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## Qualitative Evaluation of a Drug Terminology Server

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### Abstract

*Background:* Although the drug is finished, identifiable, there is no universally accepted standard for naming them. The objective of this work is to evaluate qualitatively the HeTOP drug terminology server by two categories of students: (a) pharmacy students and (b) a control group. *Methods:* A formal evaluation was built to measure the perception of users about the HeTOP drug server, using the three main questions about “teaching interest”, “skill interest” (or competence) and “ergonomics”. *Results:* The three pharmacy student subgroups gave the best and the worst score to the same categories. *Conclusion:* All three criteria are rated above 6.5 out of 10. The HeTOP drug terminology server is freely available to “non drug” specialists (URL: [www.hetop.eu/hetop/drugs/](http://www.hetop.eu/hetop/drugs/)).

### Keywords:

Drugs, ontology, terminology server.

### Introduction

Although the drug is finished, identifiable, there is no universally accepted standard for naming them [1]. Depending on the point of view, it can be defined at a molecular level as an active substance, at a clinical level as a product capable of treating a pathology, at a physical level as a presentation intended to satisfy the physician’s prescription and deliverable to the patient. The objective of this work is to evaluate qualitatively a drug terminology server by different categories of students: (1) pharmacy students, with three subcategories: (a) private pharmacy (b) industry and research and (c) hospital; (2) computer scientist students, used as a control group.

### Methods

Since 2007, the Rouen University Hospital Department of Biomedical Informatics (RUH DBI) has developed a crosslingual health termino-ontology server (HeTOP; URL: [www.hetop.eu](http://www.hetop.eu)) containing 91 termino-ontologies in 55 languages [2]. A simpler and more compact access to drug information was created based on the HeTOP instantiation: all the drug information is accessible in a unique screen.

A formal evaluation was built with three different areas. The first axis uses the Likert’s scale. This method is a psychometric tool that allows to measure perception of users about the HeTOP drug server. By marking the line, they attribute a rating on the following three aspects of the tool: 1) interest in terms of student’s skills, evaluating the potential tool aid to the student’s competence 2) pedagogic interest, evaluating the potential

added value of the tool for teaching, and 3) the display simplicity, evaluating the usability of the tool. This evaluation was performed in two groups: one group of pharmacy students (n=30), from the University of Paris (only in the fifth year) and one control group (n=9), composed of master and PhD students of the LIMICS lab, which were computer scientist trainees. This study focused on fifth year students, because they are at the end of their cursus (six years), and therefore able to judge the three main questions of this questionnaire. The group of pharmacy students was composed of three subgroups: (1) officinal students (n=10), (2) industry & research students (n=10), and (3) hospital students (or residents) (n=10). This evaluation allows to have scores and verbatim about HeTOP to understand the point of view of people about the server and the way to improve it or to adjust it to meet lay-people expectations.

### Results

Table 1 displays the three main questions of the questionnaire for the two groups. In the student group, the best grade was obtained for “teaching interest” (7.82±1.34), followed by “skill interest” (or competence) (7.55±1.16) and “ergonomics” (6.66±1.90). In the control group, the best grade was obtained for “ergonomics” (7.83±2.00), followed by “teaching interest” (6.98±2.52) and “skill interest” (6.93±1.71). This table highlights the differences between the control group and the student subgroups.

The three pharmacy student subgroups gave the best and the worst score to the same categories. Nevertheless, all the scores from the “hospital” subgroup are lower than the two others (Industry and Officinal subgroups) and specifically lower for the ergonomics (5.74), which by far is the worst rating of this study. There was no statistical difference among the two groups and among the three subgroups, using the X<sup>2</sup> test. The main points of the verbatim area are: the pharmacy student group’s verbatim is different according to each subgroup. Nonetheless, each subgroup was sharing the Top 1 pro (exhaustivity of the tool) and the Top 1 con (ergonomics). For the subgroups “industry and research” and “officinal”, the Top 2 and 3 pros were respectively “simplicity” and “links to other sites”. For the subgroup “industry and research”, the Top 2 and 3 cons were “too many general information, not enough adequate” and “not all the information in French & no aid to query”. For the subgroup “officinal”, the Top 2 and 3 con were “problem with the information; too much in quantity and not enough in quality” and “not enough aid to query”. For the subgroup

**Table 1.** Main results of the qualitative evaluation for HeTOP drug information server

	Competence	Teaching	Ergonomics
Control group	6.93±1.71	6.99 ± 2.52	7.83±2.00
5th year general student group	7.55±1.16	7.82±1.34	6.66±1.90
5 <sup>th</sup> officinal students	7.68 ± 0.97	8.38 ± 0.75	7.44 ± 1.44
5 <sup>th</sup> industry and research students	7.95 ± 1.55	8.75 ± 1.30	7.53 ± 1.64
5 <sup>th</sup> hospital students	7.33 ± 0.95	6.77 ± 1.05	5.78 ± 1.59

“resident”, the Top 2 and 3 pro were respectively “lot of functionalities and resources” and “simple to use & multilingual”, whereas the Top 2 and 3 cons were respectively “not enough quality information” and “too much quantitative information not enough useful”.

### Discussion and Conclusion

This study focused on a qualitative evaluation of a drug terminology server, with a cohort of 30 pharmacy students (fifth year) and a control group. The main results showed in the pharmacy group that “teaching interest” was the most appreciated criteria and the worst was “ergonomics”. Pharmacy students are may be eager to find precise information and knowledge about drugs. Nonetheless, all three criteria are rated above 6.5 out of 10. Overall, this qualitative evaluation provides different results in the pharmacy group vs. the control group, where the “ergonomics” received the highest grade. The results in the control group are quite different: the ergonomics

was the most appreciated criteria and the worst was the skills interest. This result is a success as the HeTOP drugs interface was specifically devoted to “non drug” specialist. According to these results, the LIMICS lab has decided to develop a specific interface for pharmacy students, which may also use the HeTOP terminology server, as it contains all the relations around drugs. This interface is much more complex to the one developed in this project, but could be of interest for this advanced population in terms of drug information.

### References

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