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# The impact of feedback methods on student achievement

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**Abstract:** This paper aims to investigate the impact of verbal and written formative feedback on student achievement via email and online platforms. The research applies an explanatory mixed-methods design that combines quantitative research and qualitative research. The standardised questionnaires were carried out in ten lower secondary schools in Kosovo (seventh and eighth grades) in urban and rural areas. In total, n = 659 and n = 202 who teach civic education. In the quasi-experimental design, we selected two junior high schools: an urban school and a rural school. Findings show that teachers who apply formative feedback techniques meet the different needs of students more, and there is a significant increase in student achievement and success. The research findings will assist educational policymakers, decision makers and teachers in revising and improving assessment methods in order to promote student motivation for their achievement.

**Keywords:** formative assessment; verbal feedback; written feedback; feedback via email; online feedback.

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## 1 Introduction

The usage of formative assessment techniques is associated with significant improvements in the learning rate. Teachers who use formative assessment techniques are better prepared to meet the different needs of students – through differentiation and adaptation of teaching, in order to increase the level of student achievement and to achieve greater equality of student outcomes. The proficiency of formative assessment techniques supports learning by giving students 'the capability to observe and direct one's learning in order to become a more engaged, accountable and effective learner' (Black and Jones, 2006, p.8).

This research relates problems that have to do with formative assessment in the classroom and researches the impact of formative assessment techniques, respectively the function and impact of feedback on student achievement. The purpose of this research is to reflect, analyse and evaluate the impact of feedback on student's achievement in lower secondary education (grades seventh to eighth) in the Society and Environment field. Another purpose of our research is to compare the results of our research between seventh and eighth grades in the subject of Civic Education and also to make a comparison between schools in cities and villages.

The research focuses to find out to what extent are formative assessment techniques implemented in practice and the impact that these techniques have on students in achieving positive results in lessons. The techniques that have been treated for research are: positive, negative and unanswered feedback, verbal feedback, written feedback, email feedback, online learning feedback, advantages and disadvantages of student's information technology during the learning process. This research will help and facilitate the work of teachers on how to organise and apply in practice student's feedback. Our research will urge debates in the theoretical and practical context, also, among experts in the field of education, during the design or revision of curricula with the possibility of modification and wider enrichment with the results of our research.

Formative assessment is in accordance with recent constructivist theory, so it is an added value in this regard, that will provide concrete solutions and strengthen Vygotsky's socio-cultural theory or social constructivism as well as meta-cognitive theory. To achieve the aim of the research, the study will based on the following research questions:

- *RQ 1*: At what level is practiced in the classroom the feedback of students by teachers and students' in the field of Society and environment?
- *RQ 2*: What is the impact of feedback on students' learning achievement?
- *RQ 3*: What are the perceptions of teachers and students' regarding the benefits of using formative assessment techniques in the classroom (feedback)?
- *RQ 4*: Is there a significant difference between the experimental group and the control group during the Pre and Post-test phases regarding the impact of formative assessment techniques on students' achievement?

## 2 Theoretical framework

Effective formative assessment helps the student to see the gap between their current understanding of the components and goals of the lesson, so that they take the appropriate actions to achieve these goals (Zhu, 2012). Classroom practice is formative to the extent that evidence of student's achievement is extracted, interpreted and used by teachers, students or their peers to make decisions about next steps in learning. From a constructivist perspective, formative assessment is more valuable to the learner, rather than summative assessment. It is focused on students' progress, allows students to see concretely how they can improve their learning (Cauley and Mcmillan, 2010).

An essential feature of improving student's learning and achievement is the feedback technique. Feedback is information that is communicated to the student that aims to modify the student's opinion or behaviour in order to improve learning (Shute, 2007). Teacher's feedback to student's feedback provides information to students in order to take the necessary steps to improve their understanding or skills. According to Wynne, student's feedback improves and avoids comparisons with other students. While, Wiggins (2004) said that feedback should not be intensive effort but a natural extension of our interactions with students (Wynne, 2013; Wiggins, 2004). An important goal of feedback is the deep involvement of students in metacognitive strategies; such as personal goal planning, monitoring and reflection. Feedback aims to move students from assignment to processing and then from processing to adjustment and is considered more effective. Hattie and Timperley (2007) studied shows that too much feedback within a level can reduce performance. Therefore, by applying a lot of feedback only at the task level can encourage students to focus on the immediate goal rather than strategies to achieve the goal (Hattie and Timperley, 2007).

Feedback is defined as information that is communicated to a student and is intended to modify the student's opinion or behaviour in order to improve learning. There are different types of feedback, e.g., verification of the accuracy of the answer, explanation of the correct answer, hints and other worked examples (Zhu, 2012). In order to have positive effects, the feedback must be: timely, motivating, manageable and to be directly related to the assessment criteria / learning outcomes (Irons, 2008; Juwah et al., 2004; Shute, 2007). Therefore, the expectation of feedback from students is very important. Students with positive opinion may perceive feedback as an opportunity for further development, while students with negative attitude are discouraged (Hatziapostolou and Paraskakis, 2010). It is important for the teacher to take into consideration the feelings of the students when giving feedback so that there is a positive result from the feedback. Positive self-confidence and good motivation are the keys to students' success.

The zone of proximal development is one of the most important concepts of Vygotsky's theory. He states that the student could be helped by a teacher or a classmate while learning a new concept. Their help resembles scaffolding used by the home master to reach a fringe that cannot be reached. Teachers must be good student's observers in order to determine if students need this scaffolding or they can gain knowledge without teacher help. Learners need help in certain cases, but they can do much on their own (Sardareh and Saad, 2012, p.350). In a constructivist social classroom, students need to engage with formative or descriptive feedback (Sardareh and Saad, 2012).

## 2.1 Feedback and its methods

Students want to receive feedback and it can be given in different ways, such as: orally, in writing, through video, etc. Methods of feedback include: handwritten comments, individual face-to-face feedback, group feedback in the classroom, word-processed feedback and more. Electronic methods of feedback include: feedback via email, feedback on e-learning or online learning systems (Hatziapostolou and Paraskakis, 2010).

