PROMOTING DIGITAL LITERACY AND CRITICAL ANALYSIS IN SOCIAL PSYCHOLOGY UNDERGRADUATE STUDENTS

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Abstract

Digital Literacy (DL) and Critical Analysis (CA) are important competences for future professionals to solve problems with proficiency and scientific basis. One of the main roles of higher education is to promote these two competences (i.e. DL and CA) and in Psychology Degree syllabus, these competences are included. Nevertheless, they are seldom being developed together and interconnectedly. Thus, our challenge has been to design new learning strategies for the interwoven development of these competences.

This paper presents the most recent results of an ongoing three-year teaching innovation project interweaving the development of DL and CA in first-year undergraduate students of the Bachelor’s degree in Psychology from the University of Barcelona. In the subject of Social Psychology, students face the following group task: they must give an informed answer to a socially relevant question using articles of scientific databases and analysing critically the obtained information. In so doing, students are expected to learn how to do a bibliographical search and apply critical analysis principles and put them at their service to give an informed answer from a social psychology point of view to a relevant social issue.

In this group task, students use two scientific databases: PsycNET and Sociological Abstracts. These two databases are important for social psychology, as PsycNET offers students a filtered and curated database of scientific publications from a psychological standpoint, while Sociological Abstracts offers an approach to psychosocial processes from a sociological point of view. Altogether, these two databases let them answer more richly to an answer separately.

To conduct these searches, students first identify and discuss which are the key psychosocial concepts and processes underlying the phenomena that appears in their question. After that, they perform a first search using those key concepts and processes, and undergo a first analysis of the obtained results using the information offered by the databases. Then, they look for one relevant article in each database, justifying their decisions and analysing it. Finally, the students compare these articles in relation to how they can answer altogether to their socially relevant question. All this process is explained in a final report which the teacher later evaluates.

The acquisition of DL and CA competences is assessed using two indicators: 1) before starting the group task, a questionnaire of 5 items related to digital literacy and critical analysis key aspects which would be developed in the group task; and, 2) after the group task, these same competences were assessed when marking the final report with a rubric. The analysis of the efficacy of this intervention indicates that the development of DL and CA competences occur at the same time and promote each other. This is evidenced both in the improvement observed in the rubric in relation to questionnaire items, and in the qualitative analysis that can be done through students’ feedback and the observations of the supervisors.

In conclusion, this methodology is useful to promote an intertwined development of DL and CA in future professionals, so they can provide informed and scientific answers to the problems they will face in their daily practice. Also, it seems a promising methodology to be applied to other disciplines in higher education teaching.

Keywords: critical analysis; digital literacy; social psychology; scientific database.

1 INTRODUCTION

Digital Literacy (DL) and Critical Analysis (CA) are important competences for professionals who put scientific knowledge at their service to solve problems and innovate with proficiency and rigor. Students and professionals are immersed in an exponentially increasing amount of information, which they need to find, filter and analyse [1]. In this context, higher education has the responsibility to
promote DL & CA in initial stages [2], and international organisms have declared their importance to
educate future professionals in the current Information Society for the promotion of innovation, growth,
and social development processes [3]. Psychology bachelor’s degree syllabus is not an exception,
and DL and CA were considered, more than 10 years ago, as transversal competences to be
developed through all the subjects and years of students’ education [4].

Nevertheless, DL and CA are seldom being developed together and interconnectedly, usually being
developed independently [5]. It is crucial to work on both competences at the same time and in a
practical way, in order to promote the efficiency of the training and to insert critical analysis processes
during the process of finding, selecting and analysing vast amounts of information obtained through
digital literacy competences.

Thus, our challenge has been to design new learning strategies for the interwoven development of
these competences. Building on previous experiences [6], this paper presents the most recent results
of an ongoing three-year teaching innovation project interweaving the development of DL and CA in
first-year undergraduate students of the Bachelor’s degree in Psychology from the University of
Barcelona. In the subject of Social Psychology, students face the following group task: they must give
an informed answer to a socially relevant question using articles of scientific databases and analysing
critically the obtained information. In so doing, students are expected to learn how to do a
bibliographical search and apply critical analysis principles and put them at their service to give an
informed answer from a psychosocial standpoint to a relevant question for their field of interest.

In the following sections, the methodology of this intervention is described, specifying the process
followed by the participants, and the instruments used to assess these competences. After, results of
this intervention are described, focusing on how the students dealt with each aspect evaluated related
to DL and CA aspects.

2 METHODOLOGY

2.1 Participants

Participants were 189 students (151 women and 38 men). They were students from a compulsory
course in social psychology, during the second semester of the first year in the degree of psychology,
at the Faculty of Psychology of the University of Barcelona. It took place from February to May of
2017. Students gave their consent for the use of the data.

