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Using online databases in the linguistics classroom: dealing with clause patterns

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In recent years, a corpus-driven approach to the analysis of language and the appropriateness of applying new technologies in language pedagogy have gained considerable attention. The integration of corpus applications in the language classroom enables both teachers and learners to reflect on genuine data with the assistance of computer technologies. This article aims at illustrating an application of an online corpus database for the teaching and learning of clause patterns. So as to serve this purpose, a continuous assessment task, especially designed for the undergraduate course *Gramàtica Descriptiva de l'Anglès II* (GDAII) "Descriptive Grammar of English II" will be presented, as well as a description of the questionnaire that was carried out among participants aimed at assessing their satisfaction towards the newly designed online database and the effectiveness of the task.

Keywords: valency pattern database; EFL higher education; student satisfaction questionnaire; interactive learning; corpus-based tools; open-source e-learning software platform

Introduction

In recent years, a corpus-driven approach to the analysis of language and the appropriateness of applying new technologies in language pedagogy have gained considerable attention (Aijmer, 2009; Aston, 2001; Bennet, 2010; Bernardini, 2002; Braun, Kohn, & Mukherjee, 2006; Conrad, 2005; Gavioli & Aston, 2001; Granger, 2003; Granger & Meunier, 2008; Greaves & Warren, 2007; Johns, 1986, 1988; Sinclair, 2004). The integration of corpus applications in the language classroom enables both teachers and learners to reflect on genuine data with the assistance of computer technologies.

Retrieving information from a corpus has proven to be a fundamental strategy for any language user, as the analysis of data provides them with new insights into language structure and use. According to Tsui (2004), EFL learners are not sufficiently exposed to the target language so as to be able to acquire that language proficiently on their own. Hence, the use of corpora in an EFL context contributes to

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filling this gap since it allows learners to focus on naturally-occurring utterances as well as highly-frequent combinations of words, rather than artificially created instances specifically chosen to be used in the language classroom.

However, much research on applied corpus linguistics and language pedagogy (Breyer, 2009, 2011; Laso & Giménez, 2007, 2008; Seidlhofer, 2002; Tribble, 2000; Varley, 2009) has pointed to the fact that, despite its pedagogical benefits, the application of corpus tools and resources in the classroom is fairly limited. Seidlhofer (2002) claimed that neither teachers nor learners are fully aware of the impact that these tools can have on the creation of classroom materials that trigger class discussions on the analysis of language behaviour.

Corpus-based materials enable students to have access to all kinds of linguistic production without the oversimplification provided by textbooks. These usually offer useful generalisations but cannot provide thorough explanations of the different ways in which language can be exploited, nor can they offer all possible patterns and all the specific lexical items that may be used in a particular context. Some features are more efficiently learned by considering them in context. As Gavioli and Aston (2001) pointed out, by observing genuine data, learners may come across patterns which are not commonly found in textbooks. To this purpose, the newly designed online database presented in this article aims to encourage learners to analyse the language and draw conclusions based on their observations; contributing, thus, to the development of their linguistic capacities and awareness of the importance of contextual features. Some of our students will become teachers of English; hence, should they need to use computer technologies to prepare their teaching materials, this can prove a very useful tool in their professional life as well.

Moreover, a corpus-driven approach in an EFL university context enables the instructor to implement different pedagogical resources, such as the use of a corpus-based online database, the observation of genuine instances of language and the inference of various lexical and morphological processes of special relevance in the language learning process. It goes without saying that the incorporation of these pedagogical tools aims at fostering a more significant learning experience. But, what do we mean by "significant learning"?

The answer to this question goes in line with the spirit of the Bologna reforms, which aim to promote the use of new technologies for teaching and self-learning processes. Within this framework, the use of new technologies changes the traditional role of both students and teachers. The former are involved in a more learner-focused environment which enables them to manage their own learning process (McClintock, 2000) and improves their critical thinking skills. Moreover, according to Faison (1996), teachers who use technology in their classrooms observe an increase in the motivation and enthusiasm of students. Regarding teachers, they abandon their traditional role and turn into facilitators or guides in the learning process (Ellington, Percival, & Race, 1993). Hence, the use of computer technologies for the design of curricular activities contributes to the reinforcement of a learner-focused process, since it allows students to have quick access to vast amounts of language in use, from which they can make their own linguistic inferences.