## 2.2 Positive teacher feedback for students

The teacher should give positive, motivating and constructive comments about the student's work. He or she should give them suggestions on how to move forward. During the feedback, it is very important that students feel safe by challenging themselves even if they are making mistakes. Teachers can achieve this in many ways, by providing positive feedback when students make a mistake and by supporting them to learn from this experience. If this is realised carelessly, student's correction can do more harm than good. Phrases such as 'This is wrong', 'No' and 'This is a mistake' do not help students to learn from their mistakes and can damage their self-confidence, in trying new things (Zhu, 2012). Denton (2018) recommended that in order to focus only on giving constructive comments and to accept the comment as constructive, then a comment should: (1) identify a specific problem, (2) explain why it is a problem and (3) provide a concrete solution to the problem (Denton, 2018). Providing feedback is so important to student's learning.

Verbal feedback is students' favourite technique, as it facilitates dialogue. Research shows that students prefer verbal and face-to-face feedback. Verbal feedback provides faster and immediate interactions between a student and teacher. It allows students to seek clarification and increases the effectiveness of feedback in creative work. Verbal feedback is quick and easy for students and teachers because it takes much less time to say something orally than in writing (Jardine, 2019). This is also the reason why Dr. Kylie Budge quoted by Jardine (2019) recommends that teachers may need to use verbal forms of feedback more often in creative disciplines as a means to communicate more easily.

Verbal feedback is usually given during the lesson. They are less formal and sometimes may not be appreciated. But, they are a very powerful and efficient tool as they can be easily secured at the right time and in the right way. The teacher may ask students such questions as, for example: What do you notice about distance learning? or How does this fit the criteria? Such questions stimulate students' thinking about their learning. He may also give you verbal feedback, such as, 'Wow, you filled out both worksheets!' 'Impressive!' 'I really like your creativity and the use of colour in your poster'. 'That did well!' 'Well done!' 'Excellent', just keep it up', such comments will encourage students' progress and achievement in learning. Good reactions are focused on students to be given the opportunity to act on the reactions: 'What is your main point here? If you do not agree, put the idea in advance and explain', 'Consider integrating these ideas' and 'Become more specific', 'Say where and when'. It is suggested that teachers should adapt their methods to students' perceptions if they want to improve things they have or have done wrong (Brown, 2009).

*Written feedback* represents students' performance in lessons, where it can be given in a variety of ways: via email, letters, reports, notes on documents or through other means. It includes information provided by using pre-designed grading schedules, forms or score sheets that may contain a mark in a box indicating the criteria, the specific characteristics of the students or to indicate whether the work being graded has its attribute. At the same time, written feedback reflects and stores the results of students' oral or written tests, submitting homework, checking essays, etc., all of which help the teacher determine the final score for student's assessment (Jolly and Boud, 2013). At once, they can be saved and used as a student's file for that time or even for the future to see student's achievement, student's progress or regression. This makes the process even easier for the teacher, especially when the student needs further improvement and together, they can manage to achieve satisfactory results in lessons. Feedback can be communicated to students in a variety of ways, both traditional and electronic (Irons, 2008).

Methods of written feedback include: handwritten comments, individual face-to-face feedback, group feedback in the classroom and printing forms of word-processed feedback, via e-mail or other means of communication. Written feedback is important because it has unique features. Firstly, written feedback is or may be easily private. Some research suggests that, even when receiving praise, students prefer to do so quietly and privately (Boud and Molloy, 2013; Jolly and Boud, 2013). Written information is also clear and tangible and as distinguished from verbally provided information, can be made consistent through writing on paper or electronically. Unlike real-time verbal feedback, written feedback is traceable and more complex or time consuming. Written feedback is useful even if we did not expect a response from the recipient when we expect the response despite the fact that it may be delayed. The pause given by written feedback can also be helpful to the student, because if students receive verbal responses or receive immediate written feedback, then at that time they are overwhelmed by strong emotions and they may not expect it well and may negatively affect the student. The recipient may not have the space to deal with feedback about their performance and he/she may choose to give feedback later when he/she has it clearer and gives a remote judgment.

There are ways in which verbal feedback can be made to function as written feedback. For example, comments on audio or video can be a rapid way to store feedback that would otherwise be delivered directly and then would be lost. This allows oral feedback to be used in a similar way to written feedback, but it may not be considered as much as its written equivalent, perhaps it is more difficult to scan, identify and edit key features from audio than from the text (Lunt and Curran, 2010). In written feedback, it is important to make it clear that the information is addressed to a specific individual or group, such as a student or project group. This avoids or reduces the possibility that in a social setting feedback may be misused, socially worshiped or diverted from others. Hattie and Timperley (2007) said:

'When delivered in groups, the feedback messages may be confounded by the perceptions of relevance to oneself or to other group members. For example, a student may interpret the feedback as pertaining to him or her or may interpret it as relating to the group as a whole or to other individuals in the group. In these latter two situations, it is likely either to be diluted or to be perceived as irrelevant to the individual student's performance' (p.92).

These authors, also point out that 'praise delivered publicly by a teacher can be perceived as punishing by some students if delivered in the presence of a peer group that does not esteem school achievement as valuable' (p.97). According to Jolly and Boud (2013), written feedback should be: *comprehensible, selective, specific*, *on time, contextualising, non-judgmental, balanced*, *observed in advance, transferable* and *personal* (Jolly and Boud, 2013). In order feedback to be effective it must be conveyed in an environment in which the learner feels safe. One of the significant features of written feedback is that while it can be generated by a teacher, the student can receive it in a variety of environments beyond the teacher's control; such as via SMS on the phone, to read on the bus, at home or in a cafe or as email or even anywhere. This can be troubling if the focus were on highlighting deficits and did not contain messages on how to improve subsequent tasks. Education must adapt to the constant changes in technology and be used in the learning process because the technology has the power and potential to transform and adapt the professional environment of students into facilitators of learning process. Technology information creates opportunities for students to learn and collaborate with each other exchanging of ideas, experiences and joint problem solving that offers unlimited learning opportunities that can guide students in their quest to learn (Shatri, 2020). In Kosovo, as in most other countries, digital platforms such as: Zoom, Google Classroom, Google Meet, EMail, Viber, Facebook, E-School, Google drive and other platforms were used during online learning. Through these platforms feedback can be practiced to students and vice-versa and also for the process of student's self-assessment.

