

Dossiê 4

Currículo: espaço de reflexão e poder

GAMING: CURRENT TEACHING AND LEARNING STRATEGY FOR COMPETENCES

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Abstract

The quest for excellence in training should be a priority in today's teaching. For this, every academic community must be prepared to face the challenges arising from the contemporary sociocultural context, seeking to correct for social changes or change them in a positive way, when possible. The two areas are a type of information that is based on the constitution of a process of social and cultural insertion, the involvement of all companies that develop a constant and lasting work routine. The present article has as its theme the current formation of undergraduate studies and its changes to a teaching by competences. The teaching is found in active methodologies, however, the highlight is the use of gamification. The text brings an account of experience in a discipline that shows numerically the positive data of the use of the methodology.

Keywords: Competency curriculum. Active learning. Gamification.

1 INTRODUCTION

Education of the 21st century has great challenges and we can highlight as the largest of them, the preparation of students for an unknown and highly changeable future. We are in an increasingly complex and competitive environment, the VUCA World - Volatile, Uncertain, Complex and Ambiguous - (BRASILIAN, 2014). A challenging reality with enormous pressures, while creating countless opportunities for individuals and companies that need to produce more with fewer resources, who need to engage their employees to increase productivity and competitive advantage. Success in this context requires flexibility, cultural sensitivity, trust, adaptability to change, agile execution, and collaboration. It is imperative that the professional of tomorrow has a multifaceted profile and protagonist aligned with the expectations of the world, whatever they are given the instability and uncertainties already announced regarding the future.

Oxford Economics (a global leader in global prospecting and quantitative analysis for business and government) in partnership with Towers Watson, a global leader in professional services, has conducted a survey mapping the professional skills required in the coming years. This study highlights that the demand for new skills is a reflection of the changes that are happening in companies, as a consequence of “the realignment of the economy, the advances of technology, the globalization of markets, changes in demographic trends, new consumer needs and of increasing competitiveness” (FONSECA, 2012).

The competencies were classified in “digital”, “agile thinking”, “communication” and “global operations”. Among the twenty skills listed by the study, we emphasize that the following are indeed essential for the professional subject of the future: the ability to work in a virtual way; ability to consider and prepare for multiple scenarios; agility to work with complexity and attentive to ambiguities; vividness to face the paradoxes of management, balancing opposing points of view; dexterity in seeing the scenery as a whole; fluidity in the propositions of creativity and brainstorming; team orientation (including virtual teams); sense of collaboration; agility in oral and written communication; ability to manage diverse teams; cultural sensitivity.

Another study carried out in 2012, PISA (Program for International Student Assessment), with fifteen-year-old students, evaluated their ability to apply acquired knowledge (in mathematics, reading, science and problem solving) in different scenarios inside or outside the school. PISA emphasizes general reasoning skills, ordering problem solving processes, and striving to solve them. Like the mapping carried out by the English, the PISA results also argue that it takes more than mastery of a repertoire of facts and processes so that students are prepared for the world of tomorrow. To succeed in today's scenario, one must become an eternal apprentice, and be able to deal with unusual situations where the outcome of his interventions is unpredictable. According to OECD (Organization for Economic Co-operation and Development) 2014, the organization that promotes the PISA assessment, students need to be able to think flexibly and creatively about overcoming the obstacles that are in the way to solve unknown problems.

Both studies indicate, therefore, needs of differentiated abilities that the traditional teaching, with focus in expositive classes and with characteristic content does not contemplate and indicates the necessity of changes, in the curricula as well as in the methodologies of teaching and learning. PISA lists some approaches that can promote learning in depth and prepare the student to apply their knowledge in different situations from

which they have appropriated them. Among them, the following stand out: “problem-based learning”; “Research-based learning”; “Project-based learning” (individual or group); “Team-based learning” and “gamification”.

These approaches are defined by student engagement in the learning process and are known as methodologies that promote active learning. This model requires the student to perform meaningful activities and reasoning and reflection on what they are doing. For Prince (2004), the main points of these approaches are the active participation and engagement of the student in the activities in the classroom. In order to create this engagement in the classroom activities, the focus is transferred from the teacher to the student, that is, one must put the student in the role of protagonist.

