

# The effects of processing instruction on the acquisition of English progressive aspect

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*Este estudio tuvo como propósito investigar el efecto de la enseñanza explícita de la gramática sobre la adquisición. Específicamente, se estudió la relación entre la enseñanza basada en el procesamiento del input (VanPatten 1996) y la adquisición del aspecto progresivo en inglés como segunda lengua. Se llevó a cabo un estudio por medio de un diseño experimental para observar posibles diferencias en la manera de interpretar y producir una estructura gramatical antes y después de la enseñanza basada en el procesamiento, comparado con la enseñanza más tradicional. Los resultados mostraron que los estudiantes que usaron el material orientado al procesamiento fueron superiores tanto en la interpretación como en la producción de la estructura estudiada, sobre todo en lo que se refiere al contraste aspectual con la forma del presente simple.*

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<sup>1</sup> This study was part of the research carried out for the author's doctoral dissertation (*Procesamiento del lenguaje y adquisición de una segunda lengua. Un estudio de la adquisición de un punto gramatical en inglés por hispanohablantes*, UNAM 2000.) The author is grateful to Bill VanPatten for assistance with the data analysis presented in this article.

*This project was designed to study the effect of explicit grammar instruction on acquisition, specifically, the relationship between processing instruction (VanPatten 1996) and the acquisition of progressive aspect in English as a second language. An experimental study was carried out to determine any differences in the interpretation and production of a grammatical structure before and after processing instruction, compared to traditional instruction. The results showed that the students who carried out the input processing activities were superior both in interpretation and production, especially concerning the aspectual contrasts of the progressive form with the present simple.*

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## Background

This study concerns processing instruction and the acquisition of English as a second language by university students in Mexico whose native language is Spanish. It focuses on the acquisition of progressive aspect, generally referred to in ESL textbooks as “the present continuous tense”.

Problem areas related to the development of progressive aspect had previously been studied in this learning context. One study (Buck, 1994), using a grammatical judgment test and a cross-sectional design, showed that students acquired the correct form of the progressive over time but not with respect to use. On the judgment test students accepted as correct some sentences using the present simple form with a temporal adverb (e.g. *What do you do this semester? Jane writes her thesis this year*), and sentences using the progressive form with a frequency adverbial (e.g. *He's reading a good novel every week*). Similar results were obtained by Bardovi-Harlig and Bofman (1989) and Bardovi-Harlig (1992), with regard to the acquisition of verbal aspect: students acquired the correct form but not its use.

VanPatten's input processing model (1996) provides insight into this problem. According to the model, students may use strategies that enable them to process input for comprehension but inhibit acquisition. In the examples above, students could be processing only the temporal adverbs that portray a situation with temporal limits and disregarding the meaning of the verb morphology; the present simple form is associated with habitual meaning, making the above sentences generally unacceptable with the given verb forms. Interpreting meaning in English correctly involves connecting the temporary or habitual meaning with the progressive or simple verb form. In order for acquisition to take place, the meaning expressed by verb morphology must be processed, providing the necessary intake.

Aspectual contrasts constitute linguistic choices speakers have for describing an event, according to Smith (1983). An action in the present tense can be presented as repeated and habitual, with no endpoints, for example, *John smokes a pipe*, or it can be portrayed as in progress, on-going, as in *John is smoking a pipe*. In the latter example, the action is seen from within, and can be interpreted as having an endpoint. These meanings are expressed in English through contrasting verb endings, in this case, the present simple form and the present progressive. Thus, acquisition of progressive aspect involves the following form-meaning connections:

Form: auxiliary *be* in present form + *-ing* ending on the verb

Meaning: A temporary action, in progress, on-going, with endpoints, taking place at or around the moment of speaking, compatible with adverbial phrases such as *now, this week, this year, these days*; it contrasts with a habitual, repeated, permanent action expressed by the simple form of the verb, which is compatible with frequency adverbs such as *always, usually, every day*.