2.2 Databases

The students used two scientific databases to look for relevant information on these topics: PsycNET
and Sociological Abstracts. These databases allow them to look for publications such as journal
articles, book chapters, and dissertations. Regarding PsycNET, its collection encompasses
publications from psychology and related areas, while Sociological Abstracts contains sources with a
sociological approach. Another strength of these databases is that they allow to filter each search
using Booleans and other additional parameters, and give summary data on your result. These
databases differ in the type of information that they give, such as author's relevance, key terms, or its
classification. Given the importance of the knowledge of sociology and psychology for this area [7][8],
proficiency in these two databases can grant a better and complimentary understanding of a social
issue.

2.3 Procedure

This intervention consisted of a supervised learning process. The student had to follow a series of
steps and phases, and this process was supervised with “progressive” reports. This process can be
visualized in Figure 1, and it is explained in the following lines.
During the first face-to-face session, teachers explained the assignment, the steps of the searching process, and the assessment procedure, focusing on the rubric that would be used to assess their performance.

In the first phase, students started forming workteams from 3 to 6 persons each. These workteams had to choose a question related to a key social issue from a list previously elaborated by the teachers. This question framed the project and made students rethink a social issue in terms of its psychosocial underlying processes (e.g. attitude change, self-esteem, dehumanization, or social conformity). The workteams identified and discussed which were the key psychosocial concepts and processes underlying their question. After that, they began to search in the databases using those key concepts and processes, and to analyze the obtained results using the offered information. Two weeks after, they sent a first report explaining these processes and which decisions they took.

In the second face-to-face session, the teachers had reviewed the first report, and gave general tips and tools on how to refine their searches (e.g. filters and Booleans) and improve the adequacy of their keywords, according to the revision of the first report. During the second phase, taking into consideration this feedback, the students reviewed their previous work and continued identifying 5 relevant articles in each database and selecting a final article according to its content, relevance, and authorship, and analyzed it. Then they sent the second report reflecting all this process.

In the third and last face-to-face session, teachers had reviewed the second report, and focused on their decision process, and the adequacy of the selected article. Finally, during the third phase the students compared the search process in each database and the articles in relation to how they could answer altogether to their socially relevant question. All this process was explained in the final report, which thoroughly explained all the phases and included every evidence of the activity. Through all these phases, the teachers were involved directly in the design and evaluation of the project, and supervised all the works and resolved any doubt, both online through e-mails, and face-to-face through individualized sessions under request of the student.

2.4 Instruments

The acquisition of DL and CA competences is assessed using two indicators: 1) before starting the task, an online questionnaire of 5 items related to digital literacy and critical analysis key aspects
which would be developed in the group task; and, 2) these same competences were assessed when marking the final report with a rubric.

Online questionnaire consisted of a set of 5 items. These items were presented randomly to avoid any interfering effects on the obtained data. In the first item, students had to identify the most appropriate set of keywords from. In the second item, students had to select which set of Booleans would be the most appropriate for searching a given topic; in the third item, they had to identify the most parsimonious solution to identify relevant publications for their topic when dealing with a lot of publications in a result; in the fourth item, they identified which search filter would be the most appropriate in a given situation; to end with, in the fifth item, students had an extract from a publication, and they had to select which conclusion was the correct one from a set of given options.

The final report was marked using a rubric (see Table 2 in the next section) evaluating each step of the phases described above. In each item of the rubric, marks ranged from 0 to 4 (0 = Not at all; 2= Partially; 4 = Totally), according to how the final report met the criteria. The same teachers rated every assignment. Data was analysed using IBM SPSS® 23.

3 Results

Table 1 shows the results for the previous knowledge questionnaire, reflecting the percentage of correct and incorrect answers to the 5 items.

<table>
<thead>
<tr>
<th>Skill assessed</th>
<th>Correct</th>
<th>Incorrect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification of keywords</td>
<td>N 47</td>
<td>% 23.98</td>
</tr>
<tr>
<td></td>
<td>n 149</td>
<td>% 76.02</td>
</tr>
<tr>
<td>Usage of Booleans</td>
<td>N 43</td>
<td>% 21.94</td>
</tr>
<tr>
<td></td>
<td>n 153</td>
<td>% 78.06</td>
</tr>
<tr>
<td>Procedure for selecting relevant articles</td>
<td>N 50</td>
<td>% 25.51</td>
</tr>
<tr>
<td></td>
<td>n 146</td>
<td>% 74.49</td>
</tr>
<tr>
<td>Filtering results using search fields</td>
<td>N 43</td>
<td>% 21.94</td>
</tr>
<tr>
<td></td>
<td>n 153</td>
<td>% 78.06</td>
</tr>
<tr>
<td>Deriving conclusions from scientific evidence</td>
<td>N 36</td>
<td>% 18.37</td>
</tr>
<tr>
<td></td>
<td>n 160</td>
<td>% 81.63</td>
</tr>
</tbody>
</table>

