

Metacognitive Awareness and its Impact on Study Strategies in Online Learning Context

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Abstract

Framework: Research has shown the importance of awareness of one's mental processes for academic success. For such conditions that help students to have thought of this culture must be created. This requirement is extremely relevant when we situate it in online education system, which advocates independence for students. Purpose: This study aims to analyze the justifications given by a set of students regarding the results obtained and the consequences for the future. Method: The sample included 43 students in continuous assessment, from both sexes. After knowing the results were asked to indicate the implications of this exercise due to the approach or not, the actual rank. Results: The content analysis revealed the existence of two categories - Causality (extrinsic/intrinsic) and Influence (No consequences / Generics / Specifics) - regardless of the approach to real rank. Conclusion: The reflection that students can make about their learning process and the difficulties in developing their tasks is of great relevant to achieve an effective success. This was evident in the analysis that our students have made on the completion of the assessment work, as well as the consequences for their future study. This process of reflection and awareness in the teaching learning process is particularly relevant in online education where the role of metacognitive monitoring and control system gains a prominent role. So, allow students to reflect on these issues is to get them to become more effective learners

1. Introduction

In the digital era, the teaching and learning scenarios have changed. The access to knowledge became easier and more immediate [1]. The virtual education, with support from the technologies of information and communication, is now placed in a privileged space in the education field. Online teaching is presented as a powerful ally for those who need a constant improvement or acquisition of competences. We find an adult audience with very specific traits and challenges to the new School. These virtual scenarios promote changes in the pedagogic relationship between the different actors in the learning-teaching environment. New scenarios, new parts, new relationships [2].

Despite the differences, there are common denominators concerning the part played by the student in the process of teaching learning. There are several authors that try to understand the purpose of self-esteem, self-regulation of learning and metacognitive strategies in the learning process, in general and specifically in online context [3][4][5][6].

The online learning context allows a bigger time, space and methodology flexibility, providing student's with more autonomy and responsibility for their learning process [7].

Learners who know, more appropriately, how to study and how learning occurs, i.e., have better metacognitive knowledge and learn better, when compared with those who have less metacognitive knowledge. It is therefore essential to teach learners about how they learn and identify themselves with the most effective learning strategies, so that they can improve their metacognitive judgments, as well as the self-regulation of their learning.

Students in eLearning require greater self-direction and self-regulation to achieve their academic goals [8]. To lead the students to reflect on their learning strategy and tailor their metacognitive strategies to achieve success in the task is of great relevance. This means that the incorporation of ICT in the educational context, using the virtual spaces, allows a more effective response to the educational challenges by allowing using strategies and tools that best fit to the real needs of their learners. The research work of Azevedo and Cromley [9] points to the implications that the design of virtual learning environments have on the acquisition of knowledge.

By monitoring they learning process, the learner can check how his plans become actions and through the introspection, made about their achievements, learners can perceive discrepancies between what

were their goals and what actually exists. The learner can thereby exercise metacognitive control, reviewing goals, plans to adapt or operations of change [10].

2. Methodology

2.1 Objectives

This study aims to analyze the justifications given by a set of students regarding the results obtained and the consequences for the future.

2.2 Design and participants

Data collection was made through the answers students gave to a question made after the results of their assessment were disclosure. A total of 43 students, in continuous assessment, answered the question, as volunteers. 14% were males and 86% were females. The average age of the participants was 41, ranging from 26 and 57 years old (see Table 1) one student was in his 20s, 21 students were in their 30s, 11 students were in their 40s and 9 students were in their 50s. The median age was 42.

Table 2. *Descriptive statistics of participansts' age*

Variable	N	MIN	MAX	AVG	SD
Age	43	25	60	42.17	8.82

2.3 Instruments and procedure

The data was collected in the curricular unit *Education and Literacy*. This belongs to the first year, second semester of the degree course in Education.

Before starting, a message was placed in the "News" forum about the purpose of the research and requesting the participation of the students. Whenever a questionnaire was available for collecting data another message was placed in the forum requesting the response of students.

The data collection was done in three stages. Before completing their assessment test, students were asked to indicate what grade they expected to obtain (Predicted scores). Immediately after finishing their test, they were asked again to indicate the grade they expected to obtain (Postdicted Score). Finally, after the results came out students were asked to indicate whether their real grades, were higher, lower or equal compared with their prediction. Furthermore, they were asked about what would be the implications for their study method. Our analysis focuses on this last phase.

2.4 Data analyses

We proceeded to the analysis of participants' responses according to how the questions were asked. It was the purpose of this research to examine the justifications given by this online students regarding the results obtained in the first continuous assessment task and how this fact will affect their study process in the future. To analyse their responses, we used content analysis.

