READING, ANNOTATION AND PRODUCTION OF AN ARGUMENTATIVE TEXT WRITTEN BY HIGHER EDUCATION STUDENTS IN A BLENDED-LEARNING SITUATION

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Abstract. Argumentation has been acknowledged as increasingly important for both academic writing and on-line communication. This study combines some of the main results and conclusions of two different, yet complementary, research studies. Here, we aim at illustrating the contribution of the use of a platform (SCALE) conceived for the development of argumentative skills for Higher Education students in argumentative and negotiation on-line interactions and as well as written productions (opinion articles and taking notes). For the compilation and discussion of the results, we analyzed the students' on-line argumentative diagrams and interactions, as well as their individual written productions. We also analyzed the questionnaires they answered before and after the experiment, regarding their attitudes towards Information Communication Technologies (ICT), reading, annotation and writing texts, including argumentative texts. Results suggest differences related to the type of interaction in free versus structured chats. The interactions are richer and more profound in the free chats. The annotation and the graphic representation of argumentative maps, in diagrams, seem to provide evidence of the students' learning, especially as far as the argumentative structure is concerned. Also, students' performance was more productive in the on-line environments in comparison with the off-line situations.

Key words: argumentation - negotiation - e-learning - interaction - information organization and selection – note-taking (NT) - higher education (HE)

Chinese
[Translation Shek Kam Tse]

混合性学习环境中高等教育学生议论文写作的阅读、注释与表达

摘要：议论文在学术写作和在线交流中越来越重要已得到普遍承认。本研究结合两项互不相同又互为补充的研究的一些主要结果和结论，旨在举例说明发展高等教育学生在议论文写作，在线交流讨论，以及写作表达（发表意见的论文和记笔记）中的议论技巧所使用的平台（SCALE的贡献。

为汇编和讨论结果，文章分析了学生在线议论的图表，对话，以及个人写作表达；并分析了学生在实验前后的有关对信息交流技术（ICT）、阅读、注释和写作课文包括议论文的态度的问卷的回答。结果显示出有关自由与固定结构的交谈类型间的差异，自由交谈的交流更加丰富深入。注释和议论图示表达，图解方式，似乎提供了学生学习的迹象，尤其就议论结构而言。同样，学生在在线环境下相比离线情况表现出更有效的表达能力。

关键词：议论-协商-E学习-交流-信息组织与选择-做笔记（NT）-高等教育

Dutch
[Translation Tanja Janssen]
TITEL. Lezen, annoteren en produceren van een argumentatieve tekst door studenten in het hoger onderwijs in een gemengde leersituatie
SAMENVATTING. Erkend wordt dat argumentatie van toenemend belang is zowel voor academisch schrijven als voor on-line communiceren. Dit onderzoek combineert enkele hoofdresultaten en conclusies van twee verschillende, complementaire onderzoeken. In dit artikel willen we de bijdrage illustreren van het gebruik van een platform (SCALE), bedacht voor de ontwikkeling van argumentatieve vaardigheden voor studenten in het hoger onderwijs. Het gaat daarbij zowel om argumentatieve on-line interacties als geschreven producten (opiniërende artikelen en aantekeningen).
Voor het verzamelen en bespreken van de resultaten analyseerden wij de on-line argumentatieve diagrammen en interacties, en hun individuele geschreven teksten. We analyseerden ook de vragenlijsten die zij voor en na het experiment invulden over hun attitudes ten opzichte van ICT, en het lezen, annoteren en schrijven van teksten, waaronder argumentatieve teksten.
Resultaten wijzen op verschillen in het type interactie tussen vrije en gestructureerde chats. In de vrije chats zijn de interacties rijker en dieper. Het annoteren en de grafische representatie van argumentatieve schema's, in diagrammen, duiden op het leren door studenten, in het bijzonder met betrekking tot argumentatiestructuur. Studenten waren ook productiever in de on-line omgevingen dan in de off-line situaties.
TREFWOORDEN: argumentatie, onderhandelen, e-learning, interactie, organiseren en selecteren van informatie, annoteren, hoger onderwijs

Finnish
[Translation Katri Sarmavuori]
TITTELI. ARGUMENTATIIVISEN TEKSTIN LUKEMINEN, MUISTIINPANOT JA TUOTTA-MINEN KORKEA-ASTEEN OPISKELIJOIDEN KIRJOITUKSESSA SULAUTUVAN OPETUK-SEN TILANTEESSA
ABSTRAKTI. Argumentointi on tunnustettu yhä tärkeämmäksi sekä akateemisessa että verkkokom-munikaatiossa. Tämä tutkimus yhdistää joitakin päätuloksia kahdesta eri toisiaan täydentävästä tut-kimuksesta. Tässä tarkoituksemme on havainnollistaa ohjelman (SCALE) käyttöä, joka tähtäsi kor-kea-asteen opiskelijoiden argumentoivien taitojen kehitykseen ja neuvotteluun verkkokeskustelussa sekä kirjoitustuotoksissa (mielipideartikkelin ja muistiinpanot).
Tulosten keräämiseksi ja niistä keskustelemiseksi analysoimme opiskelijoiden argumentoivat dia-grammit ja interaktiot verkossa sekä heidän yksilölliset kirjalliset produktionsa. Me myös analy-soimme kyselylomakkeet, joihin he vastasivat ennen ja jälkeen koetta selvittäen heidän asenteensa informaatioteknologiaan (ICT), lukemiseen, muistiinpanoihin ja kirjoitettuihin teksteihin sekä argu-

mentointiin. Tulokset osoittavat eroja vapaan ja strukturoidun interaktion välillä. Interaktio on run-saampaa ja syvällisempää vapaassa keskustelussa. Muistiinpanot ja argumentatiivisten karttojen graafiset esitykset diagrammeina tarjoavat näytettä opiskelijoiden oppimisesta, varsinkin argumen-toivasta rakenteesta. Myös opiskelijoiden suoritus oli tuottavampi verkkoympäristössä kuin sen ulko-puolella.
AVAINSANAT: argumentointi, neuvottelu, etäoppiminen, interaktio, informaation järjestely ja va-linta, muistiinpnot, korkea-asteinen opiskelu.

French
[Translation Laurence Pasa]

TITRE. LECTURE, ANNOTATION ET PRODUCTION D'UN TEXTE ARGUMENTATIF ÉCRIT PAR DES ÉTUDIANTS DANS L'ENSEIGNEMENT SUPÉRIEUR DANS UNE SITUATION D'APPRENTISSAGE PLURIELLE
RÉSUMÉ. Il est admis que l'argumentation revêt de plus en plus d'importance tant pour l'écriture universitaire que pour la communication en ligne. Cette étude combine les principaux résultats et les conclusions de deux recherches, différentes mais néanmoins complémentaires. Ici, nous présentons l'utilisation d'une plateforme conçue pour favoriser le développement des compétences argumentati-ves des étudiants de l'enseignement supérieur dans le cadre d'interactions en ligne visant l'argumentation et la négociation, et de productions écrites (articles d'opinion et prises de notes).
Pour les besoins de la présentation et de la discussion des résultats, nous avons analysé les schémas argumentatifs et les interactions en ligne des étudiants, ainsi que leurs productions écrites individuel-les. Nous avons également analysé leurs réponses à des questionnaires, remplis avant et après l'expérience, sur leurs attitudes envers les Technologies de l'Information et de la Communication (TIC), la lecture, l'annotation et l'écriture de textes, dont les textes argumentatifs.
Les résultats montrent des différences liées au type d'interaction dans des chats libres ou structurés. Les interactions sont plus riches et plus profondes dans les chats libres. Les annotations et les repré-sentations graphiques des discussions semblent témoigner de l'apprentissage par les étudiants, en particulier en ce qui concerne la structure argumentative. Ainsi, la performance des étudiants dans les environnements en ligne est supérieure à celle de situations hors ligne.
MOTS-CLÉS :argumentation, négociation, apprentissage en ligne, interaction, organisation et sélec-tion de l'information, prise de note, enseignement supérieur

German
[Translation Ulrike Bohle]