According to these form-meaning connections, in order to present an event a speaker chooses which aspectual meaning to convey and uses the linguistic form which will express the chosen meaning. Acquiring a language involves learning which forms to use to express certain meanings, and also what conventions are used in that language to interpret the meaning of different forms (Smith 1991; Taylor, 1993). A Spanish speaker, for example, can use the progressive form of the verb to express an on-going action, but it is also possible to use the present simple form of the verb. The listener is expected to infer the meaning pragmatically according to the context, as the simple form of the verb in Spanish has more possibilities of interpretation than in English; it can portray a temporary as well as a habitual action. Thus, pragmatic factors are fundamental for interpreting present-tense aspectual meanings in Spanish, while in English interpretation is based to a large extent on verb morphology (see Buck and Colombo 1996).

The inadequate processing strategies mentioned above are described by VanPatten (1996) under the rubric “processing input for meaning before processing it for form”, that includes “processing content words in the input before anything else”, that is, nouns, verbs, adjectives and adverbs (lexical morphemes rather than grammatical morphemes), as well as processing lexical items (e.g. temporal adverbs) before grammatical items (verb morphology), as in the examples given.

VanPatten (1996) proposes processing instruction as a means of altering strategies and thus making an impact on the developing linguistic system by providing correct intake. Processing instruction is based on a model which presents three processes involved in language acquisition. The first involves processing of the input and creation of intake, which consists of attention to form-meaning connections. In the second process these form-meaning pairs are incorporated into the developing linguistic system. These data can then be accessed for output in the third process. VanPatten’s model focuses on the first process: the way input is processed. Altering processing strategies which impede acquisition is the goal

of processing instruction. This type of instruction involves creating the correct form-meaning pairs, and does not include output.

In a study devised to assess the effects of instruction on interpretation and output (VanPatten and Cadierno 1993), the students who had received processing instruction were better on interpreting form-meaning connections than students who had received traditional instruction. The outstanding result came from the production test: the students who had received traditional practice in output performed no better than the students who had received processing instruction, even though these learners had no output practice. These results were taken to mean that processing instruction had altered the way input was processed and thus had an effect on the developing linguistic system. Learners could then access the intake accommodated in their linguistic system and thus produce the correct output.

Based on VanPatten's model, a study was designed to observe the effects of processing instruction on the acquisition problem outlined above, compared with the effects of traditional instruction. With a design similar to VanPatten and Cadierno (1993), the following research questions were posed:

1. Will there be any significant differences in how learners who receive processing instruction, traditional instruction, or no instruction on English progressive aspect interpret aspectual meaning in sentences in the present tense?
2. Will there be any significant differences in how learners who receive processing instruction, traditional instruction, or no instruction on English progressive aspect produce the progressive form?
3. If an effect for instruction is found, will it hold on a delayed posttest?

Motivation for the study stemmed from the results of the VanPatten and Cadierno study (1993), as well as similar studies (Cadierno 1995; Cheng 1995) which found processing instruction to be beneficial. The present study has some similarities and some differences. As in the VanPatten and Cadierno (1993) study, classroom second language learning was the focus of the present study. However, roles were reversed, as in the present study English constituted the target language while Spanish was the students' first language. Altering the lexical processing strategy was the objective of the experimental processing instruction in the present study, as with those carried out by Cadierno (1995) and Cheng (1995). The effect of processing instruction on the acquisition of progressive aspect provided a different linguistic

item to study in relation to processing instruction: verb morphology was present in Cadierno (1995)<sup>2</sup>, but with deictic time reference, not as a signal of aspectual meaning; aspectual differences were dealt with in Cheng (1995), with the copula in Spanish.

## Method

### *Participants*

Participants in the study were university students with different majors who were also enrolled in second-semester English at the CELE/UNAM. All language classes met every day for one hour. Second-semester groups were chosen to carry out the experiment at the beginning of the semester, because progressive aspect appears for the first time in the syllabus during the second semester course.

There were four second-semester groups available. One group was randomly selected for processing instruction, one for traditional instruction, and the remaining two were combined to form the control group. In order to participate, students had to take the pretest and be present on the two days that instruction took place in the instructional groups, which included the first posttest. They also had to take the second and third posttest. For the control group, students had to take the pretest and all three posttests. The processing group, after eliminating the students who had not been present for all the tests and instructional sessions, included 13 students, the traditional group 12, and the control group 16, for a total of 41 students.

