Macrothink Institute™

International Journal of Linguistics
ISSN 1948-5425
2012, Vol. 4, No. 4

The Effect of Mechanical and Meaningful Drills on the Acquisition of Comparative and Superlative Adjectives

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Received: August 15, 2012 Accepted: September 7, 2012 Published: December 1, 2012

doi:10.5296/ijl.v4i4.2735 URL: http://dx.doi.org/10.5296/ijl.v4i4.2735

Abstract

This study tested the hypothesis of the superiority of meaningful drills over mechanical drills in teaching comparative and superlative adjectives to high school students. A convenience sample of 84 male high school freshmen took part in this study. They were matched based on their pre-test scores and constituted the control and experimental groups, 42 in each group. The participants in the control group received mechanical drills while their counterparts in the experimental group received meaningful drills for presentation and practice of intended grammatical points. One week later, both groups took a post-test containing 20 multiple-choice items under two categories of mechanical and meaningful subscales. The results of the independent samples t-test revealed a statistically significant difference between the groups, t (82) = -2.53, p = .013, indicating that meaningful drills resulted in better achievement than mechanical drills. The results of the paired-sample t-test also showed that those learners who received mechanical drills performed poorly on meaningful subscale of the post-test, t (41) = 3.35, p = .002, while for those who received meaningful drills no significant difference was observed between their performances on the mechanical and meaningful subscales , t (41) = -1.31, p = .19. Based on the results, it is concluded that inserting meaning into form realized in meaningful drills not only has no extra burden on EFL learners but also results in better acquisition of linguistic forms.

Keywords: Meaningful drills, Mechanical drills, EFL learners, Grammar acquisition

1. Introduction

Teaching grammar has always been the focus of attention for second language teachers. It has gone through lots of revisions in the past few years. These revisions can be delineated in a continuum with two extremes of form-focused and meaning-based instructions. While the former gives the major role to form with elimination of meaning, the latter considers the marginal role for form believing that form is acquired marginally if meaning is on the locus of learner's attention. Research findings are in line with none of these two positions. After a long time of debate on the advantages and disadvantages of form-focused instruction and meaning-based instruction, in the late 1980s and early 1990s, the mainstream view on this issue seemed to agree that second language teaching that is primarily meaning-based can be improved if some degree of attention is paid to form (Norris & Ortega, 2001).

Therefore, many scholars "feel the need to restore form-focused instruction and error correction as a part of the language teaching/learning context" (Lightbown, 1990, p. 90). Moreover, an urgent need is also felt on behalf of teachers to embed meaning into form. Instead of regarding grammar as a 'static system of arbitrary rules', more scholars and teachers begin to view it as "a rational, dynamic system that is comprised of structures characterized by the three dimensions of form, meaning, and use" (Larsen-Freeman, 1995, p. 148). Therefore, some sort of reconciliation can be implied between the two oppositions to take a more lenient position. Such compromise is apparent from recently developed terminologies to address the minute differences in conceptualization of the issue. Long's (1991) dichotomy of "focus-on-form" versus "focus-on-formS" is the most prevalent one in which the degree of "meaningfulness" makes us approach one of these two extremes.

Transition from one extreme with meaningless mechanical drills to the other extreme with meaningful communicative tasks should be done cautiously because by moving away from one end and approaching the other, we lose one thing at the expense of the other thing. Considering proficiency as the ultimate pedagogical goal, scholars propose contextual variables as the determining factors to give weighted priority to accuracy and fluency. The proponents of mechanical drills believe that such drills are simpler and easier to acquire because learners' cognitive resources should analyze linguistic data with bare minimum of complexity. But the advocates of communicative tasks think that approaching grammar within context can effectively arouse students' interest and is more in line with actual thought processes engaged in second language acquisition.

Teachers' experience and researchers' findings have not been successful in revealing the truth because the grammar instruction pendulum is still swinging between the two extremes. As mentioned before, the mainstream view recommends a pedagogical instruction composed of both elements of form and meaning. Considering the principle of gradual transition for the sake of innovation entails investigating the plausibility of replacing pure mechanical drills with meaningful ones in traditional educational systems.

