved in the teacher-student relationship. As educators consider the implications of these findings, there is a wealth of insights to inform effective feedback practices and interventions to enhance student learning and academic performance.

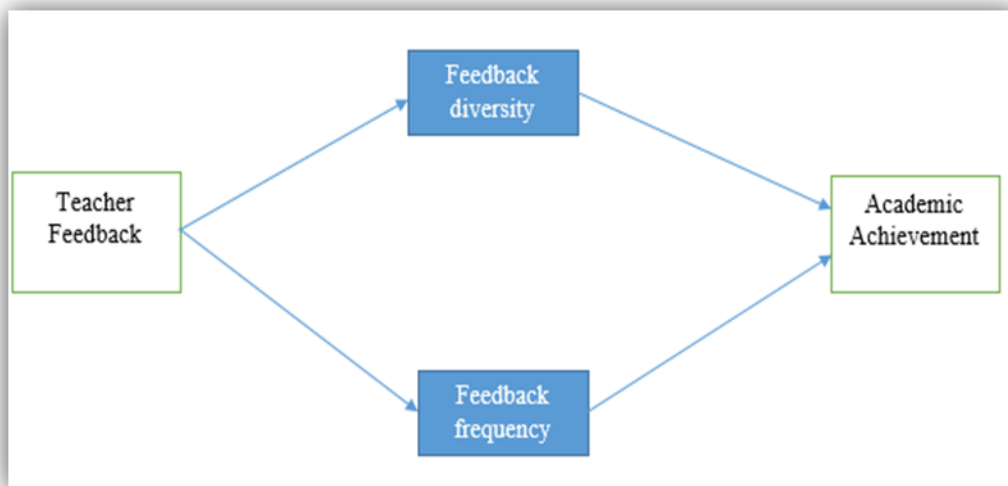
## Method

This section describes the methodology and research design used in undertaking the current study. It highlights the considerations made in choosing the data collection and other strategies of the research study. It also presents the research philosophy for the study to provide a framework for understanding how the study is undertaken. The research philosophy applied in this study is positivism, which focuses on the collection of quantifiable and observable data. The focus of positivism as a research philosophy is that knowledge can be derived objectively from the research participants without being influenced by the researcher. The investigator acts as an independent investigator in the issue and assesses the research question without being influenced by their personal views (Baškarada & Koronios, 2018).

The study was organized as a quasi-experimental study where the participants were organized into the control and experimental groups. The quasi-experimental approach was necessary to investigate the effect of teacher feedback and its distinct



characteristics on students' academic achievement. The study was undertaken using a framework where the two groups of students were exposed to different types of teacher feedback to assess their academic outcomes and learning engagement. The focus was to change the aspects of teacher feedback in the learning environment and assess how the feedback characteristics influenced academic achievement for the students.



**Figure 1:** Research Framework

The theoretical framework indicates the effect of different feedback characteristics on academic achievement of the students. The different aspects were provided for the sample of students and compared to a situation involving unstructured feedback provided to the students such as verbal feedback, observational feedback, ad-hoc suggestions and informal discussions. The performance of the students in an English grammar and comprehension test was used to assess the effects of the different aspects of teacher feedback. The focus of the study was on the private secondary schools in Jordan. The sample was sought from the Irbid Governorate, which has 10 private schools. From this population of schools, a random sample of 4 was selected for ease of data collection. Two English classes were selected randomly from each school and involved in the study. From the 4 schools, a total 160 students were involved in the study.

The experiment involved the students being allocated randomly to the control or experimental group. The two groups were equal in representation in the group where in the control group, the students received unstructured feedback from the teachers when undertaking their studies and learning for the end of semester examination in August 2021. The students were assessed after two weeks of learning using a mock exam similar to the end of semester assessments. The curriculum used was the standard applied in Jordan and approved by the Ministry of Education (Queirós, Faria, & Almeida, 2017). For the experimental group, the teachers were

engaged in a one-week recruitment program where they were trained on how to give structured feedback such as formal evaluation report, rubric-based feedback, peer review form and student feedback survey.

The group was divided into two where diversity and frequency of the feedback was altered. One part of the experimental group got homogenous feedback 3 times a week. The other group got diverse feedback on a daily basis.

The instruments used in the study were the training manual on teacher feedback and the curriculum for English grammar proficiency used in Jordan. The performance of the students in the mock proficiency test was the dependent variable and was collected for the students after two weeks of studies under the identified conditions. The data was analyzed using the Statistics Program for Social Sciences (SPSS) with descriptive statistics and independent samples t-test used to assess the differences in students' academic achievement based on the feedback provided.

## Results Analysis and Discussion

### 1. Results Analysis

#### 1.1 Sample Characteristics

The sample of students was distributed among the identified schools. The participants were 18-year-old students enrolled in the second year of secondary education studying for the Tawjihi examination. The gender distribution of the sample was relatively even with female students accounting for 50% while the male students were 50% of the sample.

The performance of the students in the exam was presented as a percentage out of 100 to provide a standardized way of assessing the examination results. The average score of the two students group in the administered test was  $83\% \pm 7.20\%$ . Before assessing the differences in students outcomes, the performance of the sampled students in a prior test were evaluated using the independent samples t-test. This was essential in order to identify whether one group may have higher performance in their English language competency than the other. The scores for the students in the prior study are presented in the table below.

Table 1. Group Statistics for pre-test scores

	Group	N	Mean	Std. Deviation	Std. Error Mean
Prior Exam score	Control	80	82.4	6.721	.373
	Experimental	80	83.1	6.468	.470

The independent samples t-test was used to compare the two groups. The results indicate that the two groups are not significantly different in their examination scores. The t-statistics for the equality of means indicate no significant differences since the p-value of 0.79 is higher than the 0.05 set for the test.