The task presented here served the purpose of applying the use of new technologies in the linguistics classroom and was aimed at introducing learners to the use of online databases. Likewise, this task also provided learners with a wide range of opportunities to discuss the various challenges that the identification of clause patterns poses for the language analyst. Insofar as this consciousness-raising task

integrated corpus applications in the linguistics classroom, it also brought about both online and face-to-face discussion, which was intended to enhance learners' sound understanding of the verbal complementation in English. By means of a student satisfaction questionnaire, learners were required to express their satisfaction of the designed task. The analysis of their responses revealed their opinion about the usefulness of the use of a database of clause patterns as part of the continuous assessment of the course in which this task was conducted.

Methodology

The use of a database in the English grammar classroom: task description

As part of the assessment of the course *Gramàtica Descriptiva de l'Anglès II* (GDAII) "Descriptive Grammar of English II", a database of clause patterns was developed. GDAII is a third-year course which deals with Verb Complementation, and is one of a series of three subjects that aim at describing the internal workings of English grammar. This advanced course in syntax is part of the degree in English Studies offered at the University of Barcelona. GDAII is mostly devoted to the analysis of English canonical sentence patterns, considering also structural and/or syntactic ambiguity and thus the different analyses a given sentence may present. The task, which was worth 15% of the final grade, was compulsory for all students, those under continuous assessment and those sitting a final exam as their only evaluation measure.

The pedagogical aims underlying the use of the task were the following: (1) to promote collaborative learning in the classroom and motivate students to exchange ideas and doubts about the way English verbs pattern, favouring their interaction so that debate was generated (i.e. students were asked to perform this task in groups of a maximum of five people for ease of interaction); (2) to make students aware of language complexity by means of analysing sentences in real context (e.g. novels, newspapers, or journals) going beyond the usually oversimplified examples used in the classroom for the sake of clarity; (3) to foster students' critical thinking by promoting their capacity of analysing real production complexities and (4) to finally help students improve their understanding of the inner mechanisms of English syntax in general.

The task consisted of two main steps: the use of the database created in Moodle (http://moodle.org/), an open source Virtual Learning Environment (VLE), and the drawing of tree diagrams. The former step involved the introduction of the use of new technologies in the English grammar classroom; the latter required the use of tree diagrams as a way of representing the underlying hierarchy of the elements in sentence structure. By graphically representing the relationships among the constituents in the sentences under analysis, students were asked to reflect on syntactic issues that might reveal their weak points in the understanding of the complexities that the basic clause patterns might present, especially when dealing with examples which have not been boiled down to basics. For instance, students may find it difficult when distinguishing between non-obligatory dependents and arguments (e.g. *He was drinking his wine alone* vs *He's drinking his troubles away*), or between (pre or post)modifiers of the same head or embedded (pre or post) modification (e.g. *I took the book of quotations by Penguin* vs *I took the book of quotations by Shakespeare*), or when telling sentence adjuncts and VP adjuncts apart (e.g. *She told him the truth sensibly*), or identifying structural ambiguity of any type

in a given sentence (e.g. *He gave her dog food*). Trees were presented and made use of only as tools that may not only help understand how language works but also reveal any difficulties students might come across when dealing with the specific data.

Detailed instructions on the task were given in the classroom and also on a document posted on Moodle containing the basic guidelines. Students were asked to choose any text (e.g. a novel, a newspaper article or a children's tale). From that text, they had to excerpt a total of eight sentences: six sentences which illustrated any of the clause patterns studied in class with the exception of Clausal Complements[1]; one sentence which exemplified structural ambiguity (e.g. *Doreen knocked on the green door with the gold knob*); finally, another sentence that allowed for dative alternation (e.g. *Pat gave Sam your phone number*; *Pat gave your phone number to Sam*). Students had to analyse these sentences and introduce the information in the database that had been previously created by the instructors in Moodle.

The database contained the following fields (see Figure 1): ''SENTENCE'', where students had to introduce the selected sentences to be analysed; ''PATTERN'' for the specification of the sentence clause pattern (i.e. the syntactic functions of the verbal complements); ''LEXEME'', for stating the main verb lemma; ''VALENCE'' for the grammatical category of the verbal complements (e.g. NP, PP, AdjP); ''FURTHER COMMENTS'' for the inclusion of comments on the sentence analysed if students found it necessary and ''GROUP NAME'' for the specification of the group number assigned to each student. Once all of the required information had been introduced in the database, students had to draw a