2. Review of Literature

One of the most controversial issues in Second Language Acquisition (SLA) has been how

language input should be presented to the second language learners. For example, some SLA researchers claim that an approach that includes a focus on the grammatical form of the second language (L2) is the best (Schmidt, 1993; Sharwood Smith, 1993; VanPatten, 1989). In contrast, others believe that there is no place for a focus on grammar in the SLA classroom and this is the meaningful communication that should be emphasized (Krashen, 1982, 1985).

These two are not the only two positions supported by their proponents. There are some others who have taken middle positions by proposing an amalgamation of different proportion of structure and content as the best way of improving the learners' interlanguage system. These people believe that the best approach is intervening directly in the process of interlanguage construction by drawing learners' attention to or providing opportunities for them to practice specific linguistic features (see Ellis, 2001; Ellis, Basturkmen, &, Loewen, 2001). In other words, the best approach is addressing form in a meaningful context. Nowadays, form-focused instruction is an umbrella term given to positions which take the role of grammar for granted. These positions stand in sharp contrast with those of pure meaning-based approaches like immersion program and natural approach which give a subsidiary role to grammar.

In the continuum of form-focused instruction two extremes can be distinguished – focus-on-formS and focus-on-form. The former involves the pre-selection of specific features based on a linguistic syllabus and the intensive and systematic treatment of those features. Thus, in focus-on-formS instruction, the primary focus of attention is on the form. By contrast, in focus-on-form instruction, the primary focus of attention is on meaning. In focus-on-form, students' attention is overtly drawn to linguistic elements as they arise incidentally in lessons whose overriding focus is on meaning or communication (Long, 1991, as cited in Doughty, 2001).

The two types of focus-on-form instruction can be further distinguished: planned focus-on-form and incidental focus-on-form. The former involves the use of focused tasks, that is, communicative tasks that have been designed to elicit the use of specific linguistic form in the context of meaning-centered language use. Incidental focus-on-form involves the use of unfocused tasks, that is, communicative tasks are designed to elicit general samples of the language rather than specific forms (Ellis, 2001; Ellis, Basturkmen, & Loewen, 2002). The proposed successive dichotomies are not the final ramifications to provide teachers with clear-cut techniques for settling the issue of form vs. meaning. Further middle positions are theorized to address the minute differences in techniques applied by teachers to help learners improve their proficiency. For example, between incidental focus-on-form (unobtrusive focus-on-form) and planned focus-on-form (obtrusive focus-on-form), there are techniques of input flood, task-essential language, input enhancement, negotiation, recast, output enhancement, interaction enhancement, dictogloss, consciousness raising tasks, input processing, and garden path.

Focus-on-formS, whose application dates back to decades ago when grammar translation method and the audio-lingual method were dominant, gives primary attention to form rather than meaning. In this type of instruction, grammatical items are treated separately one by one

until the whole system is covered. In this classical form-focused instruction, the form will occupy a central stage during the intake period of the lesson, the acquisition of the form through drilling, and the ensuing output or production. Therefore, drills constitute the backbone of such an instruction aiming at controlled practice of grammatical items in order to give students opportunity to develop quick, automatic responses in real contexts.

Unlike focus-on-form instruction, the scope of focus-on-formS is not so much vast. The first notion regarding the scope of drills and activities in this domain was proposed by Paulston and Brouder (1976) who distinguished among three types of drills: mechanical drills, meaningful drills, and communicative drills. In a mechanical drill, the student may provide correct way of responding without even understanding the meaning of the item. Mechanical drills include repetition, paradigm conjugation, as well as substitution and transformation drills. In meaningful drills, the student cannot complete the drill "without fully understanding structurally and semantically what he is saying" (Paulston & Brouder, 1976, p. 206). Comprehension and description questions are examples of meaningful drills. It should be noted that the stress in both cases will not be on the communicative use of the forms in real-life situations, but on their formal use within instructional settings. In fact, the accent is on the formal production of L2 forms rather than on the conveyance of meaning. The third category, communicative drills, aims at conveying communicative meanings. According to Paulston and Bruder's (1976), the key difference between meaningful and communicative drills is that “in the latter the speaker adds new information about the real world" (p. 207). They also argue that "in teaching languages we need to take each pattern systematically through a sequence of mechanical, meaningful, and communicative drills, not leaving out any one step" (p. 208) .