2 CURRICULO FOR COMPETENCIES, ACTIVE LEARNING AND GAMIFICATION

A search for the etymology of the term competence leads us to Latin *competentia*, and to synonyms such as “proportion,” “right relation,” fitness, ability, ability to appreciate or resolve a subject. It would have arisen for the first time in the French language in the fifteenth century, designating the legitimacy and authority of institutions to deal with certain problems. In the eighteenth century its meaning extends to the individual level, designating the capacity due to knowledge and experience.

According to Perrenoud (2001), the teaching by competences makes necessary changes in the curricular representation and in the teaching practice. This presupposes an active, cooperative pedagogy in which teachers see the act of teaching how to conceive, fit and regulate learning situations, following the constructivist active pedagogical principles. Thus, a competency-based curricular organization implies, then, a change in the methodological posture of the teaching pedagogical action that encompasses strategies and new teaching methodologies; and, focus on competence building, competency assessment and adoption of an interdisciplinary teaching context.

In order to propose a curriculum by competences, we can not rely exclusively on the traditional curricular organization by objectives, syllabuses and disciplines. And in the case of the latter, it is necessary to consider its pluri, inter and transdisciplinary character in a context of transversality of knowledge. In this way, disciplinary content should be a means, that is, a support for the construction of skills and not an end in itself.

In its PDG (Graduation Development Plan) the PUCPR (2018) describes competence as a know-how based on the mobilization and use internalized and effective of an integrated set of resources, to solve a family of problem situations. For the university, each discipline of the courses has a specific contribution to the development of the skills of the egress, which are evaluated in specific points of the curriculum.

The triad of knowledge in the university that contemplates a competence is formed with a strong theoretical foundation (know-know), permeated by practice (know-how) and complete with the know-how that is supported by the five guiding principles of graduation (autonomy, dedication, cooperation, honesty and critical sense). This process is given by active learning, it is the means for the development of skills and, consequently, for meaningful and long-lasting learning. Thus, the more protagonism of the student in a teaching methodology, the greater the chance of training someone capable of being an apprentice throughout life. The context of the university cited above meets with Leite’s assertion that building a competency-based curriculum means, above all, “[...] educating students for

a reflexive and critical doing in the context of their social group, a question that places education at the service of students' real needs for their citizen life and their preparation for the world of work "(LEITE, 2004, p. 126).

We consider that a competency-based curriculum allows the change of traditional methods used within the classroom, requires a reformulation of teaching and learning methodologies and signals the need for a constant dialogue between subjects. The reformulation of teaching and learning methods makes the teacher use his knowledge and reflect on his actions by placing more confidence in the potential of his students, in this process also gain weight the individual trajectories and collective experiences of each one.

The construction of competency-based curricula selects authentic content that can be mobilized in practical learning situations. The educational context should seek to reflect professional life, considering the various dimensions of its exercise with society. The proposal is to bring the practice and the development of the professional identity to the center of the learning activities (activities within the real context), being concerned with the identification and adequacy of processes that lead to the results. The model does not exclude the disciplinary organization that occurs in the traditional curriculum, but establishes competences that are developed in the sphere of different disciplines or in the diverse relations between them. Turning to competencies does not relieve the curriculum of thinking about knowledge, about its absorption and incorporation into the daily life of academic life. But it proposes to make it integrated into the process of student training in an innovative, creative, thought-provoking, critical and reflective way.

Curriculum by competency should be composed of teaching-learning methodologies with active focus, pedagogical practices, different contexts and learning scenarios, evaluation methods and research activities with this principle of curricular organization. Typically, they are focused on the active pursuit of knowledge, interdisciplinarity, theoretical-practical integration and teaching-society interaction, bringing the development of the professional identity to the center of the learning activities so that it is meaningful. For the development of this type of curriculum it is necessary initially, the identification and definition of the competences necessary to good professional practice. Then the definition of its components and performance levels. Also, an evaluation program that is focused on learning (formative assessment) and focused on the detection of knowledge, skills and attitudes assimilated by students should be built.