TITEL. Lesen, Notizen machen und Produktion eines argumentativen Textes, verfasst durch Schüler der High School in einer blended-learning Situation
ZUSAMMENFASSUNG. Argumentieren gewinnt zunehmend an Bedeutung für akademisches Schreiben und online-Kommunikation. Diese Studie kombiniert einige der wichtigsten Resultate und Schlussfolgerungen aus zwei verschiedenen, komplementären Untersuchungen. Wir möchten den Beitrag des Einsatzes einer Plattform (SCALE) illustrieren, die für die Entwicklung argumentativer Fertigkeiten von Sekundarschülern in online-Argumentationen und -Verhandlungen wie auch in schriftlichen Produktionen (Stellungnahmen und Notizen) entwickelt wurde.
Für die Sammlung und Diskussion der Ergebnisse haben wir argumentative online-Diagramme und -Interaktionen wie auch individuelle schriftliche Produktionen von Sekundarschülern analysiert. Außerdem analysierten wir die Antworten zu einem Fragebogen, den sie vor und nach dem Experiment ausfüllten und der ihre Einstellungen zu Informations- und Kommunikationstechnologien abfragte sowie zum Lesen, Texte Annotieren sowie Texte (einschließlich argumentativer Texte) Schreiben. Die Ergebnisse deuten auf Unterschiede je nach Interaktionstyp im freien bzw. strukturierten Chat hin. Im freien Chat sind die Interaktionen reichhaltiger und tiefer. Die Notizen und graphischen Repräsentationen argumentativer Landkarten in Diagrammen geben Hinweise auf das Lernen der Schüler, insbesondere hinsichtlich der argumentativen Struktur. Außerdem war die Performanz in der online-Umgebung im Vergleich zur offline-Umgebung produktiver.
SCHLAGWÖRTER: Argumentation, Verhandlung, e-learning, Interaktion, Informationsorganisation und -auswahl, Notizenmachen, higher education

Greek

[Translation Panatoya Papoulia Tzelepi]

Τίτλος. Ανάγνωση, σχολιασμός και παραγωγή επιχειρηματολογικού κειμένου από φοιτητές Ανωτέρας Εκπαίδευσης σε περίσταση μικτής μάθησης

Περίληψη. Η επιχειρηματολογία έχει αναγνωριστεί ως σημαντική για την παραγωγή λόγου σε ακαδημαϊκό περιβάλλον και για την επικοινωνία on-line. Αυτή η μελέτη συνδυάζει μερικά από τα κύρια αποτελέσματα και τα συμπεράσματα από δύο διαφορετικές αλλά συμπληρωματικές ερευνητικές μελέτες. Εδώ, στοχεύουμε να δείξουμε τη συνεισφορά της χρήσης μιας πλατφόρμας (SCALE) που κατασκευάστηκε για την ανάπτυξη επιχειρηματολογικών δεξιοτήτων φοιτητών Ανώτερης Εκπαίδευσης σε ηλεκτρονικές αλληλεπιδράσεις επιχειρηματολογικές και διαπραγματευτικές, καθώς και στην γραπτή παραγωγή τους (άρθρο έκφρασης γνώμης και σημειώσεις από ακρόαση η μελέτη). Για τη σύνθεση και τη συζήτηση των αποτελεσμάτων αναλύσαμε τα διαγράμματα και τις ηλεκτρονικές αλληλεπιδράσεις των φοιτητών, καθώς και την γραπτή τους παραγωγή. Αναλύσαμε επίσης τα ερωτηματολόγια που απάντησαν πριν και μετά το πείραμα εις ό,τι αφορά την στάση τους στην Τεχνολογία της Πληροφορίας και Επικοινωνίας, την ανάγνωση, το σχολιασμό και τη συγγραφή κειμένων, περιλαμβανομένου και του επιχειρηματολογικού.

Τα αποτελέσματα φανερώνουν διαφορές σχετικές με τον τύπο της αλληλεπίδρασης με ελεύθερη ή δομημένη συζήτηση. Οι επαφές αλληλεπίδρασης είναι πλουσιότερες και βαθύτερες στην ελεύθερη συζήτηση. Ο σχολιασμός και οι γραφικές αναπαραστάσεις των χαρτών επιχειρηματολογίας σε διαγράμματα φαίνεται ότι αποδεικνύουν μάθηση των φοιτητών ιδιαίτερα ως προς την επιχειρηματολογική δομή. Επίσης η παραγωγή τους on-line ήταν μεγαλύτερη από την παραγωγή off-line.

Λέξεις κλειδιά: επιχειρηματολογία – διαπραγμάτευση - ηλεκτρονική μάθηση - αλληλεπίδραση οργάνωση και επιλογή πληροφορίας, σημειώσεις - Ανωτέρα Εκπαίδευση

Italian

[Translation Manuela Delfino, Francesco Caviglia]

TITOLO. Lettura, annotazione e produzione di testi argomentativi scritti da studenti universitari in situazioni di blended-learning (didattica in presenza e a distanza)

SOMMARIO. L'argomentazione è ritenuta sempre più importante sia negli scritti accademici che nella comunicazione online. Questo studio combina alcuni dei risultati principali e le conclusioni di due ricerche distinte, ma complementari. Il nostro obiettivo è di illustrare il contributo sull'uso di una piattaforma (SCALE) pensata per lo sviluppo di abilità argomentative di studenti universitari e utilizzabile sia nelle interazioni online basate su argomentazione e negoziazione, sia nella produzione scritta (saggi e appunti).

Per la compilazione e la discussione dei risultati, abbiamo analizzato sia i diagrammi e le interazioni argomentative online degli studenti,sia le loro produzioni scritte individuali. Abbiamo anche analizzato i questionari compilati dagli studenti prima e dopo l'esperimento, a proposito dei loro atteggiamenti verso le Tecnologie dell'Informazione e della Comunicazione (TIC), la lettura, l'annotazione e la scrittura di testi, compresi i testi argomentativi.

I risultati mostrano delle differenze connesse con il tipo di interazione in chat libere vs. chat strutturate. Le interazioni sono più ricche e più profonde nelle chat libere. L'annotazione e la rappresentazione grafica delle mappe argomentative, in diagrammi, sembra fornire una prova dell'apprendimento degli studenti, soprattutto per quanto riguarda la struttura argomentativa. Inoltre, le prestazioni degli studenti sono state più produttive negli ambienti di interazione online rispetto alle situazioni offline.

PAROLE CHAIVE: argomentazione - negoziazione - e-learning - interazione – organizzazione e selezione dell'informazione – presa di appunti - formazione universitaria

Polish

[Translation Elżbieta Awramiuk]

TITUŁ. Czytanie, notowanie i tworzenie pisanego tekstu argumentacyjnego przez studentów szkół wyższych w różnych sytuacjach uczenia się

STRESZCZENIE. Umiejętność argumentowania postrzegana jest jako coraz ważniejsza zarówno w pisaniu akademickim, jak i w komunikacji on-line. Niniejszy artykuł przedstawia kilka głównych rezultatów i wniosków dwóch różnych, ale uzupełniających się badań. Naszym celem jest przedstawienie znaczenia użycia platformy (SCALE) stworzonej z myślą o rozwijaniu umiejętności argumentacyjnych studentów szkoły wyższej w argumentacyjnej i negocjacyjnej interakcji on-line oraz umiejętności tworzenia tekstu pisanego (wyrażanie opinii i robienie notatek).