In some educational contexts in traditional approaches, language learning activities are mostly designed based on mechanical drills. English language classes in guidance schools and high schools in Iran are of those contexts in which drills and exercises for presentation and practice are mainly of mechanical drills, and meaningful and communicative drills are almost nonexistent. In these classes, grammar which is of vital importance in English language program is worked on in the form of repetition, substitution, transformation, and question and answer drills. In spite of significant attention given to this language component, the results are not satisfactory. The quality of these drills, among other factors, seems to be one of the contributing factors to such a failure. While the related literature recognizes the priority of communicative and meaningful drills in most contexts, the materials in this context are replete with mechanical drills. Therefore, the time seems ripe for investigating the potentialities of the intended context to experience some sort of innovation in realm of material development.

In line with such perspectives, this study aims at investigating the effect of replacing mechanical drills with meaningful drills on the grammar acquisition of high school students. For this study, mechanical and meaningful activities, according to Lee and VanPatten (2004), are defined in this way: Mechanical activities are those that students can complete without attending to meaning and for which there is only one correct answer, while meaningful activities can only be successfully completed when the meaning of both the stimulus and the

response are attended to. With respect to the purpose of the study and the terminologies defined, this study seeks to answer the following questions:

1) Does working on mechanical drills instead of meaningful drills result in better performance in mechanical-based test items?

2) Does working on meaningful drills instead of mechanical drills result in better performance in meaningful -based test items?

3) Does substituting the mechanical drills with meaningful drills have a significant effect on the learners' overall performance?

4) Do the learners who work on mechanical drills achieve less in meaningful drills?

5) Do the learners who work on meaningful drills achieve less in mechanical drills?

3. Methodology

3.1 Subjects and Setting

The study was conducted in a high school with the population of 247 freshmen located in Mahallat, a city in Markazi province of Iran. In this high school, as the only high school for male first graders, there were eight first-grade classes with an average of 30 students randomly distributed in each class. Six classes being taught by one of the researchers were selected as the convenience sample and randomly assigned to control and experimental group, three classes to each group. After omitting those who were absent in the exam and treatment sessions, 42 matched pairs were selected as the final sample of the study whose performances were used for further analysis.

3.2 Material

The materials used in this study were two pamphlets containing two types of drills for presenting and practicing comparative and superlative adjectives as the intended grammatical points. Each one began with some patterns for introducing the points and some exercises for learners' guided and independent practice. In one of them, designed for the control group, the drills were selected from the drills in the learners' course book – English language book 1. In its equivalence, designed for the experimental group, the same drills were modified for inserting meaning by changing the unreal noun phrases with real world ones. These two versions were quantitatively equal with the same type of drills and the same number of items. It should be noted that the developed pamphlets were used as the substitutions for the course book drills and exercises.

3.3 Procedure

First, lesson one and two of the learners' course book were taught to all participants. Then they answered the multiple-choice items of a pre-test which had been validated in a pilot study. In the pilot study, the test was administered to the learners of two other classes of the population. Then, in the treatment sessions (two complete sessions with total allocated time of 3 hours) the groups received their respective teaching materials. One week later, all

participants took part in an exam session in which they answered 20 multiple-choice items of a test as their post-test. The validity and reliability of post-test had also been assured in advance in another pilot study. Among all participants who had taken part in the pre-test, post-test, and two treatment sessions, 42 pairs of subjects were matched based on their scores in their pre-test to constitute the final sample of the study.