The proper use of information technology develops some skills in students, e.g., mathematical skills, communication skills, critical thinking, problem solving, teamwork and research skills. Despite the fact that technology encourages laziness and contributes to the feeling of immediate satisfaction. It provides faster information and also time allows more time to learn. Galle states that feedback on online system can distract students from face-to-face relation, can make cheating easier, some students, make students use unreliable resources to learn, make curriculum planning more difficult or expensive, replace the teacher, create privacy issues and can also create dependency (Borysiuk, 2013).

Using email communications between teacher and students is another way to understand feedback strategies. Students email their assignments to teachers and they can ask him/her questions via email. The teacher also sends feedback to students by email. In the feedback, the teacher highlighted what was good in the student's work and used compliments. He should to be objective about the student's work, but also noted what still needed to be done and how the student could move forward in his learning. During feedback, the teacher must gave objective feedback on the student's work, at the same time also giving suggestions on how the student can improve his work. He recognised the good points of the student's work, and also used positive and motivating words to encourage the student, gave positive, motivating and constructive comments about the student's work. Suggestions are given on how to move forward.

*Student feedback A*: *Your homework is well done. It is very comprehensive and with a lot of constructive ideas, e.g., Opinion suggestions, advice for parents, children and the community will admire and add value to your presentation. Thank you for your hard work. I appreciate your work!* In this feedback, the teacher recognised the good points of the student's work, as well as used positive and motivating words to encourage the student.

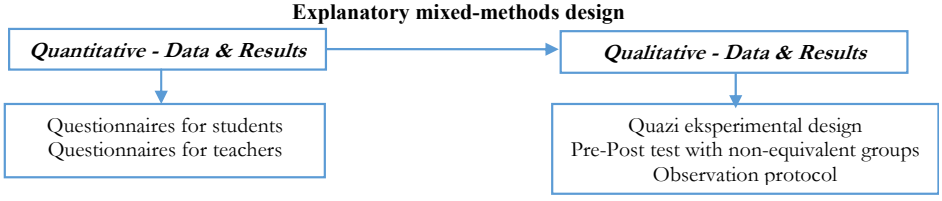
*Student feedback B*: *Your case report review has been greatly improved. Your suggestions are feasible and innovative, for example, the suggestion for presenting your work locally is a very good idea. As a next step, please try to devise a more detailed strategy of who the participants will be, who will support them financially and so on. I am very happy that you worked hard. I'm proud of your work!* In this feedback, the teacher gave positive, motivating and constructive comments about the student's work. Suggestions are given on how to move forward.

## 3 Research methodology

### *3.1 Research methods, techniques and the instruments*

This research will use a combination of quantitative and qualitative research methods or the explanatory mixed-methods design. The explanatory design of mixed methods consists of two stages: quantitative approach, followed by qualitative (see Figure 1). The researcher initially collected and analysed the quantitative data. Then, qualitative data are collected and analysed in helping to explain the quantitative results obtained in the first stage. Quantitative data and their analysis provide a general understanding of the research problem (Ivankova et al., 2006; Creswell, 2014). The purpose of this sequential explanatory study of mixed methods is to assess the impact of formative assessment techniques in the classroom that contribute to student's outcomes and achievement, by obtaining quantitative results from students and teachers, and then followed through a qualitative study analysis of issues with four selected groups to find out what results in student's feedback or what is the impact of the techniques of feedback on student's achievement and their success.

**Figure 1** Conceptual model of research methodology




Our research identifies the random / stratified sample. Based on data on schools and teachers certified in formative assessment training in Kosovo, we selected schools in cities and villages, so that the reliability of our research results is greater, as long as the representation of the included sample is realised in research. Standardised questionnaires for students and questionnaires for teachers, obtained from FAB – Formative Assessment

Benchmarking (Erasmus+), included 10 lower secondary schools in the municipalities of the Republic of Kosovo, where 5 schools were in the city and 5 other schools in the village. The research was conducted in Prishtina (3 schools in the city and 1 school in the village), in Deçan (one school in the city), in Gjakova (one school in the village), in Peja (1 school in the village), in Istog (1 school in the city and 1 school in the village) and in Vushtrri (1 school in the village). These schools were randomly selected to be part of research. In these ten lower secondary schools, 659 students answered the questionnaire, assuming that each class has an average of 30 students, 20 classes (10 classes of seventh grade = 342 students and 10 classes of eighth grade = 317 students). Also, the teacher questionnaire was attended by 202 teachers who teach in the field of Society and Environment (Civic Education, History, Geography), from 43 participating schools, 122 teachers were from urban schools and 80 teachers from rural schools (see Table 1).

**Table 1** Distribution of the sample according to classes and subjects for students and teachers

| *Students* | | | | *Teacher* | | | |
|---|---|---|---|---|---|---|---|
| *Class* | *N* | | *%* | *Subject* | *N* | | *%* |
| Schools in the city | VII | 220 | 52.8% | Schools in the city | Civic Education | 31 | 25.4% |
| | VIII | 197 | 47.2% | | | 43 | 35.2% |
| | Total | 417 | 63.3% | | History | 48 | 39.3% |
| | | | | | Geography | 122 | 60.4% |
| | | | | | Total | | |
| Schools in the village | VII | 122 | 50.4% | Schools in the village | Civic Education | 26 | 32.5% |
| | VIII | 120 | 49.6% | | | 26 | 32.5% |
| | Total | 242 | 36.7 % | | History | 28 | 35% |
| | | | | | Geography | 80 | 39.6% |
| | | | | | Total | | |
| Total | 659 | | 100% | Total | 202 | | 1000% |

The questionnaire aims to determine and evaluate the frequency of practices of formative assessment techniques during the lesson, defining options such as: *always*, *usually, sometimes, rarely, never.* The main purpose of qualitative research is the analysis and interpretation of the results of our research, using the quasi-experimental method and the observation protocol as an instrument. In the quasi-experimental design, two schools were selected for research: an urban school with 34 participating students (a seventh-grade class with 18 students and an eighth-grade class with 16 students) and a rural school with 35 participants (one class of seventh grade with 17 students and an eighth-grade class with 18 students). Teachers are selected based on quantitative data analysis, thus schools and teachers of civic education will be selected. This selection occurred based on answers' results to the questionnaires of teachers and students, and to those who practice formative assessment techniques in the classroom and have completed the training on formative assessment. In the first group (control group), the teacher will not practice student's feedback and self-assessment in his / her classroom. Whereas, in the second group (experimental group), the teacher will receive instructions on how to apply formative assessment techniques in the classroom. He will be provided with a guide on how to work with the group of students during the second phase in the post-test. The

purpose of the second phase is to measure the impact of formative feedback techniques that have on student's achievement (see Table 2).