Table 2: Independent Samples Test for pre-test scores

		Independent Samples Test						
		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Prior Exam score	Equal variances assumed	5.031	.075	-2.213	158	.077	-1.311	.592
	Equal variances not assumed			-2.185	142.02	.079	-1.311	.600

It has been concluded that the two groups did not differ significantly in their test scores before the study provided a basis for assessing how the treatment of the experimental group may have influenced their academic achievement.

Differences between the three groups involved in the group were determined using the one-way analysis of variance (ANOVA). This test was selected because it compares the distribution of a scale variable within and between three or more groups. In this case, the control group is compared to the two experimental sub groups. The results of the SPSS analysis are presented in the tables below. Table 3 shows the summary score statistics for the three student groups.

Table 3: group statistics for post test scores

Group Statistics					
	Group	N	Mean	Std. Deviation	Std. Error Mean
Post-test Exam score	Control	80	79.3	6.562	.373
	Experimental	80	83.2	7.268	.470

Table 4: One Way ANOVA

Students' post test Score					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1739.524	2	869.762	20.624	.000
Within Groups	79418.371	159	499.487		
Total	81157.895	161			

The outcome of the one-way ANOVA indicates that the three groups in the sample have significant differences between them. The F-statistic of 20.624 with has a p-value of .000 indicating that there is a significant difference between the groups. The post-hoc test for the one-way ANOVA was undertaken to assess whether there are homogenous sets in the group.

Table 5: Post-hoc tests

Exam score	N	Score	
		Tukey B	
		Subset for alpha = 0.05	
		1	2
Control	80	79.08359	
Experimental 1	40	83.93641	
Experimental 2	40	88.42925	

The post-hoc tests for the analysis were undertaken with the aim of assessing whether there were homogenous groups in the set. The results indicate that the control group and the experimental group involving the homogenous and infrequent feedback were relatively homogenous since their mean scores for the student tests did not differ significantly. The experimental sub group 2 had a significantly different and higher mean score for the student scores compared to the other two groups. This analysis indicates that the group receiving frequent and diverse feedback performed better than the other students including those who got homogenous and infrequent feedback.

## Results Discussion

The most important of this study was to assess how feedback-based teaching influences the performance of students in Jordan. Using the sample of Jordanian secondary school students in the second year of their studies, the teachers were trained on the use of structured feedback as a teaching tool. The results indicated that providing feedback in general enhanced the academic performance of the students in their English language test. Looking further into the characteristics of the feedback, the results indicated that unstructured and infrequent feedback was not as effective as when it was made diverse and provided to the students frequently.

The findings affirm the general positive influence of feedback on students' English language test performance and delve into the intricacies of feedback characteristics. The study underscores a crucial distinction: unstructured and infrequent feedback proved less effective than a more comprehensive approach encompassing frequent and diverse feedback. The one-way ANOVA results provided further granularity, highlighting that homogeneous and infrequent feedback didn't fare better than a complete absence of feedback. This nuanced exploration emphasizes the need for a thoughtful and multifaceted feedback strategy.

The findings are in line with those of Wang and Zhang (2019), indicating that feedback characteristics were a defining factor in influencing academic performance and outcomes for

the students. As presented in other studies on the association, the effect of feedbacks is mitigated by the level of learning engagement provided in the classroom. This involves the perceptions of the students about the feedback and their motivation for learning. In effect, the findings support both hypotheses developed in the research and highlight the significance of teacher feedback as a part of the teaching and learning process. It provides a tool for students to assess their knowledge and identify areas of improvement. As a result, when it is provided frequently and in a diverse manner to address the range of issues, it becomes more informative and beneficial to the student.

The study confirms the formulated hypotheses and accentuates the transformative potential of teacher feedback within the broader teaching and learning landscape. Feedback emerges as a dynamic tool, enabling students to gauge their knowledge and pinpoint areas for improvement. The call for frequent and diverse feedback, addressing a spectrum of issues, is not merely a procedural recommendation but a pedagogical imperative. Such a strategic approach is portrayed as transformative, rendering feedback more informative and beneficial to students in their academic journey. This research contributes to a richer understanding of the symbiotic relationship between feedback characteristics, student engagement, and academic achievement, offering actionable insights for educators and policymakers alike.

### **Conclusion and Recommendations**

In conclusion, the performance of students in different courses is essential in ensuring that they acquire the necessary skillset. The performance of the students in Jordan is shown to be effectively affected by the implementation of feedback-based teaching. Provision of feedback by teachers is a beneficial tool for enhancing students' outcomes and academic performance because they become aware of their proficiency levels and performance. This study has shown that an intervention involving diverse and frequent feedback provided to the students in a structured manner improves their academic performance significantly. This is because it motivates students to learn and makes them more engaged. It is essential to note that the intervention was implemented over a short period hence its impact may be relatively limited. However, the positive impact indicates a strong potential for it to play a critical role in improving student performance.

The findings from this study present a significant element of feedback based teaching where it highlights the strategies that can be implemented to make it more effective. It indicates the need for feedback to be provided in a structured manner and frequently. Another

recommendation is that teachers should provide their feedback in a manner that inform students of their proficiency level and how to improve.

The relatively small sample and limitation of the variables manipulation is a significant factor that may negatively influence the effectiveness of the study and generalizability of the findings. Future research should focus on a larger sample of students and making variations in the type of feedback provided in order to identify the affective and cognitive elements that can be enhanced by the teachers. It would also be beneficial to identify student characteristics and their effect on the impact of feedback. This knowledge can be used to guide students on how to perceive and make use of the feedback in order to make feedback-based teaching more effective.

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