3.4 Instrument

Two tests were used in this study as the instruments, one as the pre-test and the other as the post-test. Both contained 20 multiple-choice items which aimed at assessing the subjects' grammatical knowledge. The pre-test was designed based the grammatical points in lesson one and two of the learners' course book, modal verbs and "it" applications. The post-test with the same components aimed at measuring subjects' performance on comparative and superlative adjectives – the grammatical points of lesson three and four of the learners' course book. This test contained 20 multiple-choice items with the same proportion for items designed based on mechanical drills and meaningful drills. That is, the test included 10 items for the mechanical subscale and 10 items for the meaningful subscale.

Both tests were judged by three experienced teachers for content validity. For reliability, the data based on participants' performance in the pilot studies were used in Pearson Product Moment Correlation test applying odd-even method to estimate split-half reliability coefficient. The results showed the reliability index of r = 0.89 for the pre-test and r = 0.92 for the post-test.

3.5 Data Analysis

The statistical tests used in this study were Pearson Product Moment Correlation test for checking instruments' reliability, Kolmogorov-Smirnov test for checking the normality of data sets, t-test for testing the significant difference between the groups' performance, and paired t-test for testing the significant difference between the performances of each group in two subscales of post-test.

4. Results

Table 1 shows the descriptive statistics of the participants' performance in both pre-test, post-test, and subscales of the post-test. As Table 1 shows, the groups had the same performance in the pre-test as the result of matching-pairs procedure. In the post-test, experimental group showed better performance in both mechanical and meaningful subscales. Altogether, participants in the experimental group achieved higher than their partners in the control group.

Table 1. Participants' Performance in both Tests

Groups	No.	Pre-test Maximum=20	Post-test, mechanical Maximum=10	Post-test, meaningful Maximum=10	Post-test, overall Maximum=20
Control	42	M= 12.64 SD= 3.96	M=6.97 SD=1.65	M=6.28 SD=1.85	M=13.26 SD=3.25
Experimental	42	M= 12.64 SD= 3.96	M=7.38 SD=2.24	M=7.80 SD=2.01	M=15.19 SD=3.69

For better visualization, Figure 1 displays participants' performance in the pre-test, post-test and its subscales.

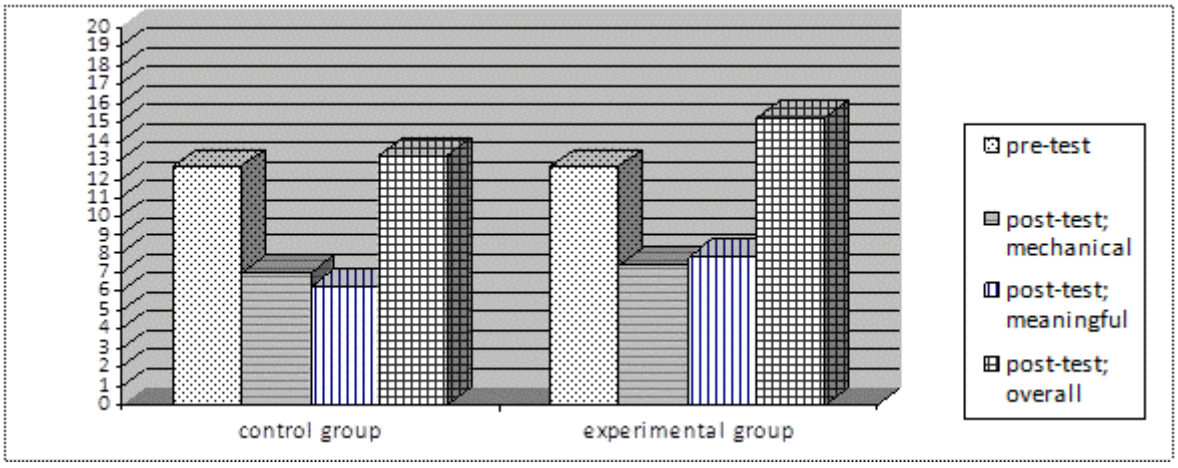

Figure 1. Participants' Performance in Pre-test, Post-test and its Subscales

To find any probable significant differences between the groups in the mechanical subscale, meaningful subscale, and the whole test, a series of t-tests were conducted. Before conducting t-tests, the assumption of normality was checked. In doing so, a series of one-sample Kolmogorov-Smirnov tests was used for each set of data individually. The results showed that all p-values were greater than .05 indicating that there was no reason to doubt that all sets of data were normally distributed. Therefore, it was safe to proceed with the t-test. Table 2 shows the results of Kolmogorov-Smirnov tests.