W celu przedstawienia i przedyskutowania wyników analizujemy studenckie argumentacyjne diagramy i interakcje on-line oraz ich indywidualne prace pisane. Analizujemy także kwestionariusze, na które odpowiadali przed eksperymentem i po nim, dotyczące ich postaw wobec Technologii Komunikacji Informatycznej (ICT), czytania, notowania i pisania tekstów, włączając w to także teksty argumentacyjne. Rezultaty sugerują różnice powiązane z typem interakcji w czacie swobodnym lub ustrukturyzowanym. Interakcje są bogatsze i głębsze w czacie swobodnym. Adnotacje i graficzne reprezentacje map argumentacyjnych, diagramów, wydają się potwierdzać proces uczenia się studentów, szczególnie jeśli idzie o strukturę argumentacji. Także rezultaty pracy studentów były bardziej satysfakcjonujące w środowisku on-line w porównaniu z sytuacjami off-line.
SLOWA-KLUCZE: argumentowanie; negocjowanie; e-learning; interakcja; organizacja i selekcja informacji; notowanie; szkoła wyższa

Portuguese
[Translation Sara Leite]
TITULO. LEITURA, ANOTAÇÃO E PRODUÇÃO DE UM TEXTO ARGUMENTATIVO POR ALUNOS DO ENSINO SUPERIOR EM SITUAÇÃO DE *BLENDED LEARNING*
RESUMO. A importância da argumentação na escrita académica e na comunicação *on-line* tem sido cada vez mais reconhecida. Este estudo concilia alguns dos principais resultados e conclusões de dois estudos distintos, mas complementares. O nosso objectivo é ilustrar a contribuição do uso de uma plataforma (SCALE) concebida para desenvolver as competências argumentativas de alunos do ensino superior em interacções de negociação e argumentação *on-line*, bem como em produções escritas (artigos de opinião e anotações). Para a compilação e discussão dos resultados, analisámos os diagramas e as interacções de argumentação *on-line* dos estudantes, assim como as suas produções escritas individuais. Analisámos igualmente os questionários a que esses estudantes foram submetidos antes e depois da experiência, sobre a sua atitude para com as Tecnologias de Informação e Comunicação (TIC), a leitura, a anotação e a escrita de textos, incluindo textos argumentativos.
Os resultados sugerem que existem diferenças entre os tipos de interacção nas conversas livres e nas conversas estruturadas. As interacções são mais ricas e mais profundas nas conversas livres. A anotação e representação gráfica de mapas argumentativos, em diagramas, parece fornecer provas da aprendizagem dos alunos, sobretudo no que respeita à estrutura argumentativa. Verificou-se ainda que o desempenho dos alunos foi mais produtivo nos ambientes *on-line* do que nas situações *off-line*.
PALAVRAS-CHAVE: argumentação - negociação - *e-learning* - interacção - informação organização e selecção – anotação – ensino superior.

Spanish
[Translation Ingrid Marquez]
TÍTULO. LA LECTURA, ANOTACIÓN Y PRODUCCIÓN DE UN TEXTO ARGUMENTATIVO REDACTADO POR ESTUDIANTES DE NIVEL SUPERIOR EN UN AMBIENTE DE APRENDIZAJE MEZCLADO
RESUMEN. La importancia de la argumentación es cada vez más reconocida tanto en el ámbito de la escritura académica como en la comunicación en línea. Este estudio combina algunos de los principales resultados y conclusiones de dos estudios investigativos que son diferentes pero complementarios. Aquí, pretendemos ilustrar la contribución del uso de una plataforma (SCALE) concebida para desarrollar las habilidades argumentativas de los estudiantes a nivel superior en las interacciones argumentativas y de negociación en línea, igual que en las producciones escritas (la toma de apuntes y la redacción de artículos expresando una opinión).
Para compilar y discutir los resultados, analizamos los diagramas e interacciones en línea de los estudiantes, además de sus producciones escritas individuales. También analizamos los cuestionarios que llenaron antes y después del experimento, que medían sus actitudes acerca de las Tecnologías de la Comunicación de la Información (TCI) en cuanto a textos escritos y apuntes, incluyendo los textos argumentativos.
Los resultados sugieren diferencias relacionadas con el tipo de interacción que ocurre durante los "chats" libres y estructurados. Las interacciones más ricas y profundas ocurren durante los primeros. La anotación y representación gráfica de los mapas argumentativos, en diagramas, parece dar pruebas de la naturaleza del aprendizaje de los estudiantes, especialmente con respecto a su estructura argumentativa. Además, el desempeño de los estudiantes fue más productivo en los ambientes en línea que fuera de línea.

1.   THEORETICAL RATIONALE

In a study developed in the University of Misiones (Argentine), Carvalho (1998) characterizes the writing of students attending the first semester at the Faculty of Humanities and Social Sciences as "naive, copious, chaotic, precarious and insufficient" (p.11). Other researchers in academic writing have reached similar conclusions (for instance, Barrass, 1996; Björk, 2003; Bono & Barrera, 1998; Matias, 2002; Romero, 2000). Even other Higher Education (HE) students, for example those attending post-graduate courses, experience difficulties with writing, especially in writing argumentative texts (Lahiff & Larkin, 2002). A student participant in the present study admits the following:

> "One of the reasons I wanted to do the course was that I sometimes have lots of ideas but struggle to put them into a clear argument, or a clear order […] I wanted to develop greater clarity in the way I present arguments" (idem: 4-5).

In Portugal and abroad, knowledge about the learning and teaching of the argumentative text is still scarce. However, several authors (cf. Barrass, 1996; Björk, 2003; Bono & Barrera, 1998; Carvalho, 1998; Dolz & Schneuwly, 1996; Matias, 2002; Monballin & Magoga, 2002; Romero, 2000; Souchon, 2002; Vieira, 2004) acknowledge the many difficulties that HE students face in developing that competence. The students fail to understand the structure of written compositions. They lack synthetic and critical skills. They are incapable of imagining an audience. They barely know the rhetorical characteristics of the explanation and the argumentation methods. They find it hard to distance themselves from the ideas and thoughts of the authors of the texts, as well as ordering and expressing their own ideas and reflections. They also tend to select and organize the most irrelevant information (which, in part, is related to their difficulty in imagining an audience).

Huver and Katchavenda (2002), for instance, state that the students in the first-year of university "find it hard to activate the adequate knowledge for the thesis they support, even if they propose irrelevant arguments, with no connection to the sustained thesis. […] [They] don't know how to write a relevant argumentation" (p. 195). These researchers add that when the argumentation structure exits, it is frequently deficient, since the students do not indicate the thesis they defend; instead, they provide incomplete explanations and they don't control the use of connectors, which, often enough, leads them to write incoherent conclusions.

Similarly, there are those authors who defend that the key aspects of academic writing are focus, consistency, accuracy and argumentation. In addition, the territory of this type of writing, viewed as sharp critical thought is a battlefield of ideas. The academic writing, by the successive reading, rereading, annotation and rewriting of a certain idea, concept and question, enables the production of something new and the reconfiguration of thought itself (Romero, 2000).

In fact, academic writing – of argumentative nature, in most of its productions – necessarily appeals to individuals' critical thought, because, as a text of ideas, it teaches them to think and to learn. Among others, the HE mission is, precisely, to enhance, as much as possible, the critical thought of each one of its students, so, in this domain, it plays a role of indubitable importance.

Then again, some studies have shown that the efficacy and the variety of the strategies used by the student represent one of the chief factors of success at University (Erlich, 2003). Besides, research seems to conceive, more and more, writing practices as ways of knowledge construction, both at the level of the reception and of the construction (cf. Boch, 1998; Creme & Lea, 2003; Erlich, 2003; Frier, 1998; Grossmann, 1994).

Hence, it is urgent to gather efforts to deepen and clarify the mechanisms that activate the process of teaching and learning of the argumentative text in HE, so as to fulfill, more effectively, the students' needs. In the words of Costa (1998), "let's not forget that most of the time we work on our teaching according to the argumentative logic –and that writing conveys an image of the reading" (p.179).

At the university, the students still face a wide variety of readings, of which the main objective is the assimilation/construction of new knowledge; the HE student:

> "must be capable of inferring upon a scientific knowledge that is in progress, and constantly accept to navigate in view of something, holding back the interpretation and distinguishing it from the construction of meaning. He must also learn how to acquire new representations, i.e. to get hold of parts of that knowledge, integrating them in his cognitive universe and building ever more open systems of representation" (Frier, 1998, p. 78).

Some studies, developed within this scope, show that HE students reveal a level of competence in reading/comprehension even lower than the level of competence in writing, which is already quite low (Cabral, 2003). It was also noticed that, in many universities, the students who failed were worse in reading than those who succeeded (Chevalier, 1993).