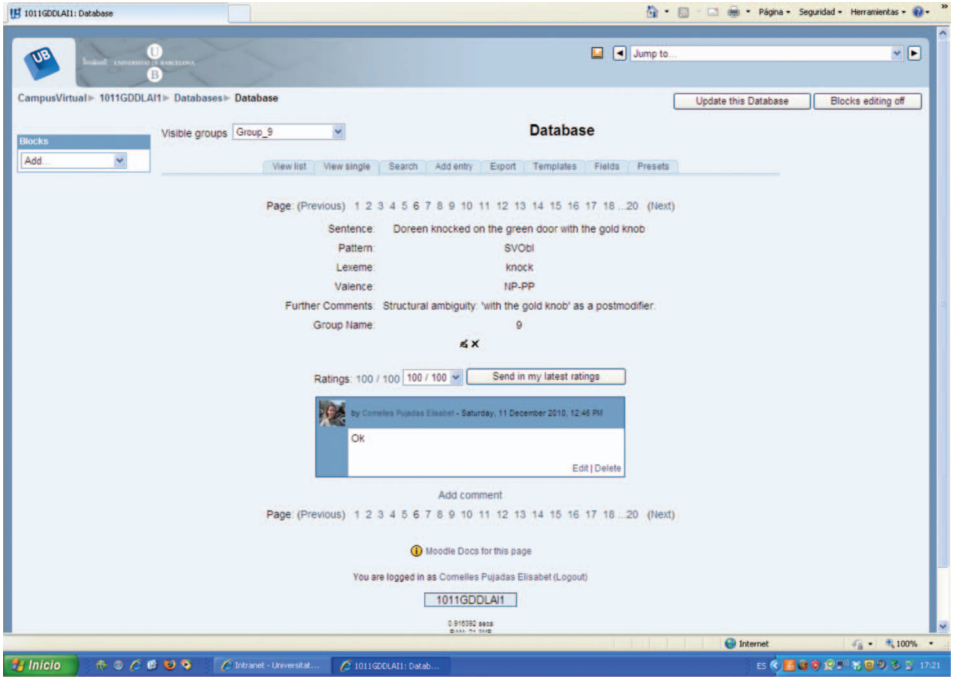

Figure 1. Screen capture of the database.

tree diagram of each sentence on a separate piece of article to graphically represent that information.

For the evaluation of the task students had to submit a first version of both the information introduced in the database and the hand-drawn tree diagrams. The teacher reviewed that first version and provided them with feedback including comments on the sentences which needed to be revised. They were also given a first rating for each of the sentences. The marks used were: 0 for sentences with major errors, 50 for sentences with minor errors and 100 for correct sentences. Students were expected to hand in a second version of the task once having amended the sentences that had not been correctly analysed. By interacting online with both their teammates and the teacher, students were able to share their knowledge, consult the teacher, get feedback and make all the necessary amendments until a final agreement was reached among the team members. The hard copy of the tree diagrams was also subject to revision after having received the teacher's feedback highlighting those parts that needed improvement. The final grade was calculated taking into account both the first version and the degree of improvement and progress shown in the second version.

Validation test

Upon task completion, a satisfaction questionnaire (see Appendix) was designed to model the relationship between the different levels of student satisfaction in relation to the database and four independent variables concerning age, academic year, status (i.e. full- or part-time students) and database familiarity.

The questionnaire contained 10 questions; nine of them were distributed into four groups: task effectiveness in combining theoretical and practical content; task promotion of student's competence in language analysis technologies and collaborative work; professors' involvement as Moodle facilitators and overall satisfaction. In addition, all students had the opportunity to comment on particularly positive or negative aspects of the task and make suggestions to improve its effectiveness by adding free text comments at the end of the survey questionnaire.

All students were invited to complete the survey via online and to grade their satisfaction using a five-point Likert scale (i.e. (1) very dissatisfied, (2) dissatisfied, (3) satisfied, (4) quite satisfied and (5) very satisfied) in the following issues:

- subject knowledge
- analytical and critical abilities
- language analysis techniques
- teacher's instructions
- task as effective link between theory and practice
- interactive and interpersonal skills
- practical task
- user-friendliness of Moodle databases
- teacher as Moodle facilitator
- overall satisfaction

The questionnaire was given to a sample of 93 students classified on the basis of their age, academic year, profile (i.e. full-time or part-time students) and familiarity with databases.

Regarding age, three groups corresponding to three different age ranges were established. The first group included students from 18 to 21 years of age (36 students, 38.7% of the sample). The second group included students from 22 to 25 years of age (33, 35.5% of the sample). A third group included students older than 25 years of age (24 students, 25.8% of the sample).