The competency curriculum requires changes in the teaching and learning process, calls for teaching methodologies different from traditional ones, known as methodologies for active learning. Even the classroom needs to be rethought in its structure and the pedagogical approach that has been used. As opposed to passive, banking, information-based learning, active learning, the student assumes a more dynamic posture, in which he solves problems, develops projects, and thereby creates opportunities for building knowledge.

The student is the central figure and the one most responsible for the learning process, in this type of methodology. Therefore, the objective of this teaching model is to encourage the academic community to develop the capacity for assimilation of contents in an autonomous and participative way. The main elements of this approach are the student's active participation and engagement in classroom activities. Active learning re-

quires the student to perform meaningful activities and reasoning and reflection on what he is doing. This is encouraged to transfer the focus of the teacher to the student, as he begins to actively participate in the activities, the lesson is no longer centered on the teacher and is centered on the student. Brent and Felder (2009) argue that active learning is signaled by activities in which students are asked to do, not just watch, listen and take notes. The authors point out that in active learning the teacher is not without moments of explanation and explanation, however, the teacher should plan short-term activities to perform between the moments of explanation. Engaging students in activities between the explanations keeps them aware of what is being worked on in the classroom.

Several strategies have been used to promote active learning such as research-based learning, game use or problem based learning (PBL), project based learning (PBL), team based learning (TBL), flipped classroom among others. Different universities have adopted one or more of these strategies in some disciplines. These universities have innovated their teaching methods, seeking to adapt them so that they can explore the advances of the educational technologies, as well as to minimize the evasion and the level of disapproval.

Flipped Classroom is based on the concepts of active learning, student engagement, hybrid education, reading, video and podcacsing from in-home lessons prior to face-to-face tuition. In doing so, the students themselves collaborate so that the time in the classroom is dedicated to the accomplishment of exercises, projects and discussions in almost the teachers have the function of being mentors, to stimulate questions and debates and to encourage work in groups EDUCAUSE (2012).

Peer Instruction proposed by Professor Eric Mazur, professor of Physics at Harvard University in 1991, who excels in understanding and applying concepts, using the discussion among students. Professor Mazur argues that the first step in the acquisition of knowledge in a given area is understanding and conceptual apprehension. Students should have the conceptual mastery, to develop their skills and apply it in practical situations - which is, in reality, what is expected of the professional in their performance.

Project based learning (PjBL) seeks to get students to acquire knowledge through a collaborative solution of challenges (BEHRENS, 2001). The student needs to research and strive to explore the possible solutions within a specific context, using different available resources, which encourages the ability to develop an investigative and critical profile in some situation. The mediating teacher should not explain all content in order for the students to seek the knowledge for themselves. However, it is necessary that the educator gives feedback on the projects and shows what the mistakes and the correct ones were. It is important to emphasize that the evaluation must be made of the process and not only of the product.

Problem based learning (PBL) aims to make the student able to build learning based on concepts, processes and attitudes through proposed problems that exposes him to motivating situations and prepares him for the world of work. This type of learning is focused on the theoretical part of case resolution (YADAV, 2011).

Team based learning (TBL) focuses on the formation of teams within a given group so that the learning is done together and there is a sharing of ideas. TBL can be used in conjunction with different methodologies such as project-based, problem-based or game-based learning; the goal is for students to solve the challenges and work together, which

is beneficial in the search for knowledge. Through teamwork and mutual aid, one can learn and teach at the same time, forming critical thinking, which is constructed through grounded discussions and taking into account divergent opinions.

The use of game or gamification has gained prominence as a teaching-learning strategy in recent years. The methodology involves using elements of the games in a way that engages students to achieve a goal. The potential of gamification is immense, as it awakens interest, increases participation, helps students develop creativity and autonomy, promotes dialogue, and resolves complex problem situations. Games are used as tools that support classes, as they allow you to train, teach, learn and identify elements that are not provided with traditional methods. Teaching games are also potential enhancers of the process in which they are inserted, and thus, they must be in constant evolution, seeking to incorporate the improvements and suggestions of users of these tools. According to Deterding (2011), games as teaching proposals provide practical aspects that the traditional teaching of lectures does not provide, with little student interaction. Teaching using games can be a playful activity that is quite motivating in the teaching-learning process. Teaching games are a powerful learning tool as the student is encouraged to participate, assisting teachers in simulating real environments, improving student performance, and stimulating the generation of individual, collective and social experiences that aid in the formation of professionals.