Therefore, a didactics of the academic writing is imperative, especially as far as the reading and writing of the written argumentative text is concerned. Because, as previously mentioned, in general, the students hardly control this typology.

At the same time, the function of both the e-learning and the teacher is no longer that of conveying contents, but, on the contrary, that of guiding the students in their process of knowledge construction, instigating a critical and dynamic attitude towards the huge amount of information with which they are permanently confronted, in academic and other contexts. As Bidarra (2004) witnesses,

> "the web challenges the user to actively commit himself in the processes; it consents on undertaking several paths; it compels to distinguish between what is important and what is secondary; it invites to create and synthesize things from different sources; and it stimulates to set new questions" (p. 39).

Thus, it is the teacher's duty to make the students perceive that they can develop knowledge and science with the information they have received, by pointing out to them some paths to pursue and providing to them the continuous knowledge recombination and reformulation. As Leffa (2001) states, "society needs new knowledge to face the countless daily challenges and the teacher is the professional who, above all, has the chance to fulfill this need" (p. 103). Thus, "the major importance of the teacher lays within his capacity to develop knowledge, not for himself, nor for the others, but in the others" (Leffa, 2001, p. 104).

The most advantageous teaching and learning paradigm, adaptable to the knowledge era, should, preferably, follow a pedagogy based on constructivism. It follows that the information should become essential to work, reflect, discourse, debate and negotiate. Thus, a qualitative learning would be favored instead of a more quantitative style of learning. As Lima and Capitão (2003) say,

> "Within this paradigm, the students should: be active builders of their own knowledge; work cooperatively in work teams and in real situations; become autonomous in their own learning; take the initiative in solving problems; access the information available in various ways and spots; […] and, critically present several perspectives" (p. 58).

Therefore, it is important that the student knows how to select and organize the information in the texts through adequate reading and annotation. Both activities are important to be successful, in academic as in other contexts (Creme & Lea, 2003; Erlich, 2003).

The Selection, Organization, and Integration (SOI) learning model, suggested by Mayer (1999), assumes the same postulation. According to this author, even if constructivistic learning is highly favored by the social context, it doesn't always develop constructivism; and, not all constructivistic learning necessarily depends on social contexts either. That is why Mayer has developed the SOI model, indicating some methods aiming at directing instruction under a constructivist perspective. According to this model, the information selection, organization and integration are the three procedures that are necessary to allow constructivistic learning to happen. Hence, as Lima and Capitão (2003) observe,

> "if the goal is to cognitively involve the student in the learning process, then the instruction should be designed in such a way as to help him identify the relevant information, understand the new information and integrate it in his cognitive structure" (p. 101).

As such, note taking (NT) seems to play a key role here. If we consider that, for many HE students (but not exclusively), NT is one of the privileged means to access knowledge, then it becomes easier to understand the importance that this type of writing may attain in teaching. In the words of Derive and Fintz (1998), "it is, then, the majestic word of the teacher (prolonged in the NT problematic) that constitutes, for the students, the means to access to knowledge. The only writings [they consider] required are those produced by the teacher, photocopied, and the NT" (p. 46).

On the other hand, like Cardoso and Cunha (2004) notice, "the selection of relevant, significant or thus considered, data or facts is an essential issue prior to

every argumentation and that previously constrains it" (p. 53). Veiga and Baptista (2004), in turn, say:

> "the way in which we structure our thought and, consequently, our arguments may be determinative of the verbal interaction we establish with the discourse of our addressees. Moreover, it might dictate the audience's degree of adherence to the arguments we intend to present" (p. 96).

As a matter of fact, to achieve a clear argumentation, it is fundamental to know how to organize the several arguments and to link them in a coherent and logical way.

There are already some studies on NT in HE (Bessonat, 1995; Boch, 1998; Fintz, 1993, 1998; Frier, 1998; Girolami Galvin, 1989; Romainville & Nöel, 2003). However, most of them have focused, primarily, on the students' notes in a classroom context, based on oral records (Boch, 1998; Erlich, 2003) and not so much on written texts. But, as we know, the written documents (articles, books, thesis, reviews, etc.) are also essential and very important sources of knowledge in HE.

As a result, the way the students take notes from these writings should be carefully investigated too, since it generally has a great deal of influence on their academic success.

In fact, if we consider, following Lemos, Cardoso and Palácios (2002),

> "the HE period as an excellent – and perhaps an exclusive – opportunity for the individual to quit a more passive attitude towards the search for knowledge and to adopt an attitude of permanent self-education, in which the motivation for the search and production of knowledge lays within the individual himself – an enquirer, creative and autonomously capable of opting for new approaches" (p. 276).

2.   THE AIMS OF THE EXPERIMENT

With the present study we aimed to understand the organizing principles of written argumentative discourse so as to grasp the most felt difficulties and the most used strategies by a group of higher education students, from the reading of texts to the production of a written argumentative text.

For this purpose, we resorted mainly to their written production (face to face work), to on-line collaborative work and graphic representation of arguments (Internet-based intelligent tool to Support Collaborative Argumentation-based LEarning in secondary schools – SCALE) platform supported, for some tasks, by Blackboard).

On the other hand, we also tried to understand the ways in which the Scale platform could contribute towards the development of students' competences at the level of organization and dialogical negotiation of the information in written argumentative texts, which entailed the development of two complementary studies.

The first study – *Organizing information from written argumentative text in a blended-learning environment* – intended, mainly, to describe the procedures used by students when they de-construct and graphically represent argumentative

texts; to analyse in what way note-taking and graphical representation proce-dures influence the development of the argumentative skill at the level of text planning; to determine how the SCALE/Blackboard tools contribute towards the development of the argumentative skill at the level of selecting and dialogically negotiating information; to outline strategies for academic writing in Higher Education at the level of planning and organizing the argumentative text.

The second study – *Constructing the argumentative discourse in an e-Learning environment – a study in Higher Education* – had the following aims: to analyse the mechanisms of dialogic collaboration used by students in activities of planning and production of written argumentative texts; to identify the mechanisms of dialogic collaboration used by students in activities of planning and production of written argumentative texts; to understand how these mecha-nisms show in argumentative textuality; to determine the contribution of SCALE and Blackboard tools towards the development of the argumentative skill in writ-ten text production; to outline didactic proposals for the construction of academic writing.

Therefore, we set out to investigate the development of the written argumen-tative text, at the level of negotiation and information organization, by means of pedagogical conditions considered to be enhanced in a blended-learning envi-ronment. Taking into account the recent importance of on-line communication and collaborative work, and the advantages they offer to teaching, we were also interested in exploring the potential of learning environments based on the web, specifically conceived for the development of the argumentative competence, such as the SCALE platform.

Simultaneously, we decided to work on the argumentative text in the scope of information reading, selection and organization (NT), aiming, in particular, at identifying and describing organization processes selected by the students.

NT is a sort of intermediate/utilitarian text between the source text (ST) and the target text (TT). To fully analyze it, we need to examine not only the way in which the information is read and selected, but also the way in which NT is re-used/integrated in the students' final writing productions (TT), after having been organized.

3. METHODOLOGY

As seen above, our corpus was complementarily studied in two parallel research studies: one was focused on the analysis and description of the HE students' dif-ficulties in selecting and organizing the information of the written argumentative text, whereas the other was focused on the analysis of the argumentative text production.

As for the sample selection and distribution and the data collection, this qualitative study involved a second year class of Primary Education Teacher Training at the University of Aveiro. The class was divided in groups of two students each, randomly chosen, which constituted argumentative dyads.

The 16 students who participated in the study worked with the argumentative texts in three stages: the first, diagnosis, consisted in the annotation of the argumentative text information in order to produce an opinion article, off-line, based on the reading of written argumentative texts (1st session) and according to a set of predefined guidelines. In the second stage, two other sessions, of two hours each, were developed on-line (SCALE's free Chat, ALEX and GRAPHER), in which pedagogical activities, perceived to enhance the organization of the argumentative text information, were carried out. In the last stage, (e.g., after the empirical work) tasks like those developed at the beginning, in an off-line environment, were conducted.