With respect to the students' academic year, three groups were established as well. They corresponded to three different years: second-year students (three students, 3.2% of the sample), third-year students (63 students, 67.7% of the sample) and fourth-year students (27 students, 29.0% of the sample).

Students were distributed into two groups according to their status: full-time students (66 students, 72.5% of the sample) and part-time students (25 students, 27.5% of the sample). The status of two other students was unknown, since they did not answer this question.

Finally, concerning students' previous familiarity with databases, students were classified into two groups: those with previous familiarity with online databases (32 students, 34.4% of the sample) and those who had no previous familiarity with them (61 students, 65.6% of the sample).

Results

Results show satisfaction across participants in the survey; in fact, the majority of student respondents seemed to be satisfied in general terms with the task and its effectiveness to link theory and practice, regardless of age, academic year, status and database familiarity.

Descriptive data

From the point of view of descriptive data, students rated each of the items in the questionnaire with a relatively high score overall, given that the lowest mean score obtained was 3.45 out of 5 (i.e. for items 3 and 6, which referred to students' use of language analysis techniques and the fostering of interpersonal and interactive skills, respectively). The rest of the mean scores obtained in the questionnaire are higher than 3.5 in all cases. Out of the 10 questions that students answered, the ones connected to the teacher's role (items 4 and 9) were rated with especially high scores by most participants, since the mean scores for those two questions stand out from the rest as being higher than 4 out of 5. The descriptive data obtained from all the participants for each of the items in the questionnaire is summarised in Table 1 and the distribution of the means of all the obtained answers for each question is shown in Figure 2 below.

Students' profiles and overall satisfaction

One-way ANOVAs were carried out to test both the relationship between the overall students' satisfaction for each of the items in the questionnaire and a set of independent variables which were derived from the different students' profiles obtained from the questionnaire. The selected independent variables included students' age, their academic year and their status as either full-time or part-time students as well as their previous familiarity with online databases or lack thereof.

Table 1. Descriptive data from all the participants in the questionnaire.

Questionnaire item	Mean	Standard deviation	Minimum	Maximum
Subject knowledge	3.70	0.894	1	5
Analytical & critical abilities	3.53	0.928	1	5
Using language analysis techniques	3.45	0.927	1	5
Teacher's instructions	4.30	0.953	1	5
Task linking theory & practice	3.78	0.965	1	5
Interactive & interpersonal skills	3.45	1.175	1	5
Practical task	3.53	1.049	1	5
Userfriendliness of Moodle	3.52	1.167	1	5
Teacher as a Moodle facilitator	4.12	0.832	2	5
Overall satisfaction	3.73	0.768	1	5

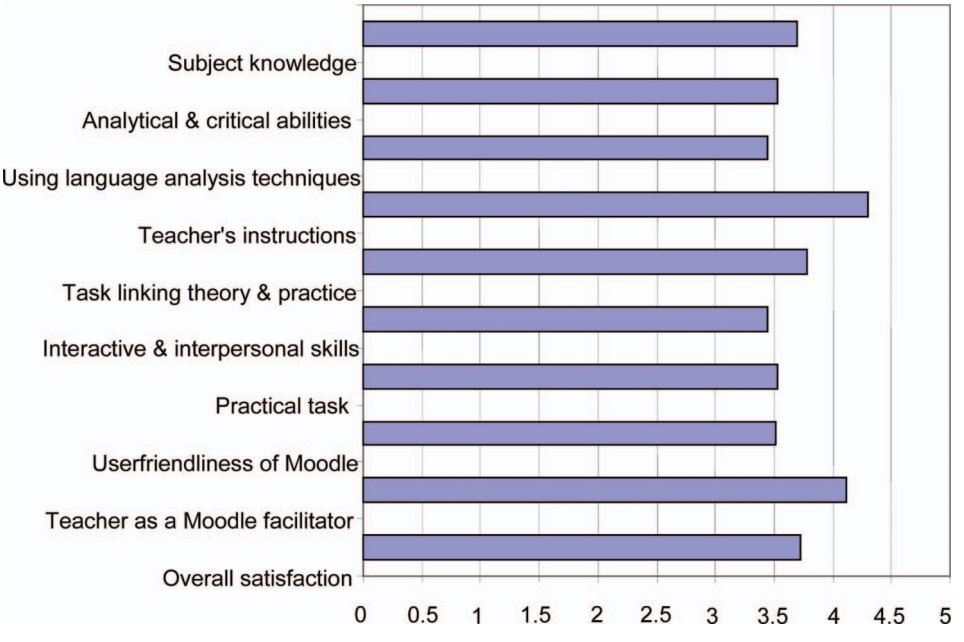

Figure 2. Distribution of the means from the scores obtained.

