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**Quality of Learning in Higher
Education: Students'
Conceptions of Learning as a
Critical Aspect**

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Quality of Learning in Higher Education: Students' Conceptions of Learning as a Critical Aspect

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Abstract

Subjects present different ways to conceptualize and experience learning (e.g., Saljo, 1979; Marton, Dall Alba & Beaty (1993). This has also been confirmed by portuguese researches (e.g., Grácio 2002, Rosário et al., 2007).

It was found the conceptions of learning influence the way students approach learning and the quality of learning outcomes. It was also established a link between the student conception of learning, the level of processing used and the understanding reached (e.g., Marton et al. 1993, Entwistle, 2009).

The different conceptions of learning are normally classified in two large groups. A first group concerning the superficial conceptions of learning (i.e., increase of knowledge, memorization and application). These three conceptions share the common fact that knowledge is viewed as something external, emphasizing the storage and reproduction of information, implying a low level of cognitive processing. A second group concerning the transformational or deep conceptions of learning (i.e., understanding, seeing something differently and changing as a person) emphasizes the assignment of meaning and the transformation of the information, indicating complex cognitive processing.

The research findings and results in this field were obtained through the use of qualitative methodologies, mainly in a phenomenography perspective. However, in 2002 Purdie and Hattie presented a questionnaire built from qualitative data to assess student's conceptions of learning (COLI – Conceptions of Learning Inventory). In this study we present its validation for the portuguese higher education population through its application to 563 students of first year from the University of Évora.

Keywords: Conceptions of Learning, Phenomenography, COLI Inventory

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Introduction

The student's role as an active agent of his own learning is more and more recognized nowadays. Research on education has increased, but studies on the teaching-learning process as students experience it, are still scarce. However it has been demonstrated that there are qualitative variation among students in the conceptualization, process and outcomes of learning in general and across different learning situations and tasks.

There are four related and overlapped dimensions in the way students and people in general think, understand and try to learn: the motivations for learning, the approaches to learning, and the conceptions of learning (Biggs, 1987; 1993; Brown, Lake & Matters, 2008; Entwistle & McCune, 2004; Marton & Säljö, 1976, 1997; Purdie, Hattie & Douglas, 1996; Richardson, 2007, Säljö, 1982).

It was found the different conceptions of learning are expressed and materialized in different learning situations leading to qualitatively different learning outcomes. Moreover, a link has been recognized between the student conceptions of learning, the level of processing used and the understanding reached (e.g., Entwistle, 2009; Marton et al., 1993; Richardson, 1999; Van Rossum & Shenck, 1984). In fact, conceptions of learning affect—the approaches to learning, a finding that has also been confirmed by Portuguese studies (e.g., Grácio, 2002; Chaleta, 2002; Rosário et al., 2007).

The conceptions of learning form the background screen from which are derived approaches to learning, cognitive processing, use of strategies to learn, learning outcomes and even students perception of good teaching. A conception is a way of being conscious of something and is not a mental representation or a cognitive structure (Marton, 1994). It is also an individual's personal and variable response to a concept as, for instance, learning (Entwistle & Peterson, 2004).

Up until now fifteen conceptions of learning have been identified, namely: 1) increasing of knowledge; 2) memorizing; 3) applying 4) understanding; 5) seeing something in a different way; 6) change as a person; 7) personal fulfillment; 8) a duty; 9) a process not bound by time or context; 10) broad and diversified ; 11) developing social competence; 12) interactive and social process; 13) teaching process; 14) individual and individualized process; 15) experiential process 16) as a value.

The first five conceptions were firstly identified by Saljo (1976) and the sixth (change as a person) by Marton, Dall Alba & Beaty (1993). The conceptions of learning as personal fulfillment, as a duty, as a process not bound by time or context and as developing social competence were first identified by Purdie, Hattie and Douglas (1996). Six more categories of learning were also discovered by Grácio (2002), namely: a) Learning as something broad and diversified. This conception of learning encompasses ideas of range and diversity at three levels: what we learn about, how we learn and learning resources; b) Learning as interactive and social process. In this conception the central idea is that the subject learns interacting with the others, through the others and also transmits the others the knowledge acquired per se; c) Learning as a teaching process. In this conception emphasis is placed on a specific action

of formal education. The subject learns through action exerted by the teaching specialized educational staff; d) Learning as individual and individualized process. This conception expresses the idea that each individual has their own way of learning and that this form is affected by factors internal to the subject; e) Learning as an experiential process. This conception expresses the idea that one learns in many circumstances, situations and experiences of everyday life. The experience emerges as a foundation and stimulus for learning. The subject actively constructs its learning from experience and learning emerges holistically; f) Learning as a value. Learning is conceptualized as having a value in itself and in a positive and rewarding way.