### *Materials*

*Instructional materials.* Materials were designed for the two different types of instruction to be compared, processing and traditional. Each set of materials was designed for two forty-five minute class periods. Both sets included an inductive presentation that guided students by using examples. In both sets the same explicit chart showing present progressive forms was included, and both included an explicit statement of the present progressive form which was presented after several exercises. Approximately the same number of verbs was used in both types of materials. By contrast, the processing material provided practice in interpreting

2 Cadierno (1995) carried out a study of the effects of instruction on the interpretation and production of the preterit in Spanish.

form-meaning connections, while the traditional material provided practice in production of the present progressive.

The set of activities for the processing instruction was designed according to the guidelines suggested for structured input activities (see Lee & VanPatten 1995, Chapter 5 and VanPatten, 1996, Chapter 3). These include identifying the processing strategy that should be altered, keeping meaning in focus, moving from sentences to discourse, using both oral and written input, and having students do something with the input. Students choose options, say if they agree or disagree, etc., but the target structure is not produced in these activities. Processing instruction includes both referential and affective activities. Referential activities have only one correct answer based on a concrete reference of some kind, while some aspect of a student's personal life determines the responses in the affective activities. One referential activity used in the present study, for example, required students to associate a concrete reference, in this case a time adverbial, with the meaning expressed through verb morphology, which constitutes the processing strategy necessary for interpreting verbal aspect in English. This activity included both written and aural items. Another referential activity consisted of interpreting the temporal meaning expressed in a sentence by choosing the correct interpretation from options in Spanish, the students' native language. One of the affective activities used consisted of students checking the items which were relevant to their personal lives at the moment. In this way students practiced interpreting the temporal meaning of the progressive form, while focusing on the content. The processing materials included a total of ten activities, five referential and five affective. None of the activities required production of the present progressive, in keeping with the guidelines for instructional activities. (See Appendix A for examples of the activities used.)

The materials used for the traditional instruction were adapted from an ESL textbook that is widely-used in Mexico (Richards 1990). Units follow a sequence of presentation within the context of a dialogue, followed by an explicit grammar focus and controlled output practice. The unit which was used had the objective of practicing physical descriptions of people and what they are doing at the moment in order to introduce the present progressive. The set of activities consisted of visual images to motivate listening to and producing descriptions of on-going activities, a chart with examples of the present progressive affirmative, negative and interrogative forms, as well as sentence completion with correct forms of the present

progressive. In keeping with the focus of traditional materials, which generally introduce grammatical points in an isolated fashion and include little contrast with items taught previously, the activities concentrated on the correct production of the present progressive. It was assumed that students had already studied the present simple, since it is introduced from the beginning in all textbooks.

It is worth pausing here to consider the definition of traditional instruction. In VanPatten and Cadierno (1993) this type of instruction involved an explanation of a grammar point followed by mechanical, meaningful and communicative practices. In the present study, 'traditional instruction' consisted of a contextualized presentation of the grammar point, and an explicit focus on form followed by controlled production. Traditional instruction thus followed the sequence found in the majority of EFL textbooks. Mechanical drills were not present, and the contextualization given to the presentation provided a more meaningful focus. However, the controlled production practice paralleled the practice offered in the traditional instruction implemented in VanPatten and Cadierno (1993).

The experimental instruction took place at the beginning of the semester, before any focus on the grammar structure (present progressive) occurred. However, since longer-term effects were taken into consideration in this study, it is important to consider the type of instruction all groups received during the semester. The textbook used in second-semester classes at the time of the experimental instruction (Buck *et al.* 1989) had been designed for university students. It consisted basically of communicative activities and included an explicit grammar focus in which students were asked to look at examples and then state the rules for the correct forms of the present progressive and the present simple and to give the meanings associated with these forms. It also included an exercise in which students had to choose which form to use, as well as correct production, but it did not include processing instruction. For the present study, it is important to note that both experimental groups and also the control group received this type of instruction at some point after the experimental instruction had taken place.

*Assessment tasks.* A test was designed to measure interpretation of form-meaning connections as well as production of the correct form of the present progressive. The interpretation test consisted of ten items divided into two parts. One part was composed of five sentences, two with the verb in the progressive form and three in the simple form, in random order. The task consisted of an interpretation of each

sentence as having a temporary or a permanent action. For example, for a sentence such as *They're looking for a new house*, the students had to write T to indicate a temporary action, or P to indicate a permanent or habitual one. For this example, the correct answer would be T, since the verb morphology indicates an on-going action with temporal endpoints. The terms permanent and temporary were chosen based on their use in explanations given in English textbooks frequently used for grammar practice (Murphy 1987; Riggenbach and Samuda 1993; Shepherd et al., 1984), as well as theoretical descriptions (Andersen and Shirai 1994).

