

# EDUCATION AND LEARNING IN HIGHER EDUCATION IN PORTUGAL: EVALUATION OF THE SELF CONCEPT OF COMPETENCE IN ONLINE ENVIRONMENTS

J. A. MOREIRA<sup>1</sup>, A. C. ALMEIDA<sup>2</sup>

<sup>1</sup>*Department of Education and Distance Teaching, Open University, Porto, Portugal*

<sup>2</sup>*Faculty of Psychology and Sciences Education, University of Coimbra, Coimbra, Portugal*

*jmoreira@univ-ab.pt; calmeida@fpce.uc.pt*

## Abstract

Studies focused on learning experiences have clarified the concept of education in higher education, particularly in Portugal, but few have elucidated about virtual environments on academic achievement and feelings of competence of students as they learn. On the assumption that academic success is influenced not only by the power of learning but also the way students perceive themselves, and that these factors predict their subsequent success, we've relied on national studies concerning self-concept of competence of students. The main issue was to situate the self-concept of competence of university students into new virtual learning environments through online methods of teaching. This research involved 278 higher education students enrolled in classes for courses in Social Sciences which was introduced a novel approach, with education mediated by web tools, and then appraised on their perception and self-concept of competence. We rely on the Self-Concept of Competence Scale [1, 2], having adapted all 31 items to online environments. The main findings indicate that the students had high perceptions of their self-concept level of competence. The results suggest therefore that the application of online pedagogical models [3], may have a very positive impact on self-concept of competence of students in higher education, even in social dimensions.

**Keywords:** E-moderating; Problem-based-Learning; Self-concept of competence; Virtual learning environment.

## Introduction

The Higher Education institutions in Portugal, today, face unique challenges. Aware of the need for change, in general, these institutions have been introducing reform initiatives, covering in their strategic plans new frameworks of operation, in which *e-learning* and/or *b-learning* has its place. However, many teachers have resisted these arrangements, because they suspect that this imposes an impoverished learning experience, based only on the distribution of contents via a learning platform, and offering little diversity in terms of teaching-learning experience. To overcome these biases, it is necessary to use models that incorporate processes of deconstruction that promote "true" collaborative and constructivist learning environments.

In addition to this, to make changes in this sense also requires a reconstruction of the teaching profession and a comprehensible set of teaching, mentoring and monitored training. The innovation will allow co-participation on issues of pedagogy, developing what in Anglo-Saxon literature has shown great impact and is called *scholarship of teaching and learning* [4], or "learning communities" [5, 6]. It is, therefore, important that all actors involved in higher education master skills such as team work, resource management, and maintain an open dialogue about quality, at the expense of individualism, and privilege of a culture of collegiality and mutual help in the resolution of educational problems. In fact, from the scientific study of problem solving problems we know that a similar process occurs within a problem space, with an initial and a final state, rules, restrictions and legal operators [7]. Hence, any theory on human action should explain, along with the effective accomplishments, the predictable variations [8, 9, 10]. In other words, the trajectories of competence development rather than global changes, point to specification, to differentiated domains [11], or spheres of expertise [12], involving essential elements, its own operations, specific knowledge and inherent beliefs. Although the processes underlying learning and development provide a general route, its recursiveness throughout the experiences of the individual will come to manifest itself in the construction of its current skills, in specific areas [13]. The fact that development is dynamic and co-participated by the different systems and sub-systems implies positing procedures for self-regulated variation and selection, themselves subject to variations and selections – which explains the tendency to *learning to learn*. The analysis of heuristics may be instructive on how the subjects identify and solve problems [14, 7], but the study of

restrictions to the development of heuristics can clarify how the subjects construct and apply them to different areas of knowledge, and are reorganized internally [13],

