

IDENTIFICATION KEY: DIDACTIC GAME FOR BOTANY- SISTEMATICS TEACHING
CHAVE DE IDENTIFICAÇÃO: JOGO DIDÁTICO PARA O ENSINO EM BOTÂNICA –
SISTEMÁTICA

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ABSTRACT

Educational games are important tools for teaching-learning process, because encourages imagination, creativity, learning of school subjects and the cognitive development of students. Based on these incentives, the aim of this study was a creation of a didactic game entitled "Identifique-me!", elaborated during the course “Difundindo e Popularizando a Ciência na UNESP: interação entre pós-graduação e ensino básico”. It consists in a simple identification (ID) key that visa Systematics / Botany subject. The evaluation of learning quality of the game was made by a questionnaire, which was answered by the graduation students. Through that, the students emphasized the importance of didactic games and approved the game "Identifique-me!". In this way, the present study demonstrated that didactic games are an important tool for the teaching-learning process, being the game "Identifique-me!" considered value to consolidate concepts in vegetal identification, stimulating a fun way to learn.

Keywords: Attractive activitie. Cognitive development. Dynamic Learning. Fun. Teaching-learning.

RESUMO

Os jogos didáticos são importantes para o processo de ensino-aprendizagem, pois incentiva a imaginação, criatividade, aprendizagem de conteúdos escolares e o desenvolvimento cognitivo de alunos. Com base nesses incentivos, foi realizada a confecção do jogo didático intitulado “Identifique-me!”, que consiste em uma chave de identificação simples, abordando o conteúdo de Sistemática/Botânica. O jogo, elaborado junto à disciplina “Difundindo e Popularizando a Ciência na UNESP: interação entre pós-graduação e ensino básico”, foi testado com alunos de graduação. A avaliação da qualidade de aprendizagem do jogo elaborado se deu através de um questionário respondido pelos próprios alunos. Neste, os alunos destacaram a importância dos jogos didáticos e

aprovaram o jogo “Identifique-me!”. Assim, o presente estudo demonstrou que os jogos didáticos se apresentam como uma ferramenta importante para o processo de ensino-aprendizagem, sendo o jogo “Identifique-me!” considerado importante para consolidar conceitos em identificação vegetal, estimulando o aprendizado de maneira divertida.

Palavras-chaves: Aprendizado dinâmico. Atividades atrativas. Desenvolvimento cognitivo. Diversão. Ensino-aprendizagem.

For many years, educational games are valued for teaching and learning process due to their action in encouraging imagination, creativity and learning of school subjects (CONTIN; FERREIRA, 2008). Many authors have been discussing the advantages of using didactic games in the educational process, as well as in a citizen’s process, providing the activity of a group work, being increasing the use of classroom games in the last years (PRENSKY, 2001). In his studies, Piaget (1962) mentions the importance of didactic games as an important pedagogical practice for the cognitive development of students (CYRRE, 2002).

The didactic or pedagogical game has the mainly objective develop certain learning through a playful material, being for this reason different from pedagogical material (CUNHA, 1988) thus provide a better understanding of the explorer content, as well as creative and interactive activities works with the students, being a dynamic and attractive learning. According to Kishimoto (1996), the didactic game is not seen as a final process of learning, being therefore a loan of playful action for information acquisitive. At this way, didactic game is considered for many as an alternative to improve the student’s performance in some difficult learning subjects during the teaching, helping the knowledge appropriation and approaching the relation between student – teacher (GOMES; FRIEDRICH, 2001; CAMPOS; BORTOLOTO; FELICIO, 2003; CANTO; ZACARIAS, 2009).

Considering the importance of educational games application in the classroom for teaching-learning process, the present study aimed the creation of a didactic game, entitled “Identifique-me!” (Identify me!), which can help the Systematics/ Botany teaching.

The game “Identifique-me!” took place in two stages: the game confection and its test with graduation students of the second year (Biological Sciences - Unesp Botucatu).