The other part of the interpretation test consisted of five sentences, three with the verb in progressive form and two with the simple form, which had to be completed with an adverbial. For example:

John drinks coffee.....every morning / this morning

This sentence should be completed with “every morning”, since this adverbial indicates a habitual, permanent action without endpoints, which coincides with the meaning expressed by the simple form of the verb. This part of the test was similar to the first activity of the material used in processing instruction.

The production test was designed to measure the ability to produce the correct form of the present progressive in a controlled written task. The test consisted of five sentences that students were asked to complete with the correct present progressive form of the verb in parentheses. Students thus had to produce the correct form of the auxiliary plus the verb ending. For example:

Susan \_\_\_\_\_ to Bill. (talk)

In this example, students should fill in the space with “is talking”.

Of the five sentences on the test, three were affirmative and two interrogative. The negative form was not included in the test.

Distracter items were also present in the test. These included questions about students' major, courses and teachers, and a completion task. The same tests were administered both as pretests and posttests.

### *Procedure*

All groups participated in the experiment during their regular class hours. The researcher carried out the instruction in both the processing and traditional groups,

and also administered the tests in these groups as well as in the control group. Since classes met one hour daily, two consecutive days were employed for the instruction. The regular classroom teachers were not present in the classroom on the days instruction took place, were not informed about the nature of the experiment, and were asked not to talk about the instruction with their students at any time during the semester, until after the third and last posttest.

The pretest was administered to all groups at the beginning of the semester, one week before the experimental instruction. Both processing and traditional instruction took place on two consecutive days for approximately 45 minutes each day, and instructional materials were collected at the end of each class period. On the second day the first posttest was administered following completion of instruction. The test took 10 minutes to complete. The second posttest was given one month after the first, and the third was given towards the end of the semester, three months after instruction. Only those students who had taken the pretest, participated in both days of instruction, which included the first posttest, and had also taken the second and third posttest were included in calculating the results. Throughout the semester students in all groups continued their classes with their regular classroom teachers. Approximately at the time of the second posttest, all students did exercises with the regular textbook that dealt with the use of the present progressive and present simple.

### *Scoring*

Tests were scored in the following way. On the interpretation test, each of the ten items was scored with one point for each correct answer, giving a possible total of ten points. For the production test, which consisted of five sentences that students had to complete with the correct form of the present progressive, a score of 0, 1, or 2 was given for each sentence, for a possible total of 10 points. Two points were given for having the correct auxiliary plus the *-ing* ending of the verb; one point was awarded if the verb had an ending of *-ing*, but an incorrect or absent auxiliary, or if there was a correct auxiliary but the verb had the simple form; and a score of 0 was given for a verb in simple form with no auxiliary, or the absence of any answer. In this way, intermediate development was taken into consideration. Spelling was not considered. No students were eliminated from the study on the basis of high scores on the pretest, unlike other studies.

## Results

Means are shown for the pretest and three posttests for interpretation and production in Table 1.

### *Interpretation test*

A repeated measures ANOVA revealed the following contrasts. There was a tendency toward a significant difference between the processing group and the control group on the first posttest,  $p=.03$ , but this tendency did not appear with the processing and traditional groups,  $p=.18$ , or with the traditional and control groups,  $p=.71$ . On the second posttest, there was also a tendency toward a significant difference between the processing and control groups,  $p=.09$ , but again not between the processing and traditional groups,  $p=.17$ , or between the traditional and control groups,  $p=.71$ . The third posttest, however, revealed a trend toward significant differences between the processing group and the traditional group,  $p=.08$ , and between the processing and control groups,  $p=.08$ , and this tendency did not appear between the traditional and control groups,  $p=.67$ . The processing group improved more than the other two groups and maintained higher scores over time.