Regarding students' previous familiarity with databases, significant differences were found between the two groups for the test item about students' perception of the task as a link between theory and practice (item 5), $F(1,91) = 4.41$, $p < 0.05$, as well as for the test item connected to students' overall satisfaction (item 10), $F(1,91) = 4.59$, $p < 0.05$. The main effect of the difference was due to the fact that higher scores were obtained from students who had no previous familiarity than from those who did. These results are shown in Figure 3.

Significant differences in the same direction were also found for those test items which were connected to the teacher's performance. Those included students' evaluation of the teacher's instructions (item 4), $F(1,91) = 12.656$, $p < 0.01$, as well as students' perception of the teacher as a Moodle facilitator (item 9), $F(1,91) = 5.575$,

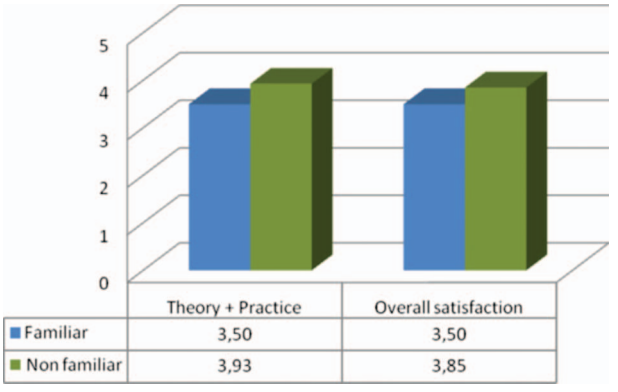

Figure 3. Students' satisfaction and previous familiarity with databases.

$p < 0.05$. As in previous cases, students with no previous familiarity showed an advantage over familiarised students.

Similarly, one-way ANOVAs were used to measure the relationship between students' overall satisfaction and the rest of independent variables concerning age, academic year and students' full- or part-time status, which were described in Figure 2. Nevertheless, no major differences were found among the groups which were established for each of these variables.

Thus, on the basis of the evidence provided by the statistical tools and the results obtained, we can claim that students showed a high degree of satisfaction with the use of databases. Such satisfaction is not necessarily dependent on students' age, academic year or status as either full- or part-time students. However, the tool proved to be useful and rated significantly more satisfactorily in those cases where there was no previous familiarity with databases.

Discussion and conclusion

The main aim of this research was to ascertain the effectiveness of the use of a database of clause patterns in the English grammar classroom. To this end, a satisfaction questionnaire was distributed among students upon completion of the task. The analysis of the questionnaire showed that the designed task catered for all student profiles, regardless of their age, academic year, status and previous (un)familiarity with the use of databases.

This finding is compatible with the new requirements derived from the Bologna agreements and the processes of convergence in the European Higher Education Area (EHEA). Within this framework, the development of learner-focused tasks, the implementation of new teaching methods and the use of new technologies have been emphasised, given that they seem to favour the students' involvement in their learning process. To this respect, results from our study indicate that the implementation of a database of clause patterns has promoted students' autonomous learning as well as the use of new technologies in content-based courses, such as GDAII, in which they had been scarcely used so far.

The questionnaire also revealed that students' previous familiarity with databases does not seem to play an important role either in their overall satisfaction or their

perception of the task as a useful device to link theory and practice. It is important to point out that the task itself did not require any previous knowledge of the use of databases, which again reinforces the fact that the task proved to be suitable to different profiles of students, irrespective of their command of databases. In fact, students with less experience on the use of databases proved to be more satisfied. This may be due to the fact that these students may have had fewer other experiences to compare this task to, which emphasises the innovative aspect of this learning platform.

As for the task contributing to developing subject contents, we believe that its utility is twofold as it made learners (1) face raw material from a corpus, since they needed to apply the concepts dealt with in class for the identification of clause patterns and (2) apply their subject knowledge by using the appropriate terminology so as to fill in the different fields of the database.