**Table 2** Difference between experimental and control group between the school in the city and school in the village

| *Class VII* | | | *Class VIII* | | |
|---|---|---|---|---|---|
| Group 1 (Village) Pre-test | There is no treatment | Post-test | Group 1 (City) | Pre-test There is no treatment | Post-test |
| Group 2 (City) Pre-test | Experimental treatment | Post-test | Group 2 (Village) | Pre-test Experimental treatment | Post-test |

Note: Group 1: control group; Group 2: experimental group.

### *3.2 Experimental procedures*

Experimental procedures include the identification and selection of two teachers in the subject of Civic Education. The experiment lasted ten weeks, of which one week was spent on teacher training (research assistant), one week on pre-test, six weeks on treatment and the last two weeks on post-test. The treatment was administered by the researcher himself/herself during the regular school hours. It was assumed that seventh and eighth-grade students had less prior knowledge of how to apply formative assessment techniques, respectively of how they self-assess and the importance of feedback or feedback from the teacher. Since the teaching was conducted by teachers (research assistants) in both schools, the researcher monitored and observed the teaching closely at all times and took notes continuously. We assume that the variance of our guidelines was minimal and the following treatments were undertaken by each experimental group, and the students got feedback about their achievements. Similarly, the participants of the experimental group received the instruction procedures described above, but they were not answered. At the end of each topic, a formative test was administered that covered all the objectives described for the unit. Following the same procedure for feedback forms, this group was followed in post-test administration. Finally, participants in the control group equally received the instruction procedures described above, but they were not exposed to any formative assessment, feedback process. Participants were exposed to the normal learning process by their teacher (research assistant). Students received homework given by their teacher from their textbooks and no formal attempt was made to control their homework.

In the experimental group during the pre-test, the teacher does not implement students' self-assessment and feedback into practice. While, after this in the next period these formative assessment techniques will be applied in practice, where the impact of formative assessment techniques on student achievement will be seen. Teachers were provided with guidelines which contain detailed information on how to apply feedback in practice. These guidelines are modified by other guidelines, so that the teacher knows how to work with the experimental group during the Pre and Post test phases. The difference between results of the Pre- and Post-test is taken as an index of treatment condition effectiveness (Johnson and Christensen, 2017, p.333). The observation protocol aims to measure the impact of formative assessment techniques on student's achievement

(formative feedback) in the field of Society and Environment, subject Civic Education. The description of the results will be in words, by analysing the activities that take place in the control and experimental groups and comparing the effects of these techniques on students' learning. The observation protocol includes categories that give us answers on how effective the learning objectives were and how effective the feedback and student's self-assessment were. So, their measurement is done using four Likert scales: 1 = ineffective; 2 = somewhat effective; 3 = effective; 4 = very effective. During the conduct of the experimental research The Hawthorne Effect will be taken into account, referring to the situation where the behaviour of the participants can be influenced by being aware that they are being observed. Researchers cited the Hawthorne Effect as the main factor distorting results (Coolican, 2018; Sedgwick, 2012). Therefore, we as researchers will not reveal to students that we are developing the experimental method in the classroom. Quantitative data analysis is done using these statistical tests such as: Chi square test, average, standard deviation, Mann Whitney U-test, Anova, correlation test (Pearson) and others. The processing of the results will be done through the statistical package SPSS 22.

## 4 Results

This research presents results which are presented from the mixed methodology, including the results from the quantitative research as well as the results from the qualitative research. The realisation of these results was realised in urban and rural schools of lower secondary education with seventh- and eighth-grade students, as well as with teachers from the curricular area of Society and Environment.

### *4.1 Research results from quantitative data*

Table 6 presented the perceptions of seventh and eighth-grade students about the implementation of classroom feedback technique by teachers (see Table 3). Thus, in the question: *Do you discuss together the achievement of learning outcomes?* results that $p < 0.05$; *Does the teacher ask questions during the lesson to assess the progress of your group?* ($p = .0.02$); *Does the teacher show your strengths?* ($p = 0.005$). *Does the teacher practice oral feedback*? ($p = 0.05$); *Does the teacher* practice students' feedback via email ($p = 0.001$); *Does the teacher use feedback during online learning?* ($p = 0.01$). Whereas, other included variables of feedback such as: *Has the teacher asked questions during the lesson to assess the individual progress of students* $p > 0.05$ shows that there is no significant difference between seventh-grade and eighth-grade students ($p = 0.20$); *Do you get feedback on what is correct and positive about the tasks done?* ($p = 0.77$); *Do you sometimes get negative feedback?* ($p = 0.18$). *Do you receive written feedback?* ($p = 0.31$).