These dyads worked on-line with the selected SCALE[1] tools: a normal Chat, a structured Chat (ALEX) – which provides models or openings for sentences, thus structuring and guiding the dialogue between the students –, and, also, the software for the construction of argumentative maps or schemes, as illustrated in figure 1.
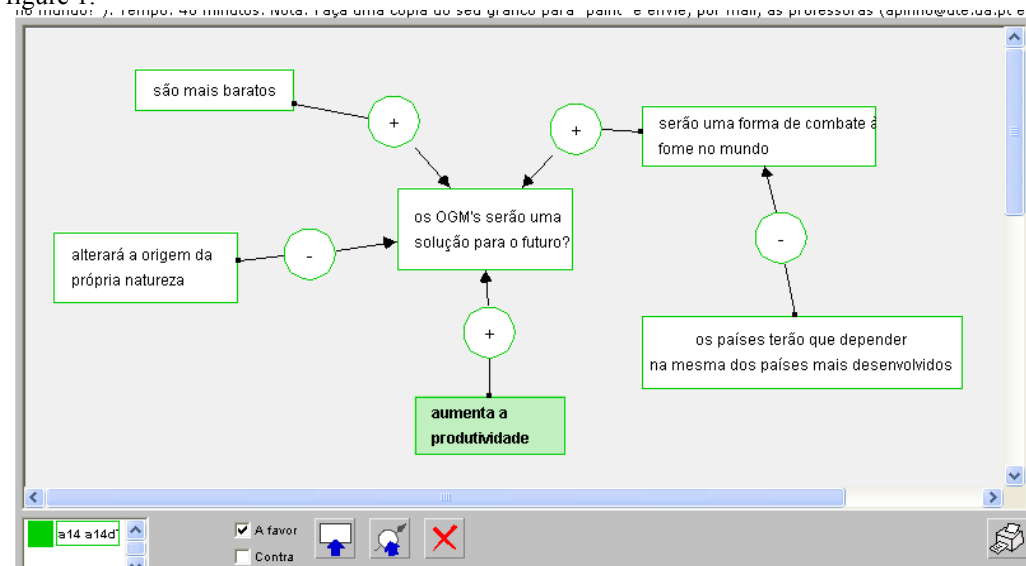

Figure 1— Example of an argumentative map[2]

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[1] *Platform developed within the European Commission IST Project, from March 2001 to February 2004.*

[2] *Translation of text in the figure, clockwise from top left: "they are cheaper", "they will be a form of fighting hunger in the world", "countries will depend on the more developed countries, anyway", "augments productivity", "it will change the origin of nature itself"; centre node: "Will GMO's be a solution for the future?"*

During all the tasks of the study, in which we adopted a case study methodology, the topics under discussion were *genetically modified organisms* (GMOs) and *world hunger*.

To collect data, researchers created and developed some tools: a questionnaire for characterizing the sample in terms of attitudes towards ICT, reading and writing and argumentative skills and relationship created with platforms used during the experiment (Scale and Blackboard); a test on knowledge of note-taking and production of argumentative texts; grids for categorizing the analysis of dialogic interactions; grid with criteria for observing intermediate production (contributions to the forum) and for observing and evaluating the final products[3]; selection of argumentative texts and organization of didactic sequences in SCALE and Blackboard.

Students, on their side, performed several tasks, during the experiment: answering initial questionnaires; initial diagnosis – Entry Test – based on individual note-taking and text production, from the reading of argumentative text(s) concerning GMOs, in an off-line environment; Chat discussion in argumentative pairs on the note-taking performed; creating argumentative graphs based on the texts read; discussing the set theme in ALEX; completing, individually, the final test – Exit Test –, in an off-line environment and answering the final questionnaires for subsequent data triangulation. Furthermore, every student was invited to participate in forums related to the work developed: a forum on the use of blended-learning, i.e. on the use of the two on-line platforms and the off-line work, a forum on the importance of note-taking and a third forum on the argumentative competence, in the Blackboard platform.

All the records were saved in the corresponding platforms. The platform SCALE still offers, in the teacher's module, besides other type of results, the possibility of observing the progression of the dyads' dialogue, as well as the number of interventions, arguments and counter-arguments presented by each student. All these logs and records have enabled a detailed analysis of both the development of the argumentative maps construction and of the interaction and negotiation between the students.

The indirect interactions and the contributions in the forum were examined through a grid that subdivides the interactions according to different categories: ask for/give explanations about the contents, the form and the procedures; interactions related to contents, argumentative capacity and comprehension issues; valuation interactions and interactions on topics not directly related to the work to be done.

In our study, we also described each dyad's work dynamics and organics, and the way in which they were triggered, bearing in mind the progress they made in the process. The performance of the students in each dyad (online work) was

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[3] *Besides these, other tools for content analysis were used: Rainbow methodology and QDS ("Quality of the Debating Space"), the former for the analysis of computer-aided debates and the latter for the analysis of argumentative graphs produced in the SCALE environment.*

compared to the results obtained in the contents tests and questionnaires, prior and subsequent to the experiment (off-line work).

This was possible because, even tough these were answered anonymously, in the questionnaires the students used the code number that was attributed to them, like in every document and login. Similarly, the answers to the questionnaires regarding attitudes, opinions and perceptions on ICT, reading, writing and argumentative competences were compared between dyads.

4.   RESULTS AND CONCLUSIONS

The high quality argumentative discourse in an on-line collaborative instruction context indicates that the learners formally build adequate arguments while they work *virtually* together in learning tasks. Thus, in this context, the study of argumentation consists of drawing some conclusions pertaining to its importance in the promotion and strengthening of learning processes, and to the key role that the work in an e-learning environment plays in the development of argumentative competence.

In both studies it is important to distinguish two different, yet interrelated, types of results. On the one hand, then, the results supported by the observation of the work, suggest that the students developed off-line and on-line written productions and engaged in interactions with either their classmates or the interface. On the other hand, there are the attitudes, opinions and perceptions that they manifested towards ICT, reading, annotation and the writing of argumentative texts.

4.1. Relation with the Platforms

At the end of the experiment, all the students expressed a positive opinion about the platform SCALE. According to them, it is quite easy to use this platform and to understand its contents. Besides, it enhances the interaction and, at the same time, it is useful for the learning of NT and the written argumentative text.

In general, the SCALE improved the discussion, organization and systematization of the written argumentative text information, since its tools allowed for exchange of information among the classmates (free Chat) and recognition of different argumentation expressions (ALEX), as well as organization and structure of the writing of the argumentative text (GRAPHER). In the opinion of many students, the platform also helped them to become aware of the different procedures of organizing and constructing a written argumentative text. So, the majority of the students considered that SCALE was a useful platform to learn how to put forward an argumentation and to produce an argumentative text, in a more efficient way.
The 16 participants were unanimous when stating that the SCALE helped them to develop more consistent opinions, to structure their points of view in a better way and to deconstruct arguments. According to them, all this highly improved

comprehension. However, they stated too that they would need to be more famil-
iarized with the platform, so that they could benefit even more from its potential.

Still, most of the students considered the SCALE tools they used capable of
enhancing autonomy, collaboration and the development of the argumentative
competence. This was, after all, a decisive factor for the willingness they showed
in working with the platform, as it has been corroborated by other studies (Cor-
bel et al., 2003).

Almost half of the students answered that, among the three tools they used,
the GRAPHER was that which helped them the most in the organization of the
argumentative text. Because, above all, it contributes to the construction of more
schematized, synthetic and comprehensible ideas, and it makes it easier to select
and organize the information.

As for the tools that ended up by making it more difficult to NT, ALEX was
considered the harder to work with, since, in their opinion, it is confusing, com-
plicated and extremely constrained by the patterns (templates). The students re-
vealed as well a clear preference for the free Chat, and not for ALEX, the struc-
tured chat. This is not surprising if we recall that the latter is seen as a complex
device, limited at some points, and the former is a well-known tool, with which
they are more familiar. On the other hand, the SCALE's free Chat was also, as
expected, the tool that favoured the most the collaborative work, since, above all,
and according to the participants, it enabled the exchange of ideas and opinions
in a freer way, when compared to ALEX (which only resulted in four positive
opinions in the collaborative work topic).