The success of using games as a teaching-learning strategy can be explained on the basis of Huizinga (1971) *Homo Ludens*. For the author, the game is an action that develops within certain limits of place, time and will, following certain rules freely accepted. During the game it is important that the students have motivation and emotion, whether for fun or competition. The course of the game must sometimes be accompanied by tension. However, it always provokes joy and relaxation. The author also affirms that the game is a condition of the existence of the culture itself and is inherent in human nature, that is, without some development of a playful attitude, no culture is possible.

Gambification is related to the idea of engagement, narratives, autonomy and meaning. It includes challenge, sense of control, decision making, and sense of mastery. All these are intrinsic characteristics of games that are highly valued. We can consider games to be ideal environments for learning because they are built with permission for errors and encourage players to think. But it is not only the sense of engagement, the high point of the use of games for teaching, also the immediate feedback, the sense of companionship and the search for a challenging and overcoming goal. The use of classroom games are strategies of great value for the development of students' skills considering not only the motivation they can generate but also the fun time they provide.

2.1 Experiment in the discipline of Textile Technology Applied

The discipline of Applied Textile Technology, as well as Textile Technology (its precedent), was understood as basically theoretical and was taught by lectures at PU-CPR until the second semester of 2017. From the students' point of view it was "a difficult subject and with a lot of thing to decorate ", consequently with a large number of students under examination or disapproved. Knowing the fibers and fabrics, their production processes and their characteristics is fundamental for any fashion designer, which was not happening with much success. In this context, the big challenge for the teacher was how

to make the course more interesting for students and engage them in the process of learning something they found so difficult. The path chosen was to begin to work the discipline from methodologies that lead to an active learning. A learning that was related to the context and culture of the young students, that developed its criticality, ethics, autonomy, reflection and research, in order to become participants in the educational action.

The modifications in the discipline of Applied Textile Technology of the course of Fashion Design of PUCPR were programmed during 6 months and with accompaniment of CrEARe (Center of Education and Learning), that is a nucleus of educational development linked to the Direction of Support to the Graduation, of the Dean of the Pontifical Catholic University of Paraná, as part of a large innovation project financed by FINEP. The process of transformation of the discipline began with the reformulation of the teaching plan, learning methodologies and evaluation focused on performance indicators that lead to learning outcomes that contribute to skills training.

According to Sena (2018a) changes in the discipline (which was totally theoretical) occurred in response to the new student who processes the information differently hyper-connected, self-confident and “empowered”. Young people born between 1994 and 2010, known as Generation Z, have demanded and provoked changes in education, according to the Coolhunting Community Trends Observatory of Spain (2016). According to the observatory, today’s students fit into the “power pupils” profile, are increasingly aware of their abilities and talents. They are confident, they have imagination and they are not passive in the classroom, being moved to work with personal fulfillment. So it is necessary to captivate this student so that he engages in the learning process.

In a scenario where teaching and learning methodology would be totally different, a discipline syllabus, focused on a list of contents, was not enough. Then the first step of the transformation process was to rewrite the menu, indicating to whom that discipline was developed, what the student would do during the semester and closing with what learning outcomes, ie what the student would be able to do in the semester. end of the semester. The new menu was described as follows: “The discipline is offered to students of the course of Fashion Design who have studied the discipline of Textile Technology. Throughout the semester students carry out research and practical activities of analysis and construction of textile samples relating their types, production processes and benefits from the fibers and yarns with the properties of the fabrics and that will indicate their characteristics and recommendations of use. At the end it is able to select the ideal material for creating fashion products in specific situations, focusing on sustainability, technology and innovation. “ (SENA, 2018b)

In order to achieve the results outlined, the discipline was totally restructured with different activities. The students were organized into teams that would last all semester based on TBL (time-based learning) strategies. The teams were organized from the answers of a questionnaire about their mental models, the proposal was to set up teams with students of different mental models and thus to stimulate the emergence of empathy between the peers and the understanding of diverse ways of thinking and acting. At TBL, students are assessed for their individual performance and also for the outcome of group work, in addition to peer evaluation, which increases accountability. Members have the opportunity to evaluate individual contributions to team performance. Peer review is essential because team members are usually the only ones who have enough information

to accurately assess the contribution of the other.