The different conceptions of learning are ordinarily classified in two large groups that reflect two broad qualitatively different conceptions: a surface, quantitative or reproductive conception of learning and a deep, qualitative, seeking meaning or transformative conception. The first group involves less sophisticated ideas about learning reporting to the acquisition, storage, reproduction and use of knowledge (increasing of knowledge, memorization, application). The second group, includes higher subcategories of conceptions since it refers to learning as seeking and construction of meaning and personal transformation (understanding; seeing something in a different way; change as a person).

Better learning outcomes occur—when students have transformative or deep learning conceptions. Students express and materialize their conceptions in concrete situations of learning, addressing them differently and activating psychological tools for the collection, processing and manipulation of information (e.g., Säljo, 1982; Richardson, 1999; Biggs, 1993)

It is accepted that conceptions of learning have a developmental trend from the less sophisticated conceptions to more sophisticated ones (Entwistle & Peterson, 2004, Marton et al., 1993; Purdie & Hattie, 2002; Saljo 1979; Vermunt & Vermetten, 2004). However conceptions of both kinds can also co-exist in the same individual. The problem is when students do not have the deeper conceptions of learning. In this case they cannot consciously adopt learning processes appropriate for different tasks.

Conceptions of learning are developed in particular contexts and they are contextually dependent. For instance, not only students try to understand what is required of them as their conceptions of learning suffer the influences of teaching and teachers conceptions of learning and teaching. If teaching does not promote and require—deep conceptions and approaches, students may not develop them or if they have already the more complex ones they can only use superficial approaches. In summary, the effects of the context arise at three levels: i) the promotion of more sophisticated conceptions of learning; ii) in the activation and use or nonuse of the more complex conceptions and cognitive processing associated with them; iii) on the development of ways of learning in specific subjects (Säljo, 1982; Trigwell & Ashwin, 2002).

Most of the studies on conceptions of learning are made in a phenomenographic perspective with small samples. Purdie and Hattie (2002) developed an inventory from qualitative data in order to assess students conceptions of learning that could be used with larger groups (COLI).

As conceptions of learning are one of the most important dimensions about how people think and understand learning, there is a need to test such an instrument allowing it to be used not only with larger populations but also with cultural diverse groups of students.

The aim of the present study is to test the dimensionality of the Conceptions of Learning Inventory (COLI) and to validate it to Portuguese higher student's population.

Method

The Conceptions of Learning Inventory (COLI) was developed from qualitative data obtained from Australian and Japanese high school students (Purdie, Hattie & Douglas, 1996). Using the student's responses about their conceptions of learning Purdie and Hattie (2002) develop an instrument with Australian high school students. In this study we use the version of 32 items to validate the instrument from the higher education first year Portuguese students.

In the COLI construction Purdie and Hattie (2002) resorted to SPSS10 (Exploratory Factor Analysis) and AMOS (Confirmatory Factor Analysis). The final 32 items instrument answered on a Likert scale of 7 points from 1 (Strongly Disagree) to 7 (Strongly Agree). These items were distributed to six conceptions of learning, namely: 1- *gaining information* - *INFO* - 5 items; 2- *remembering, using and understanding* - *RUU* - 9 items; 3- *duty* - *DUTY* - 3 items; 4- *personal change* - *PERS* - 8 items; 5- *process not bound by time or place* - *PROC* - 3 items; 6- *social competence* - *SOC* - 4 items.

Participants

The stability of the structure of the COLI was tested on 563 higher education first year Portuguese students (n= 390, 69.3% female). To collect the data we contacted with the teachers responsible for the 1st year in three higher education institutions in order to make available some time in their classroom to fill in the inventory. In the classroom context, students were informed of the objectives and procedures of research, as well as how to fill in the inventory. We also mentioned ethical aspects inherent to this process, particularly with regard to anonymity and confidentiality of data as well as the fact that student participation was voluntary.