3. Results

The content analysis of the answers given by the students to the question after the results came out (actual grades) allowed us to establish the following categories and sub-categories, regardless of the dimension in question - Table 2. These are the categories and subcategories common to both online assessment moments (e-folio A and e-folio B).

Table 2. *Categories and sub-categories*

Dimensions	Categories	Sub-categories	Units of register	
Higher / Lower / Same	Causality Statements concerning the cause of the difference in scores	<i>Extrinsic</i>	System	<i>Interesting and current topics</i>
			Teacher	<i>Monitoring of teacher</i>
			Task	<i>Overlap of content</i>
		<i>Intrinsic</i>	Self	<i>Motivation</i>
				<i>Self-esteem</i>
	Influence Statements concerning the implications of this difference in terms of future studies	<i>Generics</i>		<i>Lack of study</i>
				<i>Misinterpretation of concepts</i>
		<i>Specifics</i>	Motivation	<i>Lack of objectivity in the answers</i>
				<i>Will positively influence</i>
			Method	<i>Encouragement and Motivation</i>
<i>No consequences</i>		<i>Ability to stimulate oneself</i>		
		<i>Structure the work in function of time</i>		
		<i>Direct the effort</i>		
		<i>Be more careful when answering</i>		
		<i>I will continue to study the same way</i>		

In the second assessment (e-folio B), another category came up that relates to a more reflexive component of this type of work and the importance of paying attention to the feedback given by teachers concerning the student's task – *Reflective Category*.

The indication of a Good, Bad or Equal classification, comparing the scores obtained with the ones predicted was not clear. For that reason, the content analysis presented in this paper includes the responses in global terms. The Dimension has not proved to be a suitable descriptor. The following results refer to the analysis of frequency distribution taking into account the categories and sub-categories. Table 3 shows the results found in the category *Causality*.

Table 3. *Categories and sub-categories – Causality: Number of occurrences*

Sub-categories	N. of occurrences			
	1st moment (e-fólio A)	2nd moment (e-fólio B)		
<i>Causality</i> <i>Extrinsic</i>	System	2	1	
	Teacher	2	1	
	Total = 13 Task	2	5	
<i>Intrinsic</i> Total = 90	Individual characteristics	12	16	
	Self	Performance	6	4
		(Total = 31) Positive nature		
	Negative nature	13	8	
	Organization / Planning	Positive nature	10	10
		(Total = 30) Negative nature	6	4

As it can be seen in Table 3, the highest number of occurrences that justify the classifications obtained is at the intrinsic level. These may refer to more individual characteristics, such as motivation, self-esteem and lack of confidence in the capabilities, but also on aspects that may be more controllable by the student. This level involves the way the subject feels within the assessment task, such as an incorrect interpretation of questions, a difficulty in understanding some questions. Finally, we find the issues related to the preparation for the assessment task. These refer to the organization and planning of the study itself.

We now introduce the results obtained given the implications/consequences to prepare/organize future study situations – Table 4.

Table 4. *Categories and sub-categories – Influence: N° of occurrences*

Influence	Sub-categories	N. of occurrences	
		1st moment (e-fólio A)	2nd moment (e-fólio B)
	Generics	9	6
	Motivation	10	15
	Specifics	8	4
	(Total=34) Organization	9	13
	No consequences	1	3

Despite the structure of the answers being identical in the two assessment moments, we can observe that their distribution in the subcategories presents differences. More occurrences related to the importance of motivation in the process arise, as well as the theme of organization/planification of the task in study as an important element to reach success in the assessment.

We believe that is related to this that, in the second task moment, answers with a more reflexive and global nature arise, reaching beyond the assessment task. – Table 5

Table 5. *Reflexive Category: N° of occurrences*

e-fólio B	Category		Units of register	N. of occurrences
	Reflexive	Answers related to:	- This type of survey does reflect on the consequent results;	6
a)	The influence of this type of study on the reflection about study methods;	- Correction criteria are important to understand the failures		
b)	Teacher's feedback purpose in future works.	- Reflection on the expected rating and the received rating guides for the future		

4. Conclusions

The goal of our work was to know the reflections of a group of eLearning students' about assessment tasks in two specific moments. The results obtained through the analysis of their answers allow us to recognize the part of the subjects' intrinsic characteristics as the main responsible for the process. Among these, we highlight traits associated with motivation, effort and self-esteem. The traits related to motivation and to a careful planification are precisely the ones where the influence of reflection is felt the most.

The pertinence of this kind of reflection is also recognized by students after their first assessment moment.

Therefore, we consider that the goal of our work exceed expectations, giving the students' the opportunity to reflect about their study and learn process and making them aware of the importance of their reflection for a better performance.

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