Because of the fact that the traditional group also improved on interpretation with the experimental instruction, further analysis was carried out in order to explore these results. Considering the different ways that present-tense aspectual contrasts are presented in English and Spanish, the students' L1, as discussed in the background section of this paper, it was hypothesized that interpretation of the simple present items in English would be more problematic for Spanish speakers. In order to test this hypothesis, the items on the interpretation test were separated into sentences containing the verb in progressive form (5) and those with the verb in simple form (5). In an analysis which involved only the two instructional groups (the control group showed little change over the entire period), an unpaired  $t$  test was performed to compare the scores for both groups on the items containing a simple verb form after instruction. This analysis revealed that on these items the processing group showed higher scores on interpretation than the traditional group, and the difference was statistically significant ( $t=2.99$ ,  $p=.01$ ), while the observed value of  $t$  for the comparison of scores on items with the verb in progressive form was only 0.35. This finding reveals important differences in what the processing and the traditional groups acquired through instruction. Not only did the processing group improve in connecting the progressive form and its temporary meaning, but

also in recognizing that the simple or progressive verb forms express contrasting meanings. This can be taken to mean that the processing group performed significantly better than the traditional group on the interpretation of meaning signalled by verb morphology in the present tense, thus showing a change in processing strategies. We will return to this point in our discussion of the results.

Summarizing, both the processing and traditional groups improved on interpretation as shown on the first posttest. Further analysis revealed that both groups improved on interpretation of temporary events in sentences with the verb in progressive form, but the processing group improved more and at a significant level on interpretation of permanent or habitual events expressed by the verb in simple form. On the third posttest, three months after instruction, the processing group was better than both the traditional and control groups, and there was no difference between these last two.

### *Production test*

A repeated measures ANOVA was conducted on the scores from the production test, revealing the following results. On the first posttest the traditional group was significantly better than the control group,  $p=.00$ , while there were no significant differences between the processing and traditional groups,  $p=.11$ , or between the processing and control groups,  $p=.20$ . However, on the second posttest, there were no significant differences between processing and traditional,  $p=.96$ , between processing and control,  $p=.91$ , or between the traditional and control groups,  $p=.96$ . These results were maintained on the third posttest, with processing not significantly different from traditional,  $p=.42$ , not significantly different from control,  $p=.33$ , and there were no significant differences between the traditional and control groups,  $p=.96$ . The control group varied little in its scores throughout the different posttests, while the traditional group started low and improved considerably, dropping a bit on the second and third posttests. The processing group showed improvement on the first posttest, dropped a bit on the second, and on the third posttest improved even more, attaining a higher score than the traditional group on production.

Summarizing, both instructional groups improved on production, and both instructional groups were better than the control group. There was no significant difference between PI and TI on production of the correct form of the present-tense progressive. A summary of the results appears in Table 2.

### *Summary of results*

The results of the study provide the following answers to the original research questions:

1. There were differences between how learners who received processing, traditional and no instruction scored on the **interpretation** test after instruction. Both the processing group and the traditional group improved, but the processing group improved more on processing aspectual contrasts.
2. There was improvement on **production** in both instructional groups immediately after instruction, even though the processing group did not practice production. There were no significant differences between the processing and traditional groups, suggesting that the processing instruction contributed to changes in the learners' developing linguistic system by altering how input is processed, according to VanPatten's model. These results coincide with the VanPatten and Cadierno study (1993) discussed above.
3. Over time (three months), the processing group showed superior scores. The control group showed little change over time.

### **Discussion and conclusion**

The results obtained in this study point towards the benefits of processing instruction. In discussing the differential effects of the two types of instruction included in this study, it is important to consider the linguistic processing necessary for acquisition. Regarding the grammar point in question, progressive aspect, acquisition cannot be fully ascertained from items containing the progressive form alone. The real processing problem involves the meaning contrasts expressed through present-tense verb morphology. Recall that present-tense aspectual contrasts are expressed differently in English and Spanish, the students' L1. In Spanish, present tense sentences with the verb in the progressive form indicate on-going actions, and the simple form can be interpreted either as habitual or temporary, on-going (or even future), while in English the simple form is usually connected to a habitual meaning and the progressive form indicates a temporary, on-going action. In this study, the effect of processing instruction on the correct interpretation of aspectual

meanings as expressed by verb morphology was seen in the superior scores of the processing group in the interpretation of the meaning of sentences having the verb in the simple form. This can be taken to show a change in processing strategies that the traditional group did not achieve to any significant extent. The processing group improved more on interpreting meaningful aspectual contrasts, through processing verb morphology and its meaning. Correct linguistic processing, that is, making use of linguistic mechanisms and the meanings they convey, constitutes the intake necessary for acquisition.