Instrument

The Conceptions of Learning Inventory - COLI (Purdie & Hattie, 2002) was translated to Portuguese language by a bilingual Portuguese national and back-translated separately by a bilingual English native speaker and a second bilingual Portuguese national. All translators were higher education teachers of English. Back-translations were compared and discrepancies were settled through consensus of all three translators. Because the Portuguese higher education context is different from the context of the original validation

(Australian high education) we asked at 10 higher education students to read the questions and to indicate those that they did not fully understand.

Results

In this study we present just the exploratory factor analysis. The statistical treatment of data was performed using *SPSS - Statistical Package for Social Sciences* (Maroco, 2010; Gageiro & Pestana, 2008).

Factor loadings indicated differences from the original instrument. Seven factors are identified with a Total Variance Explained of 57.69 %. Some differences are detected in the association of the items. The results are reported in Table 1.

In the Factor I (Gaining information) only two items remain of the original structure. Another item from factor II joins this factor (RUU2, see Appendix). We assume that association is possible because gaining information can include aspects related to process of the memory control (INFO-M). The internal consistency obtained has an alpha of .60.

In the Factor II (Remembering, using, and understanding) five items persist of the original structure but are associated with two items of Factor I (INFO4 and INFO5).

The association of these items of factor I (INFO) to this factor II (RUU) leads us to believe that the conceptions of remembering, using and understanding are also related to a modification of cognitive skills. (RUU-MC1e RUU-MC2). This items association obtains a high value of alpha (.80).

In factor III (Duty) remain two original items that associates with a third belonging to factor I (INFO3). The association of this last item is conceptually difficult to explain and that is also confirmed by the low alpha value (.42). This scale originally designated as Duty gives us some difficulties of interpretation. In our opinion it seems more learning as “value” than “duty”.

Factor IV (Personal change) loses two items compared to the original scale of eight items but maintains a strong internal consistency (.83).

In the Factor V (Process) remain two items of the three original items of the factor. In this case we find a combination with one item of factor II (RUU5). The association of this item of factor II, to the original items of factor V can be understood as expressing the particular aspect of generalization in the learning process (PROC-G). In present case the internal consistency of alpha is .63.

In relation to Factor VI (Social) the scale was similar to the original and presents an alpha value of .62.

The factor VII is new and we call it PERD (Personal Development). It combine six items of four different scales. A careful analysis of the items showed a conception of learning as personal development. The items express the idea of a holistic development in a personal, adaptive and constructivist way. The scale shows strong internal consistency (.85).

In the original study we just can see the interval between lower and higher value of alpha for the exploratory analysis (.65 to .83). In our sample, excluding Factor III (Duty), our results are similar (.60 to .85).

Table 1. Factor Loadings from Exploratory Analysis of Conceptions of learning Items for Portuguese sample

Factor/item	Factor loadings				Alpha
	COLI Exploratory sample (n=331)		Portuguese Exploratory sample (n= 563)		
Factor I Gaining information (INFO)	INFO1	.61	INFO1	.77	.60
	INFO2	.55	INFO2	.61	
	INFO3	.61	INFO-M (RUU2)	.76	
	INFO4	.62			
	INFO5	.58			
Factor II Remembering, using and understanding (RUU)	RUU1	.54	RUU1	.70	.80
	RUU2	.62	RUU3	.78	
	RUU3	.63	RUU4	.81	
	RUU4	.58	RUU8	.52	
	RUU5	.68	RUU9	.47	
	RUU6	.47	RUU-MC1 (INFO4)	.54	
	RUU7	.63	RUU-MC2 (INFO5)	.62	
	RUU8	.55			
	RUU9	.56			
Factor III Duty (DUTY)	DUTY1	.38	DUTY1	.49	.42
	DUTY2	.68	DUTY3	.69	
	DUTY3	.45	DUTY-X (INFO3)	.63	
Factor IV Personal change (PERS)	PERS1	.64	PERS2	.77	.83
	PERS2	.65	PERS3	.74	
	PERS3	.75	PERS4	.73	
	PERS4	.73	PERS5	.56	
	PERS5	.56	PERS6	.79	
	PERS6	.70	PERS7	.79	
	PERS7	.61	PERS8	.64	
	PERS8	.68			
Factor V Process (PROC)	PROC1	.55	PROC2	.60	.63
	PROC2	.47	PROC3	.57	
	PROC3	.73	PROC-T (RUU5)	.54	
Factor VI Social (SOC)	SOC1	.70	SOC1	.54	.62
	SOC2	.64	SOC2	.69	
	SOC3	.68	SOC3	.51	
	SOC4	.76	SOC4	.75	
Factor VII Personal Development (PERD)			PERD1 (PERS1)	.81	.85
			PERD2 (RUU7)	.69	
			PERD3 (PROC1)	.60	
			PERD4 (PERS6)	.79	
			PERD5 (RUU6)	.75	
			PERD6 (DUTY2)	.64	