The option of active methodologies favors student autonomy, arousing curiosity, instigating individual and collective decision making, through practical activities. The subjects of the discipline were worked on two major projects, the first was the construction of a textile book that explored the constructive processes, characteristics and properties of the fabrics. And the second dealt with the creation of a game that approached the textile beneficiations. For the development of the projects, the students also passed through the experiences of learning with peer instruction) and flipped classroom.

In this article, we highlight the use of gamification as one of the methodologies chosen to transform the discipline. The use of games or strategies of gamification aims to develop content learning by arousing the interest of students in a playful environment, conducive to better learning, very different from traditional classrooms.

It is much more efficient to learn through games, and this is true for all ages, from the motherhood to the adulthood. The game itself has everyday components and the involvement arouses the interest of the learner, who becomes an active subject of the process, and the making of the games themselves is even more exciting than just playing. (LOPES, 2001, p. 23).

The gameplay proposal or the gamification system should be used in addition to rewards or medals, and it should involve people, motivate their actions, promote learning and help them solve problems. The focus of the use of games comes to contribute to teaching and to the teacher, as it allows students to develop the rationale for formulating the answers, stimulating them in the construction of knowledge and also helps in student / teacher interactions, and student / student interactions, collaborating for their social formation. In the discipline, both the use of games developed by the teacher, and the development of a PjBL of construction of games about textile processing were chosen.

Figure 1: Examples of games developed in the discipline.



Source: Sena, 2018

The students developed different types of games (boards, cards, questions and answers, applications, among others) for which they had to do research, gather information about the contents and then organize them in a coherent way and fit the logic of the

proposed game. The different methodologies provide students with opportunities for the development of skills that go beyond those directly related to the content of the subjects. The success of the project depended greatly on the commitment and engagement of the student in carrying out the activities. When compared to the previous semesters, where 50% of the students stayed for examination and only half of them passed, we can consider the changes extremely positive, with 100% of the students who finished the course had approval without passing examinations. We consider, therefore, that we achieve the objective of developing autonomy, critical sense, creativity, reflection, argumentative power, research, research techniques, collaboration and cooperation, skills that can contribute to continuing education, student learns to learn.

4 CONCLUSION

The change in the profile of the student calls attention to the need for changes in the curricular structure of the courses and calls for innovation in the teaching and learning process and its evaluation so that the student achieves excellence in professional and citizen training and develops autonomy. In the case presented above, we seek to show an example, among many others, such as the design of a university that wants to change its curricula to competency resumes, needs to be aligned and coherent in order to be successful. At PUCPR, transformations have been taking place since 2014, with the formation of CrEARe, which provides training for teachers with training workshops in different methodologies, individual consulting to help with the construction of a teaching plan and monitoring the progress of disciplines, monthly coffee for discussion (which the author received in 2016 for the use of differentiated methodologies in the classroom), annual forum for discussion of the matrices, changes in the PDG of the institution and the own one FINEP project, which is in the 3rd edition (each one of them with 60 approved teachers for the development of the project that have a duration of three semesters: the first one for preparation of the discipline, the second one for applying the modifications and the third one for disseminating the good practices produced during the project).

The methodologies of teaching and evaluation of learning must be coherent with each other and with the profile of the egress that is intended to form, and should make sense for the mental model of each university. The quest for excellence presupposes the achievement of a high technical level in professional training, demanding an increase in the degree of demand. The challenge for teachers is to change their strategies, because to develop skills it is necessary to work on problems and projects, proposing complex tasks that challenge and stimulate students to mobilize their knowledge to complete them.

The change goes through the model of collaborative education, interacting the knowledge of the teacher with the student, and thus the class becomes more stimulating and attractive and the results are production of knowledge and significant learning. The experiences acquired using methodologies that promote active learning were enriching and stimulating. This fact motivates us to continue our work. It is important to point out that the simple use of these methodologies does not guarantee the learning of the contents if there is not an early analysis of the teacher, so that he can better use this practice.

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