By this we mean that while the competences adjusted to new learning environments and activated from new formats of content presentation, whether as problems that students must solve or scenarios they must analyze, for the purpose of pragmatic use of information, incentives to new research and self-regulated epistemic growth to consolidate knowledge are now beginning to surface in academic pathways of students and their teachers and tutors. We have reasons to believe that its re-edited construction to address new problems or scenarios within a prescriptive model will tend to generalize to the practices of teaching, learning and research. Thus, these competences, that we dare call info-cognitive and social, will enable new forms of management and organization of knowledge and its application. In this sense, we have witnessed in recent years the emergence of various models of learning in virtual environments related to the development of communities of practice and learning and to problem solving [15], that have sought to address these concerns and have allowed a reflection on the “new” functions that teachers and students are called to perform in new learning environments. Among the existing models, we highlight the models of research communities [16, 17], of e-moderation [3], related to the development of learning communities and the learning processes within these communities, and the learning models involving the solution of problems as envisaged by Jonassen [18], called CLE- *Constructivist Learning Environments* and the model *Multiple Perspectives to Structure Learning Objects* [19],

The study now presented is therefore designed to better understand the operability of some of these *blended learning* models, analyzing the impact of new learning scenarios, and of these models in students’ perception of competence, in particular with regard to self-sufficiency, responsibility, self-direction and self-regulation, confidence in its own competences, ability to solve problems, problematisation, planning and decision making, in applying knowledge to practical situations, to invest and motivate to learn, as well as to explore and deepen learning, reflected in improved outcomes.

The self-concept of learning competence under analysis is a predictive variable of the academic relationship, and refers to the perception of oneself in the ability to deal effectively with the environment, enjoy successes and deal properly with failures, triggering cognitive and affective mechanisms that promote persistence, effort and the active search for challenges to achieve objectives focused on learning. The high concept of competence is associated with objectives focused on results, and with a low concept of competence, vulnerability to failure and dropout achievement patterns [20]. Although cognitive skills are considered most representative of competence [21, 22, 23], like Faria and collaborators [24, 2], we define self-concept of competence as a set of perceptions of personal competence in the cognitive, social and creativity areas.

## Methodology

The participants in this study were undergraduate students (n = 280) enrolled in blended online courses offered through Moodle platform during one semester at different Portuguese high schools and university, involving students of diverse courses (especially in Health and Education). Aged between 17 and 54 years old, there were 133 female and 95 male students (cf. table 1).

		Age				Total
		[17 – 24]	[25 - 34]	[35 - 44]	[45 - 54]	
Sex	Female	83	26	16	8	133
		36.4%	11.4%	7.0%	3.5%	58.3%
Sex	Male	63	21	9	2	95
		27.6%	9.2%	3.9%	.9%	41.7%
Total		146	47	25	10	228
		64.0%	20.6%	11.0%	4.4%	100.0%

**Table 1. Sample characterization by cross tabulation between age and sex**

The instrument used to study the learning community in our teaching environment was the Self-Concept of Competence Scale (SCCS) [26, 2] adapting its 31 items to virtual learning environments.

The *Self-Concept of Competence Scale* - SCCS, as mentioned above, is formed by 31 items, each rated on a 5-point *Likert* scale in which “1-Totally Disagree” indicates a low self-concept of competence

and “5- Totally Agree” indicates a high self-concept of competence, reflecting the degree to which each individual self-characterizes itself in each field of competence. The SCCS items are organized into 3 broad areas: *Cognitive, Social and Creativity*. The first includes three sub-scales called: (i) *Resolution of problems*, assessing the perception of competence in the field of cognitive learning, problem solving and applying knowledge to practice; (ii) *Sophistication in Learning*, which assesses the perception of competence in the field of investment and motivation in learning; and (iii) *Prudence in Learning*, which assesses the perception of competence in the field of accuracy and depth in learning. The second dimension comprises the sub-scale: (iv) *Social Assertiveness*, which assesses the perception of competence in the social area, especially the ability to express opinions, make new acquaintances and initiate actions; and the sub-scale (v) *Social Cooperation*, which assesses the perception of competence in the field of cooperation with others. And finally, the third dimension formed by the sub-scale (vi) *Divergent Thinking*, which assesses the perception of competence linked to creativity.