**Table 3** Perceptions of seventh and eighth-grade students about the implementation of classroom feedback technique

| *Pearson Chi-Square* | *Class* | *Always* | *Usually* | *Sometimes* | *Rarely* | *Never* | *p-value* | *Sig.2 side* |
|---|---|---|---|---|---|---|---|---|
| We discuss together the achievement of learning outcomes | Class VII | 156(23.7%) | 87(13.2%) | 56(8.5%) | 24(3.6%) | 19(2.9%) | | |
| | Class VIII | 116(17.6%) | 93(14.1%) | 75(11.4%) | 19(2.9%) | 14(2.1%) | 9.242[a] | 0.055 |
| | Total | 272(41.3%) | 180(27.3%) | 131(19.9%) | 43(6.5%) | 33(5.0%) | | |
| I get feedback on what is correct and positive about the tasks done | Class VII | 164(24.9%) | 86(13.1%) | 53(8.0%) | 26(3.9%) | 13(2.0%) | | |
| | Class VIII | 125(19.0%) | 99(15.0%) | 65(9.9%) | 20(3.0%) | 8(1.2%) | 8.434[a] | 0.77 |
| | Total | 289(43.9%) | 185(28.1%) | 118(17.9%) | 46(7.0%) | 21(3.2%) | | |
| I sometimes even get negative feedback | Class VII | 62(9.4%) | 44(6.7%) | 98(14.9%) | 75(11.4%) | 63(9.6%) | | |
| | Class VIII | 43(6.5%) | 56(8.5%) | 103(15.6%) | 62(9.4%) | 53(8.0%) | 6.159[a] | 0.188 |
| | Total | 105(15.9%) | 100(15.2%) | 201(30.5%) | 137(20.8%) | 116(17.6%) | | |
| The teacher practices oral feedback | Class VII | 186(28.2%) | 84(12.7%) | 40(6.1%) | 23(3.5%) | 9(1.4%) | | |
| | Class VIII | 137(20.8%) | 107(16.2%) | 39(5.9%) | 25(3.8%) | 9(1.4%) | 9.364a | 0.053 |
| | Total | 323(49.0%) | 191(29.0%) | 79(12.0%) | 48(7.3%) | 18(2.7%) | | |
| I get written feedback | Class VII | 136(28.2%) | 78(11.8%) | 72(10.9%) | 35(5.3%) | 21(3.2%) | | |
| | Class VIII | 110(16.7%) | 92(14.0%) | 68(10.3%) | 25(3.8%) | 22(3.3%) | 4.764 | .312 |
| | Total | 246(37.3%) | 170(25.8%) | 140(21.2%) | 60(9.1%) | 43(6.5%) | | |
| The teacher practices with the students the feedback via e-mail | Class VII | 82(12.4%) | 49(7.4%) | 61(9.3%) | 61(9.3%) | 89(13.5%) | | |
| | Class VIII | 44(6.7%) | 47(7.1%) | 65(9.9%) | 89(13.5%) | 72(10.9%) | 17.728[a] | 0.001 |
| | Total | 126(19.1%) | 96(14.6%) | 126(19.1%) | 150(22.8%) | 161(24.4%) | | |
| The teacher also uses feedback during online learning | Class VII | 161(24.4%) | 89(13.5%) | 46(7.0%) | 19(2.9%) | 27(4.1%) | | |
| | Class VIII | 118(17.9%) | 88(13.4%) | 59(9.0%) | 33(5.0%) | 19(2.9%) | 12.472[a] | 0.014 |
| | Total | 279(42.3%) | 177(26.98%) | 105(15.9%) | 52(7.9%) | 46(7.0%) | | |

From the Table 7, it can be noticed that there is a significant difference between students in rural and in urban schools concerning the question: Does the teacher ask questions during the lesson to assess the individual progress of students? $p>0.05$ so $p = 0.05$ in students and $p< 0.05$ to teachers ($p = 0.93$). When negative feedback is used there is a significant difference between students where $p = 0.005$, whereas there is no significant difference between teachers according to the area where they work ($p = 0.29$). Concerning the question: Is the oral feedback practiced? there is a significant difference between students, where $p = 0.005$, but there is no difference between teachers, where $p = 0.73$. There is no significant difference between seventh and eighth-grade students regarding the application of written feedback ($p = .312$). The study shows that the students' feedback via e-mail is practiced and there is a huge difference between students in urban and rural schools ($p = 0.00$), also there is a significant difference between teachers in urban and rural schools ($p = 0.01$); Feedback is also used during students' online teaching $p = 0.006$ and teachers' $p = 0.01$ (see Table 4).

**Table 4** Perceptions of students and teachers of rural and urban schools for the implementation of feedback presented through the *p*-value and significance

| *Pearson Chi Square* | *Students* | | *Teachers* | |
|---|---|---|---|---|
| | *p-value* | *Sig. (2 sided)* | *p-value* | *Sig. (2 sided)* |
| Achieve learning outcomes are discussed together | 7.439[a] | .114 | 1.277[a] | .735 |
| The teacher asks questions during the lesson to assess the progress group of the students | 4.227[a] | .376 | 1.880[a] | .391 |
| Students get feedback on what is correct and positive about the tasks done | 2.949[a] | .566 | .746[a] | .862 |
| Negative feedback is used | 14.734[a] | .005 | 4.923[a] | .295 |
| Verbal feedback is practiced | 14.734[a] | .005 | 2.002[a] | .735 |
| Written feedback is practiced | 1.948 | .745 | 10.913 | .012 |
| Feedback is practiced with students via e-mail | 23.511[a] | .000 | 11.963[a] | .018 |
| Feedback is also used during online learning | 14.605a | .006 | 8.328[a] | .016 |

In the questions addressed to the students according to the grade level and the school, we have presented the following results from the next questions: Does the teacher give you enough time to be prepared to say something? There is a significant difference between urban and rural area, where $p$=0.001, and there is no difference between seventh-grade and eighth-grade students ($p$=0.26). In the question: Does the teacher correct my mistakes in a way that does not discourage me from learning more? there is a huge difference between students in rural and urban schools ($p$=0.000). There is also a significant difference between classes ($p$ =0.01). The research results show a significant difference between classes in the question of whether they receive detailed feedback and advice from the teacher on how their performance can be improved ($p$=0.02), and there is no difference between urban and rural schools. Whereas for the question Do you feel engaged in the learning process? $p$ is equal to 0.03 between classes, and based on residence there is no significant difference ($p$=0.82).

### *4.2 Research results from qualitative data*

All personal records were confidential and our research results were stored without any problems. Both teachers expressed their willingness to participate in the research, despite obstacles due to the situation of the pandemic COVID-19. In this case, written feedback and oral feedback are combined and the result has been much more effective when these two formative assessment techniques interact with each other. In Table 5, we compare the average and standard deviation for the pre- and post-test results from the control group in the village and the experimental group in the city analysed in seventh grades.