The results differ from the VanPatten and Cadierno (1993) study in that the traditional group in this study also improved on the interpretation test, although not as much as the processing group. Concerning production, the results were similar to the original study in that no significant differences were found between the two instructional groups, even though there was no output practice in the processing instruction group. This outcome is similar to the findings in the Cheng study (1995). It also resembled that study in that some linguistic items masked differential effects<sup>3</sup>, and the separation of items revealed important differences between the effects produced by the two types of instruction.

In another vein, the delayed effects, shown on the third posttest administered three months after instruction, revealed the benefits of processing instruction over time. The processing group had superior scores compared to both the traditional and the control groups in interpretation and production, even though all groups were exposed to an explicit focus on the grammar points relevant to the study and to a communicative meaning-based focus during the semester. The results seem to suggest that a combination of processing instruction and a communicative course could be beneficial for acquisition. A promising avenue of research lies in the study of the effects of different combinations of explicit grammar focus and communicative practice, as proposed by Lightbown and Spada (1993).

One final comment gives voice to the students who participated in the study. As an example, one student perceived the benefits of processing instruction in the following manner (translated by the author): “These exercises help us see the difference between temporary or continuing actions by noticing the verb form...I

3 Cheng (1995) compared the effects of processing and traditional instruction on the interpretation and production of *ser* and *estar* in Spanish. Both groups improved on interpretation and production. A second analysis was carried out separating the items containing *ser* and the items with *estar*. On the items with *estar*, only the processing group showed a significant improvement. It was concluded that grouping all the items had masked differential effects of the two types of instruction.

can express what I really want to say. If I want to express something continuing indefinitely, to get my meaning across, I use the verb in the present simple form, and if I want to say that it is only right now, I use the progressive form.” This student’s perception seems to sum up the goals of processing instruction and its possible effects on acquisition.

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**Tables**

Table 1 Scores for interpretation and production tests

Interpretation

		Pretest		Post 1		Post 2		Post 3	
	n	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Proc.	13	5.92	2.40	8.85	1.68	8.62	.87	9.46	1.20
Trad.	12	7.00	2.86	7.50	3.06	7.83	1.75	7.83	2.95
Cont.	16	7.13	2.16	7.13	2.31	7.56	2.00	8.25	2.11

Production

	n	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Proc.	13	3.15	2.76	7.23	2.86	7.08	3.95	8.77	2.74
Trad.	12	.42	.79	8.75	1.55	7.00	3.54	7.92	2.47
Cont.	16	6.25	3.38	5.75	3.17	6.94	2.74	7.88	2.16

Table 2 Summary table for results on interpretation and production

	Pretest	Posttest 1	Posttest 2	Posttest 3
Interpretation	PI=TI=Control	PI > Control PI = TI TI = Control	PI > Control PI = TI TI = Control	PI > Control PI > TI TI = Control
Production	Control >PI>TI	PI = TI PI = Control TI > Control	PI=TI=Control	PI=TI=Control

## Appendix A

### Examples of Processing Instruction activities

#### *Example of a referential activity in PI*

Activity 1. Choose the time expression that corresponds to each of the following actions.

Example: Bob reads the newspaper.....every day / today

1. Bob plays basketball.....every day / this month
2. She eats at home.....every Friday / this week.
3. I'm taking a special course....every day / this semester
4. Sue runs a mile.....every morning / now
5. I'm reading a good book.....on the weekend / this week

Now, listen to the sentences. Write the time expression:

- a) every day or
- b) this month

Example: You hear "John is working on a project....."

You write: this month

Teacher's script:

1. Mary is working in the office.
2. John goes to the bank.
3. He's writing reports.
4. I'm teaching a course.
5. Susan walks to work.

Example of an affective activity in PI

Activity 2) Check the activities that apply to you this semester:

- I'm working.
- I'm taking four courses.
- I'm taking five courses.
- I'm dating someone.
- I'm taking karate lessons.
- I'm learning how to drive.
- I'm writing my thesis.