Regarding the individual learning stimulus through SCALE, the GRAPHER
was the most quoted tool (9), followed by the free Chat (5); ALEX was only
mentioned by one student. In the opinion of some of the participants, GRAPHER
enhanced, mainly, an autonomous work, since besides consenting on doing indi-
vidual tasks, it helped to build personal schemes of information organization,
which favoured comprehension. It still helped to evaluate prior knowledge about
the theme under discussion, contributing to the development of the synthesis
ability too.

As far as the possible advantages of the SCALE tools are concerned, with re-
gard to the learning of the written argumentative text, and specifically to the
identification and organization of the several argumentative aspects (thesis, prob-
lem, arguments, counter-arguments, examples), GRAPHER was the most high-
lighted tool. Accordingly, most of the students supported that it favoured the
organization and the distinction of arguments for and against. They thus consid-
ered this "sort of conceptual map" as a kind of on-line NT, which facilitates the
identification, organization and development of the several argumentative as-
pects.

In comparison with the free Chat, ALEX is very confusing. For a significant
number of participants it could be quite different than what they were used to. In
fact, a more detailed analysis of the interactions in the *Replay* reveals that the
most important difference is related to a smaller challenge and to the lack of
broader cycles of explanation (which are more frequent in the free Chat or in the
forum). Indeed, given that the interactions in ALEX are guided by a set of prede-

fined models, it makes the interaction more oriented and organized, inhibiting the students more. In the end, this impoverishes the explanations and restrains, in a way, the communication and a more in-depth reflection of the topics under debate, as some of the students said on the Blackboard forum.

Nevertheless, some of them, holding a more favourable opinion about ALEX, stated that this tool helps, to a certain degree, in the identification and organization of the argumentative elements, mainly because it presents a lot of vocabulary related to the argumentation.

Still, as far as the free Chat is concerned, it was observed that the predominant category is the one related to *giving opinions*, which is followed by that of *monitoring the work*. Right after these two, the interactions of *agreeing*, *negotiating*, *questioning* and *explaining procedures* emerge. The category of *disagreeing* appears much further down, with a rather low number of occurrences, exactly at the middle of the scale. Thus, in the 20 categories established for the analysis of the interactions (see Appendix A), this one appears in the 10th place.

On the other hand, when analyzing the frequency of the free Chat interactions, and some of its excerpts, evidence indicates that the students manifest their agreement clearly, and explicitly too. But, when it comes to dissuade the classmate with whom they are discussing, they prefer to do it through the monitoring of the work (*Wait, let's take a better look*) and by suggestions or concessions (*I'd chose this, what about you?*). So, students strategically use the questions or the negotiations to indicate their point of view, i.e. they invite the others to think and reflect (*See... how do we start a text? It's not with arguments right away, isn't it? I'd rather put this, what do you think?*). In other words, they constantly ask questions asking for agreement and conformity to the idea they sustain.

The interactions that took place were abundant and varied, reflecting a healthy concern for the Other, which is fundamental in the conviviality habits that are intended to be stimulated in the virtual communities. Moreover, their "learner contributions" may be considered as "a major source of reusable learning objects" (Collis & Moonen, 2005, p. 54).

This does not mean that the graphics that were presented correspond to a more profound level of knowledge construction, the *Knowledge transforming*, in contrast with the *knowledge telling*, according to the concepts used by Scardamalia and Bereiter (1987). However, in general, the students drew complete graphics, well structured and with well supported and sustained arguments.

However, the well-outlined argumentative schemes don't imply that the students have integrated their arguments in the texts they wrote. In fact, such a procedure was only occasionally observed. Hence, these results validate what has already been proved in other studies: in the tools of argumentative maps the graphical representation becomes more relevant than the function that they might, eventually, perform as far as the promotion and the creation of new ideas are concerned. Actually, as was seen in other studies, the relevance of the ideas' structuring and schematization is more important and more visible for the participants. This is, indeed, the conclusion suggested by our trial study, in which GRAPHER was used in dyads, and which corroborates conclusions of previous studies: "the analyses of chat dialogues about the Diagrams suggest that for some

participants this tool did not serve as a basis for discussion or a tool for idea generation, as it was intended, but rather functioned as a visual representation" (Kanselaar et al, 2003, p. 13).

Initially, we could suppose that the maps promote new ideas. This might occur in the work in pairs, but even thus what is stressed is the importance the students bestow on the tool for the argument schematization and organization.

4.2. Written productions: strategies and difficulties

4.2.1 Movement TS-NT

An overview of the selection and organization of the written argumentative text information reveals that, in general, the difficulties the students admit were, above all, related to the lack of familiarity with the theme/topic and to the incapacity to distinguish between the central and the secondary information. It should be further emphasized that of the 16 students, only four assumed not to have felt any difficulty whatsoever in organizing the information.

Regarding, in particular, the ST management strategies that were used, these vary from individual to individual, as much in the way in which they were used as in the quality with which they were put into practice. On the whole, three different ways of managing the information in the ST were brought to light: the underlining, the highlight of "keywords" and the annotations in the margins of the text. In contrast, none of the students divided the text in parts, nor drew attention to the articulation connectors that bring internal logic to the text.

The underlining seems to have often been done without any criteria concerning the information selection; in some cases, the contents of some texts were even almost entirely underlined. There were also situations in which most of the core information ended up by not being brought out. Besides, it was witnessed that an underlining was, quite frequently, incomplete and illogical in the scope of the ideas. This entailed, in the several NT, ambiguities and imprecision in terms of meaning.

As for the argumentative strategy management/systematization in the annotations, we were surprised by the fact that the examples supporting the different ST arguments have a fairly poor annotation (9 and 5 NT, respectively prior to and after the experiment); only 14 of the 47 analyzed NT include some of those examples.

In addition, the argumentative strategy record was, after all, scarcely personalized (e.g., the personal comments/observations of the annotator were almost non-existent; only two cases were traced, one prior to the empirical work and the other afterwards). Besides, there were also only two records of annotation of the author and the source, both at the end of the experiment. In fact, the reference and the corresponding author from which the annotations were drawn out, as well as the enunciating instances that sustain the various arguments, were, in general, barely annotated at all and/or deficiently specified.

Focusing now on the interconnection between the arguments/ideas noted down, this is predominantly insufficient. In some NT, the connections between

the different ideas are, sometimes, fairly unclear or yet absent. Some of the information that is collected is even transformed, due, in part, to an incorrect information link, sequence and hierarchy. Therefore, the association of the different ideas is, at times, only vaguely clear and ambiguous, and in some cases even contradictory, which leads to mistakes.

As expected in NT, the logical-argumentative connectors were, most of the times, replaced by arrows, which tend to be often used ambiguously and without well-defined criteria. In the end, a great deal of them had a merely enumerating function and not so much an "integrative" idea. Besides this, the use of arrows does not always make sense to the reader who is unaware of the ST.

There was also a general tendency to avoid noting down the counter-arguments, which, in a way, seems to point to the weak notion that the students hold on the argumentative dynamics. In turn, this dynamics should normally include both sides (argumentation and counter-argumentation) to achieve a greater sustainability and credibility of the ideas that are presented.

Again, within the ST argumentative strategy annotation, it was witnessed that the arguments are clearly indicated in less than half of the NT: 11 annotations prior to the study and 11 in the end. Some arguments, for example, are presented in a vague and incomplete way, which makes them ambiguous. Additionally, we also detected some confusion between the arguments for and against, as well as a diffuse annotation of the same NT.

We further observed that, in a rather significant number of annotations, the problematic and the argumentative strategy existing in the ST rarely emerge in a sufficiently clear and explicit way, either for the annotator (especially, in a middle and long term context) or for the other readers. Thus, in certain moments of the NT, the argumentative movement was noted down in an unclear, inconsistent and emergent way. In one of her studies, Pollet (2001) also observed a defectively argumentative dialectics in some HE students: "some completely erase the argumentative guidance […]. They only keep the information they regard as objectives and they note them down, one after the other" (p.75). In most of the NT produced in our study, the ideas that were noted, besides being poorly interconnected, are incomplete, and, therefore, ambiguous, which prevents a more logical and coherent reading of the information gathered.