**Table 5** The average and standard deviation for the impact of long formative assessment techniques during pre- and post-test phases in the control and in the experimental group in the seventh grade

| | *Zone* | *N* | *Mann Whitney U* | *Wilcoxon W* | *Z* | *Sig. (2-ailed)* |
|---|---|---|---|---|---|---|
| Correct and positive feedback | Experimental Group | 18 | 141.000 | 312.000 | –.708 | .479 |
| | Control Group | 17 | 138.000 | 291.000 | –.259 | .796 |
| Written feedback | Experimental Group | 18 | 93.500 | 264.500 | –2.254 | 024 |
| | Control Group | 17 | 119.500 | 272.500 | –.948 | .343 |
| Negative feedback | Experimental Group | 18 | 100.000 | 271.000 | –2.020 | .043 |
| | Control Group | 17 | 117.500 | 270.500 | –.977 | .329 |
| Verbal feedback | Experimental Group | 18 | 157.500 | 328.500 | –.154 | .878 |
| | Control Group | 17 | 127.500 | 280.500 | –.677 | .498 |
| Feedback via email | Experimental Group | 18 | 60.000 | 231.000 | –3.364 | .001 |
| | Control Group | 17 | 119.500 | 272.500 | –.924 | .356 |
| Feedback during online learning | Experimental Group | 18 | 157.500 | 328.500 | –.150 | .881 |
| | Control Group | 17 | 120.500 | 273.500 | –.881 | .379 |

The importance of positive constructive feedback is very important. Some of the useful strategies to help students succeed are to inspire students to embrace their mistakes and try again, to give students the confidence to make mistakes, to support students in their learning, to help students learn from mistakes theirs as well as encourage them to remember their previous lesson

During verbal feedback, the teacher can ask students such questions, for example: What do you notice about distance learning? Or do you have any other ideas on how to organise learning while we teach online? Such questions stimulate students' thinking about their learning.

The teacher marks the written feedback with two colours. The blue colour praises the student's work. Meanwhile, he marks the 'mistakes' in red so that the student can improve them.

Below are two examples of email feedback. e.g., a) *You have improved your work based on my recent comments, but you need to read more relevant references and material. Below are some of the references that you can read and use in your report...* In this feedback, the teacher is objective about the student's work, but also points out what still needs to be done and how the student can move forward in his/her learning. b) *Your*

*case study report is now improved compared to last time, especially the part about the additional explanation about the pricing strategy for hotel reservations. In addition, the section on Contract Law information is very useful. Good job.* In this feedback, the teacher emphasised what was good in the student's work and used complimentary words.

The use of feedback through online digital platforms is more effective when used in zoom, Google classroom, Google meet, Viber, etc., and also through the e-school. This was proven during the pandemic period, where the students were very satisfied and showed good results, feeling themselves as researchers and contributors to society.

The Table 6 shows the difference between the experimental group in the city and the control group in the village in the seventh grade through the Mann-Whitney U-test, Wilcoxon W- and the Z-test, where the significance between the groups is determined.

**Table 6** Difference between the experimental group in the city and the control group in the village in seventh grade

| | *Control Group / Class VII (Village)* | | | | *Experimental Group/ Class VII (City)* | | | |
|---|---|---|---|---|---|---|---|---|
| | | *Mean* | *SD* | *Diff. of mean* | | *Mean* | *SD* | *Diff. of mean* |
| Correct and positive feedback | Pre-test | 1.9412 | .65865 | 1.9118 | Pre-test | 2.0556 | .99836 | 2.0000 |
| | Post-test | 1.8824 | .60025 | | Post-test | 1.9444 | 1.25895 | |
| Written feedback | Pre-test | 3.1765 | .72761 | 3.2941 | Pre-test | 2.8333 | 1.29429 | .3611 |
| | Post-test | 3.2941 | .68599 | | Post-test | 1.8889 | .96338 | |
| Negative feedback | Pre-test | 3.1176 | .99262 | 3.2941 | Pre-test | 3.2222 | 1.30859 | 2.8056 |
| | Post-test | 3.2941 | 1.04670 | | Post-test | 2.3889 | 1.24328 | |
| Oral feedback | Pre-test | 1.4706 | .51450 | 1.5294 | Pre-test | 1.7222 | .82644 | 1.7500 |
| | Post-test | 1.5294 | .51450 | | Post-test | 1.7778 | .87820 | |
| Feedback via email | Pre-test | 3.7647 | 1.43742 | 4.0000 | Pre-test | 4.0000 | .76696 | 3.3611 |
| | Post-test | 4.0000 | 1.27475 | | Post-test | 2.7222 | 1.07406 | |
| Feedback during online learning | Pre-test | 2.8235 | 1.01460 | 3.0000 | Pre-test | 2.1667 | 1.33945 | 2.1667 |
| | Post-test | 3.0000 | 1.11803 | | Post-test | 2.1667 | 1.15045 | |

Regarding the positive feedback in the control group in the village, the difference of the average during the Pre- and Post-test phase is 1.9118, sig = .796 while those in the city in the experimental group is the average of 2.0000 while the level of significance is .479. As for written feedback, students in the control group indicated an average of 3.2941, ($p$ = 343) while the average from the experimental group is 3611, whereas the significance level is $p$ = 024. In the negative feedback, the students in the control group indicated an average of 3.2941 $p$ = 329 while those in the experimental group indicated 2.8056 with a significance level $p$ = 043. In terms of oral feedback, the differences between the students in the control group and the experimental group are 1.5294 ($p$ = 498) to 1.7500 ($p$ = 878). The differences between the students in the control group and in the experimental group about the impact of the feedback form via e-mail are 4.0000 ($p$ = 356) and 3.3611 with significance at $p$ = 001. Regarding the impact of feedback during online learning, the average in the control group is 3.0000 ($p$ =379) while in the experimental group is 2.1667 with significance $p$ = 881.

The results of the variance's homogeneity test provided by the Levene test examine the assumption of whether the variance within each group is similar or not. In our case, the Levene test according to the level of the class is significant at the level $\alpha = 0.05$ and the results $F$ (5.482), $p$ = .003 in the oral feedback, while according to the area is $F$ (4.256), $p$ = 0.01. In the feedback via email, according to the level of class $F$ (34,883), $p$ = 0.05 and $F$ (4.546), $p$ = 0.04 by area. When the teacher asks questions to assess individual and group progress, the variance according to the grade level is $F$ (13,166), $p$ = .001, and by the village-town area is $F$ (18,784), $p$ = 0.02.