The use of the database has proven to be very useful as a pedagogical tool, since it triggered group discussion. The ''Add comment'' option (see Figure 4 below) enabled both teachers and students to comment on controversial examples and provide alternative analyses. The skills developed here relate to collaborative work, and emphasise the effectiveness of the task as a tool that links theory and practice in the English grammar classroom.

Moreover, as confirmed by the statistical analysis of the student's satisfaction questionnaire, this teaching experience has stressed the role of the teacher as a trainer that facilitates the task. In this context, and in accordance with the Bologna requirements, teachers, as group monitors, abandon their traditional role to become guides who provide the necessary conditions for a successful learning process.

Figure 4. Screen capture of student–teacher online interaction.

As this was the first time this task was implemented in GDAII, a follow-up of the experience is on our agenda. So as to favour the students' involvement and their exchange of views, smaller groups will be set up in future editions. In addition, after exploring several syntactic parsers, participants will be asked to draw tree diagrams using the *phpsyntaxtree* (http://www.ironcreek.net/phpsyntaxtree), a tool that allows the user to generate graphical syntax trees from labelled bracket notation phrases. This association will contribute not only to developing the database but also to making students more aware of the underlying hierarchy of the constituents of a sentence by realising how bracket notations relate to the tree diagrams. Similarly, it will be worth exploring if the use of online databases with the addition of tree diagrams contributes to enhancing students' performance and plays any role in helping students attain the pedagogical aims of GDAII.

Regarding the questionnaire, it seems worth including a fifth independent variable on students' preferences in future editions. This variable would classify students into those who prefer literature and those who have a preference for linguistic studies, which may be significant not only to assess students' overall satisfaction but also their degree of involvement in the accomplishment of the task. This can be easily measured by adding a further item (i.e. *involvement*) to the questionnaire.

Having proved to promote self-learning and suit all students' profiles, as well as meet their expectations, the task revealed itself as highly effective as an interactive learning tool.

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Note

1. This type of complementation was excluded since it is only covered at the end of the course; plus, it proves more difficult to find sentences which are free of clausal arguments, making the task more challenging.

Notes on contributors

Elisabet Comelles Pujadas is a part-time teacher in the Department of English and German Philology at the University of Barcelona. She graduated in English Philology and Linguistics at the University of Barcelona and she is currently working on her dissertation on Machine Translation Evaluation. Her research interests include both corpus linguistics and natural language processing. She has worked in several language technology companies and was a member of the TALP group (Center for Language and Speech Technologies and Applications – Technical University of Catalonia) for six years, where she focused on machine translation, natural language generation and question answering.

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Appendix. Student satisfaction questionnaire.

About you

Gender	☐ *Male*		☐ *Female*		
Age	☐ *18–21*	☐ *22–25*	☐ *26–35*	☐ *36–50*	☐ *50+*
What level of the course are you currently studying?	☐ *1*	☐ *2*	☐ *3*	☐ *4*	
Are you studying	☐ *Full-time*		☐ *Part-time*		

LEARNING AND TEACHING	**Satisfied**				**Dissatisfied**
The task has developed your subject knowledge	1	2	3	4	5
Your confidence to learn has been enhanced	1	2	3	4	5
The task has helped you to develop your problem-solving skills	1	2	3	4	5
The task has enhanced your analytical and critical abilities	1	2	3	4	5
The task promoted your competence in using language analysis technologies	1	2	3	4	5
The task met the expectations you had prior to your performance	1	2	3	4	5
The task closely linked theory and practice	1	2	3	4	5
This type of tasks provide you with Up-to-date knowledge and skills needed by employers	1	2	3	4	5
The task gave you sufficient opportunities to learn an interact with others(peers) and develop your interpersonal skills	1	2	3	4	5
I feel that the content of the task was sufficiently interesting from a practical viewpoint.	1	2	3	4	5
I feel that the professor's explanation of the environment's operating rules was appropriate.	1	2	3	4	5

USABILITY	**Satisfied**				**Dissatisfied**
I think that I would like to do tasks in Moodle frequently	1	2	3	4	5
I found Moodle activities unnecessarily complex	1	2	3	4	5
I thought Moodle was easy to use.	1	2	3	4	5
The professor facilitated my understanding of platform-related technical issues.	1	2	3	4	5
I thought there was too much inconsistency in this system.	1	2	3	4	5
I felt very confident using Moodle resources	1	2	3	4	5
I needed to learn a lot of things before I could get going in using Moodle resources.	1	2	3	4	5
The information (such as online-help, on-screen messages, and other documentation) provided with this system was clear.	1	2	3	4	5