The lack of clearness in the annotation of the argumentative movement seems to be due to some vocabulary oversights and to vague links and hierarchies, often in a significant number of juxtaposed information segments, without any kind of logical and argumentative connection.

It is also worthy of note that the inclusion of the secondary information made the NT more dense, whereas the lapse of information ended up by interfering, often, with a more logical and comprehensive sequencing of the different ideas that were noted down. Thus, all together, these factors entailed the weakening, and even in some cases the loss, of the argumentative dialectics in the ST.

Of the 47 analyzed NT (24 at the beginning and 23 at the end – Student a7 didn't make any NT, immediately starting writing the opinion article), 29 of them (16 prior to and 13 after the empirical work) might be considered looser from the graphical point of view, meaning that the information is exposed in a more syn-

thetic and schematized way. On the contrary, the rest of the annotations are too dense and linear. The information showed on the page is not synoptic enough, which sometimes makes it difficult, or even impossible, to interpret/reuse in future NT, as previously mentioned.

As far as the information retaking/reformulation are concerned, in general, it was felt that the NT is too close to the ST and, so, scantily reformulated. This compromises the appropriation and, consequently, a possible knowledge transfer, competence that is indubitably crucial in HE. The advice that Creme and Lea (2003) give to their students, in their guide for academic writing, takes that fact into account:

> "Try to summarize in your own words rather than writing down large chunks of the text. Getting things into your own words is about getting ideas into your own ways of thinking about them. This is the first step to owning the ideas that you are going to write about in your assignment" (p. 30).

As for the ST distancing/reformulation, when present, it is generally very cautious; most of the time the annotators merely make a synonymic change in the vocabulary and/or in the ST syntactic structure. Or, in the words of Gérard Petit (2002), in most of the cases the pronominal reformulation prevailed, and not the lexical reformulation. According to this researcher, in the former, the speaker, by reformulating through the pronouns, ends up by assuming the existence of semantic invariance of initial data, refusing its declination. The latter is more demanding because "the speaker gets involved in the games of semantic and referential adjustments, which sometimes overlap the boundaries predicted by the units' lexical acceptation" (Charaudeau & Maingueneau, 2002, p. 491). That is why the students no longer opt to provide a personal comment/criticism to the ideas, nor reformulate them, but keep, instead, their order.

On the whole, the participants still revealed difficulties in synthesizing and distancing from the collected information. A significant number of NT was too exhaustive; as a result, the information selection was not very attentive, which became visible in the often-random ST information management, as we mentioned before.

It should also be emphasized that, in most of the annotations, there was a nearly total lack of personal commitment by the students (comments, personal observations, information expansion). They showed a diminutive capacity to synthesize and a tiny critical spirit. At the same time, the annotations were hard to perceive because they were too dense.

Thus, in general, these are minor functional annotations, which in the middle and long term will hardly be reused, either by the annotator himself and/or by others.

As far as the collected information link is concerned, of the 48 NT produced, 10 at the beginning and 12 at the end, in all 22 presented sequences/sections of juxtaposed information, i.e. without any type of connection, were observed. This inevitably leads to ambiguities in the information apprehension. Moreover, the annotations in which the articulation connectors are used can be either quite clear in general (9) or ambiguous (13). After the empirical work, of the NT produced,

13 are clear and the rest of them (10) ambiguous. Hence, it seems that at the end of the experiment a slightly positive change took place with regard to this aspect.

Besides the negative link between the collected information and the lack of important information, to which we have already referred to, there were also other factors/causes that, even though less evident, may explain the transformation and ambiguity of some of the collected information: vocabulary and syntactic structure reformulation; incorrect replacement of terms, such as, for instance, the defectively synonymic substitutions; annotation of single words, (e.g., without any link whatsoever between the terms and/or ideas); inadequate use of connections, like, above all, the use of arrows. So, in general, the change of meaning derived, essentially, from the ST information reformulation and systematization/hierarchy. Sometimes, it was still due to the syntactic alteration/reformulation and/or to the oversight of terms that completed the meaning, hence essential to a more faithful information transport. In other annotations, the changes simply resulted from a bad interpretation by the annotator.

Simultaneously, when we compared the presence of the different factors that seem to have led to the transformation of the collected information, at the start and at the end of the experiment, on the whole, after the study, we noticed a slight improvement in the performance of the annotators. In fact, apart from the transformations emerging from the vocabulary reformulation, which increased at the end of the empirical work, the negative impact of the other factors was, to this purpose, weakened after the experiment, as a more thorough data analysis reveals.

The negative impact of the causes that seem to have entailed the ambiguities we perceived in the different annotations (incomplete annotation of phrases/ideas, a total lack of connections and the combination or even the omission/non-specification of the different enunciative forces) is highly diluted after the experiment. This is similar to what happened in the factors that cause the transformation of meaning, and, in general, it seems to result in a greater quality and clearness of many of the NT after the empirical work.

In short, a more detailed analysis of the annotations has enabled us to detect that a yet significant number of students show many difficulties: besides selecting and organizing the argumentative text information, some of them quite often mix their opinions with the ST perspectives. Thus, they reveal problems in keeping a distance from the ideas and opinions of the authors of the texts. The students also reveal difficulties in criticizing and synthesizing; in terms of vocabulary and syntax, they have trouble in simplifying, synthesizing and transforming the collected information; they find it hard to express and structure their ideas and reflections; they often badly define the ST argumentative strategy. In fact, hardly any NT illustrates a certain distance and an acceptable appropriation of the ST contents. On the contrary, as we have already underlined, the majority of the NT is exceedingly developed and close to the texts that were read.
At the same time, a very small expansion of the ST contents was still observed:

> "the author's will in specifying as much as possible the arguments: definitions, descriptions, examples, reformulations, developments, […], comments, contents

> notes, in a word, what we'd call 'expansions', in this case, explicative expansions, signs of a didactical approach, meant for comprehension" (Pollet, 2001, pp. 46-49).

This, again, points to the knowledge appropriation/construction issue. Besides, and judging on the results we obtained, it seems that, globally, the participants consider the NT (usually provisional and auxiliary) as definitive writing, since the information that lays in the annotation is transferred to the TT, with very few changes and even, in some cases, *in extremis*, with hardly any change at all.

4.2.2 NT-TT Movement

The circulation of information from the NT to the TT, i.e. the retaking/integration of the different annotations in the opinion articles produced by the students, as much at the start as at the end of the empirical work, varied from individual to individual, similarly to what had occurred in the transport of contents from the ST to the NT.

In the NT/TT information flow, besides the deficient intertextuality management, there was also, in a significant number of TT, a mere juxtaposition of the several ideas that were gathered. Sometimes, this even annulled, totally, the text's argumentative movement. Therefore, in some cases the argumentative strategy ended up by being basically built on a mere comparative transcription of information collected from either annotation. Thus, the texts seem to have been written, apparently, without a great concern with regard to the organization/integration of the information gathered. There were also cases in which a nearly literal transfer of the annotations was evidenced.

Regarding the faithfulness of the ST, the transformation of the information was greater in the ST/NT flow; it was more perceptible at the beginning of the experiment (16 NT out of 24) rather than at the end (9 NT out of 23). In addition, if we compare the results obtained in the information circulation from the NT to the TT, as far as the change of meaning is concerned, we can see that the difference between both is reinforced at the start of the empirical work (16 NT and 8 TT), and not at the end (9 NT and 5 TT). All together, it seems that we can globally recognize that the meaning is less changed in the NT/TT flow rather than on the ST/NT. At the end of the work the meaning is less changed, in proportion, in the first case.

On the other hand, the transformation of meaning of the ST information in the TT seems to be due to mainly three key aspects: the structure's reformulation, the sequence's alteration and the information's deficient connection. In other situations, the transformation still seems to result from an incorrect association between the enunciative forces and its corresponding arguments.