## 5 Discussions

Based on metacognitive and socio-cultural theories, the research aimed to investigate the effect of formative assessment techniques that have on student's achievement. The research treats implementation's ways of feedback techniques and student's self-assessment techniques by examining whether their influence is greater in seventh or eighth grade. Student-teacher communication is very important either with physical presence or even during distance or online learning, where a dedicated teacher can achieve success by using different methods even during formative assessment. Therefore, the research examined which formative assessment techniques have the highest degree of their effectiveness: accurate and positive feedback, oral feedback, written feedback, negative feedback, online learning feedback and feedback via email. Furthermore, the research made the difference between students in urban and rural schools by showing the practice of these techniques and their effect according to the residential area. At the same time, a comparison was made between students 'perceptions and teachers' perceptions of the implementation of formative assessment techniques application. Also, a distinction was made between the groups involved in the quasi-experimental design, the difference between the experimental groups and the control groups during the Pre- and Post-test phases. The results of this study are in accordance with previous findings that techniques of formative feedback are among the most significant activities in which a teacher can use in order to improve student's achievement (Hattie and Timperley, 2007; Kim and Lee, 2019; Zhu, 2012, Shatri, 2020).

Based on the summarised data from the two included classes, say that their teachers encourage them to participate in all classroom or online activities ($p$ = 0.006). The study on formative assessment techniques by Zhu (2012), showed that most students preferred teachers to use feedback with constructive and elaborate comments and about 1/3 of students preferred the teacher to use feedback with positive comments or negative. A very small proportion of students preferred the teacher to use positive or negative feedback, or without any response.

Compared to students with high-cognitive skills, a larger proportion of students with low cognition (68.8%) preferred the teacher to use feedback with constructive comments, where $f$ <.05 (Zhu, 2012). However, our research shows that when accurate and positive feedback is used there is no significant difference shown between students in the control group during Pre- and Post-test phase $p$ = 0.79 nor in the experimental group $p$ = 0.47. In negative feedback there is no significant difference between students in the control group during Pre- and Post-test phase $p$ = 0.32 nor in the experimental group $p$ = 0.43.

According to Kim and Lee (2019), negative feedback was followed by a more accurate assessment of student's skills performance than positive feedback. Negative feedback help students evaluate their performance in realistically and accurately way, than positive feedback. In our study, results regarding students' self-assessment in both seventh and eighth grade were higher in the experimental group than in the control group, where the effect was the greatest in the Post-test phase. Our research finds out that students tend to overestimate themselves, because based on the students' self-assessment test based on marking, where students had to present their strengths with the √ mark and their weaknesses with the mark X, students assessed themselves more in almost all points while the teachers pointed out to the students their weaknesses in addition to the strengths (for more see Tables 9 and 10). One explanation for these groups related findings is that positive feedback impacted students' good mood, higher motivation and feelings of self-efficacy, which led them to evaluate their performance in a higher level.

Positive feedback was followed with better student's performance in practice, as students provided better care and thus received better grades. Negative feedback was followed with a more accurate self-assessment of performance, more than positive feedback, where supports the previous research which suggested that constructive feedback may increase students' ability to reflect on themselves more accurately. Positive feedback produced stronger positive emotions and higher self-efficacy than negative feedback (Kim and Lee, 2019).

To determine the impact of students' verbal feedback, Sisquiarco et al. (2018) conducted their research through an action plan, which was conducted at two levels: a) Comparing the first and second performances of students' oral feedback and b) Taking students' perceptions of their progress in relation to the use of strategies and oral performance (Sisquiarco et al., 2018). So, according to these authors, verbal feedback positively affects the preparation and performance of students, because it helps them to know their level of progress and gives them alternatives for the steps they need to follow in order to get better results (p.107). Méndez and Cruz quoted by Alkhammash and Gulnaz (2019), point out that some studies have shown that many teachers have positive perceptions of verbal feedback because it has the potential for correction, while some studies perceive verbal feedback practices that have negative impact on students' feelings and emotions (Alkhammash and Gulnaz, 2019; Sisquiarco et al., 2018). On the other hand, Brown (2009) conducted a study comparing the perceptions and beliefs of teachers ($n$ = 49) and students ($n$ = 1,600) regarding verbal feedback and how it can be corrected. His study presented major differences between the way teachers and students viewed feedback, where teachers in his study discouraged clear instructions given to students because in their view such instructions reduce the communicative approach to teacher-student. On the other hand, students strongly favoured the concentration that the teacher should have and the clarity when transmitting verbal feedback. It is suggested that teachers should adapt their methods to students' perceptions if they want to improve things they have or have done wrong (Brown, 2009). Our research finds that there is no significant difference between seventh grade students in the control group in the village during the first and last phase ($p$ = 0.49) nor in the experimental group in the city ($p$ = 0.87). Whereas, in the eighth grade in the experimental group in the village there is a significant difference ($p$ = 0.05) and in the control group in the city there is no difference ($p$ = 0.60). During the experimental treatment, the more verbal feedback was conveyed to the students, the more confusion students had due to the overload of which advice to consider more. And in cases where the teacher gave them less verbal feedback, but it was

more concise and simpler, the students felt more motivated and easier to move on, having the opportunity to improve and correct or even to reinforced them.

Abalkheel and Brandenburg (2020) showed that written-focused feedback has an overall positive effect on student's writing, while complete written information has the potential to have a detrimental effect on student writing over time. But why does this happen? Sheen et al., Quoted by Abalkheel and Brandenburg (2020) suggested that the reason why focused instruction is more effective than comprehensive instruction is that 'when correction addresses a range of mistakes, students are unable to process feedback effectively, and even if they pay attention to corrections, they are not able to understand why they have been corrected'. Furthermore, they argue that the errors examined in big feedback can overload the learner, sometimes they are unsystematic and arbitrarily resolved. Feedback helps the learner notice errors, engage systematically and monitor their writing (Abalkheel and Brandenburg, 2020). Instead of addressing all the errors in a task, the teacher should select a limited number of error types and address only those in written corrected feedback. The research results of these authors are in full accordance with our research, where this way of dealing with students gave more success and at the same time students had the opportunity to improve and correct their mistakes. In our research the results in the seventh grade show that in the control group in the village there is no difference during the Pre- and Post-test phase ($p$ = 0.32), and in the experimental group in the city there is a significant difference ($p$ = 0.02). Meanwhile, in eighth grade students, written feedback was more effective in the control group in the city ($p$ = 0.04) than in the experimental group in the village ($p$ = 0.30). The combination of written feedback and oral feedback from teachers gave a very satisfactory result, the result was much more effective in students when these two formative assessment techniques interacted with each other.