In different courses (in Health and Education) of undergraduate degrees, students were enrolled in blended online courses offered through Moodle platform, during one semester at different Portuguese high schools and university. At the end of the courses, these students answered the SCCS survey, which has been adapted to online learning in virtual environments. The survey was presented in paper format and the database was constructed in SPSS (Statistical Package for the Social Sciences, version 19.0). The main issue was to situate the self-concept of competence of university students into virtual learning environments through online methods of teaching. We intended to validate the instrument for collecting empirical data, adapted to virtual learning environments, but also to identify the degree of self-concept of competence, when learning involves the management of knowledge and relationships in virtual environments, at a time when we started using methodologies based on information technology and distance communication. It is also our aim to estimate whether, in virtual environments, students perceive themselves as much or more competent than in real environments face-to-face interaction in synchronous time. Ordinal responses were scored using the 5-point scale (scaled from 1=Strongly Disagree to 5=Strongly Agree). There were no inverted items.

## Results and discussion

The study of reliability revealed that the instrument used in this study is valid (Table 2).

Variables	Cronbach's Alpha	N of Items
SCCS	0,964	31
Cognitive	0,935	16
Social	0,891	11
Criativity	0,829	4

**Table 2 - Reliability Statistics found for SCCS and each dimension**

In spite of all this, items were scored along all points of the range (from 1 = Strongly Disagree or 2 = Disagree to 5 = Strongly Agree), mean responses for the 31 items extended from 3.60 to 4.13, with a standard deviation range of 0.669 to 0.921. That means that students recognize each dimension of self-concept of competence relevant when learning in an online web-base.

The main results of this study indicate that the students had high perceptions of their self-concept of competence, with central issues around item 4 (e.g., mode = 4), supporting the recognition of ownership of the cognitive, social and creative characteristics, indicating a high self-concept. It is nevertheless interesting to see that the social dimension is, on average, the one that scores more favorably. The results, also, suggest that the application of online pedagogical models can have a very positive impact on the self-concept of competence of higher education students, and can even improve social competences and the perception of a more supervised development of social characteristics.

## Conclusions

Normally, studies in Portugal focused on learning experiences have clarified the concept of education in higher education [25], but few have shed light on virtual environments on academic achievement and feelings of competence of students as they learn. On the assumption that academic success is influenced not only by the power of learning but also the way students perceive themselves, and that these factors predict their subsequent success [1], we have relied on studies concerning self-concept

of competence of students [1, 2]. The main issue was to situate the self-concept of competence into virtual learning environments through online methods of teaching, a new trend in our educational system. We intended to collect empirical data, identify the degree of self-concept of competence when learning involves the management of knowledge and relationships in virtual environments, at a time when we started using methodologies based on information technology and distance communication. It is also our aim to estimate whether, in virtual environments, students perceive themselves competent. We conclude that online pedagogical models are valuable to foster pedagogical gains [3, 18], and that new learning scenarios have effective impact in raising self-concept of students' competence.

Assuming that the self-concept of competence is a significant predictor of academic relationship, referring to the perception of itself in the ability to deal effectively with the environment, assess the successes and the failures to adequately deal with, causing cognitive and affective mechanisms that promote the persistence and effort to learning and problem solving, we arrive to the conclusion that virtual environments are beneficial to elevate the learning results. The high self-concept of competence is associated with good results, while a low self-concept of competence is associated with vulnerability to failure and dropout patterns. The main findings in this study indicate that the students had high perceptions of their self-concept level of competence. However, the cognitive dimension dominates, being the most representative of the self-concept of competence. But also we must attend to the social and creative domains of students' experience. When someone knows that he/she is able, have more will to get the goal and predisposes to the supply and demand of help, in a healthy relational climate and cooperative problem-solving.

And to some extent, it is curious to note that students in virtual environments can keep a closer proximity to each other than in person in classes. A blended methodology seems to validate the intent of the Bologna process, humanizing the teaching and the student responsible for the quality of their learning and intensity of their involvement in educational process [26, 27]. We've observed that the self-concept of competence is strengthened in relation to the face-to-face learning experience, except for some aspects of social cooperation. This observation enforces de empirical validity, calling attention to the insufficiency of distance learning in some of the relationship and communication components of the process of learning. Therefore, the results suggest that the application of online pedagogical models simultaneously to face-to-face approaches may have a very positive impact on self-concept of competence of students in higher education, even in social dimensions, and in the perception of a careful coaching.

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