To sum up, in the TT construction, we observed a barely satisfactory processing of the collected information: the arguments were neither developed nor in-depth enough; the students' critical spirit is hardly ever noticed; the personal interpretation of the information is not abundant either. Most of the time, the description of the information prevails, instead of the integration and development of a structured argumentation, oriented towards a conclusion; in general,

the participants are not very analytical with regard to the information gathered; the lack of progression and/or continuity and the frequent breaks, leading to compulsory fits and even to information misplacements; the lack of testimony, quotation, example, argumentative strategies capable of being marked by authority (Charaudeau & Maingueneau, 2002). Some of the connections intra and inter-phrases/paragraphs, which guarantee the textual cohesion, were still underprovided in some texts.

As Creme and Lea (2003) argue in their writing guide for HE students to which we have alluded, "being analytical involves thinking through what you are doing in your writing and the information and ideas you are presenting in a particular, sharp, questioning way" (p. 84). But, as we witnessed, this does not seem to occur in most of the TT, "as if the student would prefer to draw attention to the knowledge predefined feature, which tranquilizes him, rather than getting involved in the (re) construction of that knowledge […] mentioning only his knowledge" (Pollet, 2001, p.59).

4.1.3   Production of the TT: comparison between off-line and on-line environments

As for the writing of the argumentative texts, it is important to mention that no link was found between the students' on-line and off-line performance. If the students with a good off-line performance had a reasonable on-line performance, then, again, the good on-line performances didn't necessarily match good off-line performances. For example, the student who had the third worst performance off-line was one of the most active and dynamic in the on-line interaction. Thus, our study does not corroborate the results presented by Wilson (2000), according to whom the students with good face-to-face performances are those who present the best performances in computer-mediated communication (CMC).

Another relevant aspect is related to the focus and the attention's agglutinating qualities mentioned by the students, which is a key factor for the learning success, especially in the CHAT and in the GRAPHER tools. The same potential had already been referred to, earlier, regarding the devices of argumentative maps, like the Questmap™: "nearly all students reported that Questmap™ sessions helped them maintain a focus on the task at hand, providing for structured argumentation sessions" (Carr, 2001)[4].

It is also important to stress that the students' commitment in the on-line tasks was obvious. The on-line discourse of the students interacting with their peers was sometimes flowing as a torrent, structured and convincing, and at other times it was more uncoordinated and confusing.

It should be noted that according to our results and subsequent comparisons, the work in the platforms had no visible influence on their off-line performance, but

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[4] *We translated all quotations, except those that were already in English.*

it interfered, decisively and positively, with the students' attitudes and perceptions towards their writing and argumentative capacities.

In fact, many of the already favourable attitudes, at the start, suffered change, in a positive way, after the study, chiefly as far as the argumentative competence is concerned. Therefore, in the end, the participants felt they were more capable of identifying and selecting the main arguments of an argumentative text, as well as distinguishing those for and against and establishing connections between them. They also felt they were more apt to express their own ideas and clearly explicit them.

As for the students' proficiency in the off-line written production and their performances in the on-line interactions, there was no direct connection whatsoever, as was already mentioned and as table 1 illustrates:

Table 1 – Comparison between off-line and on-line results

Off-line Tests		On-line			
		Alex	Grapher	Chat	Forum
1st	A7				
2nd	A3		3rd	5th	
3rd	A11	4th			
4th	A10	3rd	1st	2nd	
5th	A6	2nd	3rd	4th	
6th	A8				
7th	A14				
8th	A9				
9th	A13				
10th	A12		4th		
11th	A5	1st	4th	3rd	1st
12th	A15				
13th	A16				
14th	A1		2nd	1st	1st
15th	A4				
16th	A2			5th	

Above, in the column on the left, the students are positioned according to their grades in the written production (from the higher to the lower grade). In table 1, then, one can see that the student with the 2nd best performance off-line had a reasonable performance in two of the on-line tools. It is even more evident that the student who had the 3rd most inadequate performance off-line was the one who, in contrast, had particularly high, relevant and positive results in the work with the on-line tools. He was even the most participative student in both the CHAT and the FORUM, and the second best in the GRAPHER.

A key factor for the on-line success seems to have been the degree of adhesion to the tools and the degree of acquaintance the students say they have with computers. One of the students with the worst on-line performance is the only one not to have a personal computer, though he has developed the basic compe-

tences to use ICT. The only student who decisively declared that the platform SCALE inhibited him, thus preventing him to adhere to the work with those tools, also had a bad performance. It should be further noticed that this participant had obtained in the first test one of the best grades and, at the same time, he seemed to feel at ease with the virtual environment. However, he was the only one to refer to the fact that he didn't acquire the basic competences in ICT and to have a much weaker grade in the final test, in comparison with the first test.

5.   FINAL REFLECTIONS

As previously stated, there seems to be no direct connection between the students' performance in the platforms and the quality and integration of the knowledge acquired on-line in the production and construction of the argumentative discourse off-line. Hence, we cannot state that there was a determinant influence of SCALE and Blackboard tools on the development of the argumentative competence at the level of the off-line written production. Nevertheless, like in other learning situations, the language is learned by doing and, in this context, doing means reading, writing and interacting on-line through writing, shaping communicative intentions by means of words.

In the didactical sequence put into practice in both research studies, the on-line argumentative construction constitutes the *doing* and the consciousness of this type of discourse constitutes the effective learning situations. The accessibility to specific devices of argumentative textuality, in the SCALE environment, might have favoured some kind of linguistic development of the students, through the possibilities of using the languages that were bestowed on them, through the patterns of phrases, the constructed diagrams and the confrontation with other ideas. These have enabled the consciousness and the metacognition of some of the argumentation specificities. In turn, students´ progress in these domains was done through their creation of language use situations and the corresponding reflection in dyads.

Thanks to the tools that were used, the students selected and schematized information sections, reported and debated their ideas with their classmates and discussed the organization of more consistent argumentative structures. Besides, in general, the SCALE tools seem to have allowed the development of competences related to the act of convincing the interlocutor through the persuasive selection of arguments and counter-arguments. Simultaneously, the students also had the opportunity of activating strategies, such as the rapid and prompt, or the more delayed and reflected synchronous reply, to catch the interlocutor's attention. This requires ability both at the level of problem solving and at the social, cognitive, affective and even cultural levels.

To conclude, it is important to restate that to the students writing argumentative texts became, essentially, a task of problems solving and a challenge for knowledge construction, which are two vital competences for education in general.

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APPENDIX A

Categorization of on-line interactions (Interactions in student/student dyads)[5]

Giving opinions	GO	*Presenting a straightforward reasoning, affirmative or not, merely giving an opinion*
Agreeing	A	*Giving consent*
Disagreeing	D	*Disagreeing, refusing, objecting, refuting contradictory ideas, doubting explicitly*
Formulating a question	Q	*Questioning, asking for an explanation, soliciting reformulation*
Explaining procedures	EP	*Trying to describe the development of a way of acting*
Presenting a justification	J	*Developing a topic, deeply analyze a reasoning, explaining, presenting reasons*
Negotiating	N	*Making concessions, trying to reach an agreement*
Correcting	Co	*Making small orthographic or other corrections*
Monitoring the work	MW	*Coordinating the work, serving as motor for the development of the tasks*
Regulating and evaluating one's own work	REO	*Organizing and judging one's own work, metacognitive attitude*
Regulating and evaluating the work of the peers	REP	*Organizing and judging the others' work and contributes*
Asking for help	AH	*Soliciting support for any sort of difficulty*
Giving help	GH	*Offering support for any sort of difficulty*
Valuing the effort	VE	*Giving positive retroaction regarding the effort*
Promoting safety	PS	*Giving positive retroaction in order to keep the motivation of the classmate*
Saluting	S	*Incoming or farewell salutes*
Out of task	OT	*Parallel interactions beyond the scope of the debate*

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[5] *This table shows the interaction categories defined for this study, which were validated by a set of international experts.*