The overall performance of the students in the previous knowledge questionnaire was the following: 50 students (28.9%) failed all these questions; 71 participants had only one correct answer (41%); 43 of them had 2 correct answers (24.9 %); 8 students had 3 correct answers (4.3%); and only 1 student had 4 correct answers (0.6 %). None of them answered all the items correctly. These results evidenced the baseline of the group, and highlighted the need to develop DL and CA in this group.

Regarding the final project, 33 works were marked using the rubric, obtaining a final mark from 0 to 10 (\(M = 7.93; SD = 1.22\)). Table 2 reflects the different aspects evaluated in the rubric and the final marks.

<table>
<thead>
<tr>
<th>Table 2. Rubric and final report marks (n = 33 final group projects)</th>
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<tbody>
<tr>
<td>Md</td>
</tr>
<tr>
<td>------------------------------------------</td>
</tr>
<tr>
<td>1. Formal aspects</td>
</tr>
<tr>
<td>1.1. Content distribution follows the guidelines</td>
</tr>
<tr>
<td>1.2. References follow APA Style</td>
</tr>
<tr>
<td>2. Introduction: objective, search terms and method are explained briefly and concisely</td>
</tr>
<tr>
<td>3. Search and analysis</td>
</tr>
<tr>
<td>3.1. Information has been properly searched, explained and justified (i.e. keywords' selection, decision processes, usage of booleans). [Identification of keywords; Usage of Booleans; Filtering results using search fields]</td>
</tr>
<tr>
<td>3.1.1. PsycNET</td>
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</tbody>
</table>
A first approach to the results in the rubric shows a good performance on average. Both the mean and median of each aspect of the rubric is on the upper side of the scale (that is, greater than 2 out of 4), and most of them are above 3 out of 4. Nevertheless, students show different dexterity in different parts of the final project, which is understandable given that this was the first time that faced this kind of task in psychology syllabus. Concerning those parts in which students had relatively less dexterity, as shown in their respective mean and median values, the main challenges were:

- following APA style when citing and referencing publications (aspect 1.2), with minor mistakes in reference list;
- displaying their findings in an understandable way, occasionally obviating in their text relevant indicators they used to make their decisions (aspect 3.2);
- and analysing the articles (aspect 3.4) and comparing them properly (aspect 4.3), which principal problems were writing hypotheses clearly and methodically; relating the hypotheses to their topic of interest; a tendency to describe the article rather than analysing it; and not using appropriate scientific terms.

With regards to the aspects in which the students performed better, they included:

- following the distribution of contents previously demanded by the teachers (aspect 1.1);
- writing a clear introduction to explain the key points of their searching and analysis processes (aspect 2);
- and explaining the process by which they identified the keywords and filtered the articles (aspect 3.1).
Finally, the results of the previous knowledge test and the rubric were compared. The comparison showed an improvement of DL and CA skills from the beginning to the final project. In general terms, improvements are more pronounced in the decisions that involve more structured indicators, such as using the number of citations to select a given article. On the contrary, the decisions that entail more autonomous decisions, like analysing the article and its implications for the social issue are more difficult. Thus, there is space for improvement in this critical analysis skill, which will be further developed in the following years of Psychology bachelor’s degree.

4 CONCLUSIONS

In this paper, we have presented the development of a learning process which had the intention to develop and reinforce mutually DL and CA competences.

Regarding this objective, we highlight the usage and combination of two databases for the following reasons: it improves DL as every database use different criteria, filters, and keywords; it gives different responses which makes the student integrate different and complementary information for answering a social issue; and, in our case, it entails understanding a social issue from the standpoint of two different perspectives.

Given these results, future works will incorporate a post-test questionnaire with the same characteristics as the previous knowledge questionnaire, so as to assess the development of these skills beyond the final report. In relation to the methodology, further improvements will consider the incorporation of an individual task, in order to reassure on the development of DL and CA on each student, and avoid processes such as the diffusion of responsibility.

To sum up, our methodology of learning and supervision in the intertwined development of DL and CA is useful for the training of future professionals. In fact, the students have been able to provide informed and scientific answers to the problems they will face in their daily practice. Therefore, it is a promising methodology to be applied to other disciplines in higher education teaching.

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