Table 1. One-Sample Kolmogorov-Smirnov Tests

		Con. Group Mech.	Con. Group Mean.	Con. Group Overall	Exp. Group Mech.	Exp. Group Mean.	Exp. Group Overall
No.		42	42	42	42	42	42
Normal Parameters[a, b]	Mean	6.97	6.28	13.26	7.38	7.80	15.19
	SD.	1.66	1.85	3.25	2.24	2.014	3.69
Kolmogorov-Smirnov Z		.882	.889	.891	1.25	1.29	1.17
Asymp. Sig. (2-tailed)		.418	.408	.405	.086	.072	.127

a. test distribution is normal

b. calculated from data

After checking the t-test assumptions, each set of data were plugged into an independent t-test. Levene's tests for equality of variances showed that the data for the mechanical part of the post-test were not of equal variances (p = .025; α = .05) while those for the meaningful part and the whole test were of equal variances (p = .34 and p = .22, respectively; α = .05).

The results of independent t-tests showed that there were no significant differences between the groups in their performance in the mechanical subscale of the post-test, t (75.58) = -.941, p = .35, α = .05. Therefore, it can be concluded that those learners who received mechanical drills could not outperform their partners who did not have such instruction. The case for the meaningful subscale was proven to be different because the t-test results revealed a statistically reliable difference between the mean scores of the groups in the meaningful subscale of the post-test, t (82) = -3.60, p = .001, α = .05. The experimental group that received meaningful drills performed significantly better than its counterparts in meaning-based test items. To answer the third question regarding the effect of substituting mechanical drills with meaningful drills on the learners' overall performance, another t-test was run. The results of the t-test for the whole test revealed a statistically significant difference between the groups t (82) = -2.53, p = .013, α = .05. It means that such a substitution can contribute to learners' achievement. Table 3 shows the results of all Levene's tests and t-tests.

Table 2. Results of Leven's Tests and T-tests

		Levene's test for equality of variances		t-test for equality of means		
		F	Sig.	t	df	Sig. (2-tailed)
Post-test; Mechanical Part	Equal variances assumed	5.185	.025	-.941	82	.350
	Equal variances not assumed			-.941	75.581	.350
Post-test; Meaningful Part	Equal variances assumed	.887	.349	-3.609	82	.001
	Equal variances not assumed			-3.609	81.420	.001
Post-test; The Whole Test	Equal variances assumed	1.510	.223	-2.538	82	.013
	Equal variances not assumed			-2.538	80.698	.013

Paired sample t-tests were also run to determine if each group performances in each of the subscales of the post-test were statistically different from each other. The results showed that the control group had significantly better performance in the mechanical subscale of the post-test, t (41) = 3.35, p = .002, α = .05. Such results give the answer to the fourth question. They signify that participants in the control group who received mechanical drills had significantly lower performance in the meaningful subscale of the test. To answer the last

question, another paired-samples t-test was run. The results intended for experimental group showed that the participants' performance on the meaningful subscale was not significantly different from their performance in the mechanical subscale, t (41) = -1.31, p = .19, α = .05. It indicates that working on the meaningful drills did not result in lower performance in the mechanical drills. Table 3 shows the results of both paired samples t-tests.