The correlations between different factors are all statistically significant (Table 2).

Table 2 -Correlations between factors

	INFO	RUU	DUTY	PERS	PROC	SOC
INFO	1					
RUU	,466**	1				
DUTY	,329**	,384**	1			
PERS	,267**	,512**	,241**	1		
PROC	,263**	,460**	,226**	,607**	1	
SOC	,285**	,456**	,237**	,547**	,401**	1

Conclusion

Different as defined by Purdie and Hattie (2002), our exploratory factor analysis resulted not in six but in seven factors (INFO, RUU, DUTY, PERS, PROC, SOC and PERD). Some items saturate in different factors and not in the originals. However, even if there is a seventh factor we must stress the stability of the structure of COLI since it keeps the other six factors.

The analysis shows good internal consistency in the most of the scales. Factor III (DUTY), presents a low Cronbach's alpha (.42). Still, the internal consistency of the scale is very good (.91).

In summary, different conceptions identified by factor analysis are correlated with each other to explain the construct of learning conceptions since the correlations between different factors are all statistically significant.

The Conceptions of Learning Inventory (COLI) permits researchers to assess students' conceptions of learning in a quantitative way and with larger samples, not only in high school students but also of students of first year of higher education.

The results obtained in the validation of COLI can be interpreted in relation to cultural, educational and age particularities of our sample. Although conceptions of learning identified so far have many similarities between them, we can ignore the influence of context and culture.

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Appendix

Subscales and Items of the Conceptions of Learning Inventory (COLI)

Learning as gaining information (INFO)

INFO1 - Learning is when I'm taught something that I didn't know about before.

INFO2 - Learning is taking in as many facts as possible.

INFO3 - When someone gives me new information, I feel that I am learning.

INFO4 - Learning helps me to become clever.

INFO5 - Learning means I can talk about something in different ways.

Learning as remembering, using, and understanding information (RUU)

RUU1 - When something stays in my head, I know I have really learned it.

RUU2 - If I have learned something it means that I can remember that information whenever I want to.

RUU3 - I should be able to remember what I have learned at a later date.

RUU4 - I have really learned something when I can remember it later.

RUU5 - When I have learned something, I know how to use it in other situations

RUU6 - If I know something well I can use the information if the need arises.

RUU7 - Learning is making sense out of new information and ways of doing things.

RUU8 - I know I have learned something when I can explain it to someone else.

RUU9 - Learning is finding out what things really mean.

Learning as a duty (DUTY)

DUTY1 - Learning is difficult but important

DUTY2 - Even when a learning task is difficult, I must concentrate and keep trying.

DUTY3 - Learning and studying must be done whether I like it or not.

Learning as personal change (PERS)

PERS1 - Learning has helped me to widen my views about life.

PERS2 - Learning changes my way of thinking.

PERS3 - By learning, I look at life in new ways.

PERS4 - Learning means I have found new ways to look at things.

PERS5 - Increased knowledge helps me become a better person.

PERS6 - I use learning to develop myself as a person.

PERS7 - When I learn, I think I change as a person.

PERS8 - Learning is necessary to help me improve as a person.

Learning as a process not bound by time or place (PROC)

PROC1 - I don't think that I will ever stop learning.

PROC2 - I learn a lot from talking to other people.

PROC3 - Learning is gaining knowledge through daily experiences.

Learning as the development of social competence (SOC)

SOC1 - Learning is knowing how to get on with different kinds of people.

SOC2 - Learning is not only studying at school but knowing how to be considerate to others.

SOC3 - Learning is the development of common sense in order to become a member of society.