In this study, feedback via email was considered a very convenient and timely tool for teacher and students. The results of this study are consistent with previous findings in showing that feedback is one of the most significant activities in which a teacher can be engaged to improve student's achievement. Feedback should be an important part of the learning process when students know how to correct or improve their work. The quasi-experimental design in our research on feedback via email, shows that in seventh-grade there is no significant difference between students in the experimental group in the city ($p$ = 0.01) and in the control group in the village ($p$ = 0.35), while in eighth grade there is no difference between the experimental group in the city ($p$ = 1.00) and the control group in the city ($p$ = 0.06).

Whereas, when feedback is transmitted during online learning, the results show that in the seventh grade there is no significant difference between the students of the experimental group in the city ($p$ = 0.88) and in the control group in the village ($p$ = 0.37), while in the eighth grade does not exist a difference between the experimental group in the city ($p$ = 0.93) and the control group in the city ($p$ = 0.37). Motivational words also played a very important role during the feedback to the students. If students know that the teacher wants them to succeed and appreciate their work, they are more engaged in the learning process and more motivated to improve their learning. Email as a more intense source of student interaction can lead to deeper, more active and engaged learning. Correspondence via e-mail in the educational environment provides many relative advantages such as speed of delivery, improved and more immediate communication, freedom from location and time constraints, potential for increased interaction, and reduction of social isolation. The ubiquitous nature of email makes it an

easy and convenient tool to provide feedback to students. Feedback should be timely because if it is delayed, it would reduce its value for the learning process (Zhu, 2020). Since our research was conducted during the pandemic period, where the teaching process in addition to physical teaching was held online, students had to work on assignments on their own, where feedback took an important place in order to keep them motivated and to provide student-teacher interaction. In addition, compared to group feedback in the classroom, the advantage of email is that the teacher can give personalised feedback to students. As a disadvantage of using feedback through email, is considered the fact in most of the cases students did not respond to it and even in those rare cases when they responded, the response was delayed or even deficient. The other essential problem, which students had, was the lack of laptops or personal computers which disabled students to connect or participate in the learning process during online teaching.

## 6 Conclusions and recommendations

These results can be used for further research by young researchers at national and international level, by teachers, education experts in the field of curricula and didactics. There is a need to develop formative assessment because it will require finding new tools and promoting changing classroom practices. Teachers should be encouraged to explore different tools of formative assessment techniques. The teacher should be clear about the formative assessment practices and techniques to be used regarding the purpose and reason why a particular formative assessment technique is used. These formative assessment techniques should be used to achieve learning outcomes as well as facilitate and improve the student's learning process. Evaluation should be ongoing in nature and should allow teachers to determine which specific learning outcomes students have met and which not. Assessment should advance student's learning by supporting students to learn, and students should receive information that shows how they should improve their results. Formative assessment practices, strategies and techniques help the student to be prepared for the final exam (Summative Assessment). Homework should be regularly monitored and checked by the teacher and collaborate with other teachers within the curricular area to ensure consistency and effective implementation.

A large number of pedagogical researches, as well as our research have shown an efficiency of the daily use of formative assessment techniques and an increase of students' achievements in lessons. Based on the questionnaire conducted with students and teachers, as well as the observation conducted in both schools and in the four classes, where two classes were control group and two classes experimental group, through the observation protocol, we can come to some conclusions about the effectiveness of formative assessment techniques, specifically to look at the impact of feedback on their achievements. The findings of this study show that providing the right kind of feedback to students can make a significant difference in their achievement. It was demonstrated that teachers provided timely and constructive feedback to students. Suggestions are also given on how to improve their work. Both the students and the teacher were very involved in the learning process.

Written feedback and verbal feedback have given a positive effect to the students, ensuring improvement in learning and increasing activity. But, at the moment when written feedback and oral feedback were used, for instance, their combination was made,

in those cases the students showed a much higher result, being active in learning continuously. Our research shows that formative assessment techniques turn out to be used more in seventh graders, compared to eighth graders. And in the quasi-experimental design, the experimental group in the seventh grade in the city was more successful during the Pre- and Post-test phases, than the control group in the village. The control group in the eighth grade in the city, turned out to be more productive than the experimental group in the city. This shows that formative assessment techniques are applied more in urban schools than in rural ones. At the same time, one of the main reasons why seventh-grade students had greater results when using formative assessment techniques is that all students were provided with basic textbooks and appropriate workbooks in coordination with the subject and curricular area. Eighth-grade students lacked textbooks; they were occasionally provided with a textbook where teachers selected the units in which the topic fit best. Most of the time they took notes in class and received the material electronically through the e-school, where this database was not very successful because not all students could always access the tasks given to them by the teacher due to the overload of using this digital platform, and often in the absence of electronic devices by the students.

Despite the fact that both participating teachers were trained in formative assessment, the use of formative assessment techniques was more successful in the school in the city than in the school in the village. Face-to-face feedback seems to be more practical and efficient. However, in these circumstances closer contact with students through modern technology such as email or online forums is very helpful. Using asynchronous communication such as emails requires a certain level of technical expertise. Through email communication, students and the teacher can maintain their interaction with each other. Without a maximum commitment and a coordinated effort by the teachers of the curriculum area Society and environment, the potential of technology and the realisation of the curriculum cannot be fully realised.

Teachers are trained in formative assessment in general, but we recommend that they should be continuously trained specifically for each formative assessment technique, how they are developed in practice, and pay as much importance to them as ossible.

### *6.1 Research limitations*

The research was conducted normally respecting ethical issues including the subjects involved in the research as well as the data collection process. We have also encountered problems that have made data collection difficult. Owing to the state of the COVID-19 pandemic, despite the permission we had from the MEST and the Directorate of Education to conduct the research, we were faced with hesitation by the school directorate to enable us to conduct research, especially qualitative one.

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