Table 4. Results of Paired Samples Test

		Paired Differences							
		95% Confidence Interval of the Difference							
		Mean	SD	SEM	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Mechanical-Meaningful: (Control Group)	.69	1.33	.20	.27	1.10	3.35	41	.002
Pair 2	Mechanical-Meaningful: (Experimental Group)	-.42	2.12	.32	-1.08	.23	-1.31	41	.197

5. Discussion

The purpose of this study was to investigate whether working on meaningful drills instead of mechanical drills can result in better grammar acquisition for high school freshmen. To achieve the intended goal, two independent groups, matched based on their performance on a grammar test, received two different types of material for instruction. The control group practiced and learnt the intended grammatical points through mechanical drills while the experimental group received meaningful drills for this purpose. The results revealed that the meaningful drills resulted in better achievement than the mechanical drills. It was also confirmed that those learners who received mechanical drills had significantly different performances in mechanical and meaningful subscales while for those who received meaningful drills no significant difference was observed in their performances in the test subscales.

The results of this study can be discussed from different perspectives. As the post-test results showed, the learners who were exposed to meaningful drills performed considerably better than the learners who received mechanical drills as instruction. The findings are in line with this theoretical notion that effective grammar instruction needs to be conducted in the context (Stern, 1980). Contextualizing grammar instruction is also supported by Celce-Murcia (1985) as she argues that grammar should never be taught as an end in itself but always with reference to meaning, social factors or discourse – or combination of these factors.

Interestingly, the non-significant higher level of achievement in mechanical post-test subscale in behalf of those who received meaningful drills as instruction is revealing. Participants in the experimental group who received no mechanical drills were expected to score less than the participants who received this type of drills. But these participants outperformed non-significantly their counterparts (M = 7.38 vs. M = 6.97). It implies that meaningful drills are in higher level of hierarchy which incorporate the mechanical drills. The significant

higher achievement in the meaningful subscale in behalf of the experimental group also supports this implication.

The answers to the last two questions based on the paired-samples t-test results also contribute to the priority of meaningful drills over mechanical drills. The participants in the control group who were instructed by mechanical drills had significantly lower performance in the meaningful subscale of the post-test. This finding also supports the notion of hierarchical order of drills because working on lower-leveled mechanical drills does not pave the way for the higher-leveled meaningful drills which resemble real life tasks and activities. The non-significant difference between the two post-test subscales in experimental group is also in favor of such hierarchical order because those participants who enjoyed meaningful drills had an acceptable level of attainment in the mechanical subscales. Although their gain score in the mechanical subscale was less than theirs in the meaningful counterpart (M = 7.38 vs. M = 7.80), the difference was not significant. It indicates that meaningful drills have the elements of mechanical drills plus an extra element.

Based on the obtained results, teachers of foreign languages are recommended to put aside the traditional mechanical drills in favor of the more innovative meaningful drills prevalent in the communicative approaches. Meaningful drills not only entail more focused attention in behalf of learners, but also arouse their motivation which seems to be of vital importance for foreign language learning. Furthermore, such simultaneous focus-on-form and focus-on-meaning is what runs in real world situations. If learners are supposed to be competent language users in real contexts to get their meaning across, they'd better start with those practices which are in line with the requirements of real situations. Writers of English textbooks are also recommended to modify the structure of the textbook for incorporating newer versions of drills and exercises. Such modification in materials can also prompt teachers to make use of meaningful drills. It is also suggested that test developers embrace both form and meaning in designing grammatical test items. Definitely, the washback effect of this new brand in testing facilitates the transition from meaningless grammar instruction to meaningful one in traditional systems.

6. Conclusion

The results of this study supported the fundamental assumption of focus-on-form instruction which proposes that both form and meaning must already be evident to the learners when they want to acquire the grammar of a second or foreign language. The results also showed that working with meaningful drills which focus simultaneously on form and meaning can lead to an acceptable level of performance in mechanical drills which require learners' focal rather than peripheral attention to form. This implies that meaningful drills are not of higher complexity and consequently more demanding in terms of cognitive processes, but of higher quality which make learners notice forms more effectively. Therefore, inserting meaning into linguistic forms is more likely to induce deeper cognitive processing and better acquisition of linguistic forms.

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