The game confection was inspired by the lessons of Plant Systematics, carried out by Profa. Dr. Ana Paula Fortuna-Perez, at the Biosciences Institute of Botucatu - IBB / UNESP, Rubião Jr., which plant diagrams are distributed to students with an identification key. To make the scheme concrete, plants were made with sheets of EVA (Ethylene Vinyl Acetate, a non-toxic rubber type) with various colors, EVA glue and scissors. Each EVA color indicated a structure of plants:

leaf limb, stipules, stems and flowers, and each plant have specific characteristics, which makes them different from each other. In total, 6 plants and 6 indicating letters (A-F) were made; each letter corresponds to a specific plant (Figure 1). In addition, a simple identification (ID) key was made based on the model plants, as well as a glossary with cited terms on the ID Key (Figure 1).

The game happens following step-by-step of the identification key, which presents some characteristics of the model plants, in order to find their corresponding letter (Plant A, Plant B, Plant C, etc.), students can also consult the glossary, if they present some doubts about the plant morphology terms on the ID key. This game provide the insight of an identification key, as well the activity of following their steps to achieve the objective: identify the model plants.

In 2017's January, in the course "Investigando a Vida das Plantas", carried out through the extension project "Difundindo e Popularizando a Ciência na UNESP: interação entre pós-graduação e ensino básico", the game "Identifique-me!" was created. In this course, students of public basic education had the opportunity to learn the principle and function of an ID key and also to apply it on a science fair.

The game was tested with 9 second year graduation students of Biological Science course (Unesp - Botucatu). At the end of the test, were given them a questionnaire, based on Canto e Zacarias (2009) studies, to know the importance of didactic games for basic education and graduation, which was the way to evaluate the learning quality of the game (Table 1). The questions were:

1. Have you ever played didactic games in basic school or in the first year of graduation?
2. Do you think that it's important to insert didactic games into the teaching and learning process?
3. Did you understand the principle of a ID key before the game?
4. After the game, will you feel able to run an ID key?
5. What else can the game help you in the learning process of Botany teaching?

Our results showed that 100% of the students who answered the questionnaire had didactic games in basic school and at the first year of graduation (Table 1). Other games cited by them does not contemplated Botany area. In addition, all students affirm that include teaching games on classes are important to teaching-learning process (Table 1), since, according to their answers: "Games stimulate learning in a fun way"; "Helps to realize and make the content easier for many students" and "Helps to consolidate theory".

Regarding the ID key, only 11.1% of the students did not understand the principle of an ID key before the game (Table 1). Some students affirmed know the theory of an ID key, but had never used one in practice. After the game, 100% of the students answered that they were able to run an ID key and they affirm the game helped (Table 1): "To remind concepts previously learned", "To relate botanical concepts with plant morphology through the glossary", "To recognize and identify external morphological structures, as well provide plant identification", "To memorize certain plant characteristics and morphological structures" and "Recognize plant structures, record terms and consolidate Botany theory". Some students also complemented their answers affirming: "The game can help introduce the subject of Plant Systematics and it can also help the future professional careers".

Botany subjects, even for basic education or graduation classes, are often recognized as a memorization of difficult names. According to the study by Ceccantini (2006), the botanical content is very abstract for most students of basic education, especially when it's related to plant morphology and systematics, therefore, is very important having practical and dynamic classes, aiming to increase the student's interest for this contents. According to Cunha (2001), the teaching practice should not be made in a fixed way, the teacher/professor must adapt to the context that their students are insert and search to attract the student's attention to the subjects.

In this context, didactic games present themselves as an excellent tool for the teaching and learning process, especially in Botany (CANTO; ZACARIAS, 2009). Our results corroborate this statement, since 100% of the students affirmed to understand the principal of using an ID Key, as well as they felt able to follow an ID key after the game, even a difficult one, which demonstrated the real help of "Identifique-me!" game to Systematics (Botany) teaching. In addition, the game interconnects themes about Botany subjects, since it includes terms related to plant morphology; terms that many students claim to have remembered in the course of the game.

Therefore, our results corroborate the importance of didactic game for the teaching-learning process. The Game, as cited before, was important to consolidate terms and practices of vegetable identification, besides stimulating the learning in a fun way. In this specific case, the "Identifique-me!" game has been tested and approved for undergraduates, especially for students who didn't know an ID Key and, after the game, they understand it. The game idea, its elaboration and practice is very simple, and it's also an excellent proposal to be tested and used in basic education on Science / Botany classes.

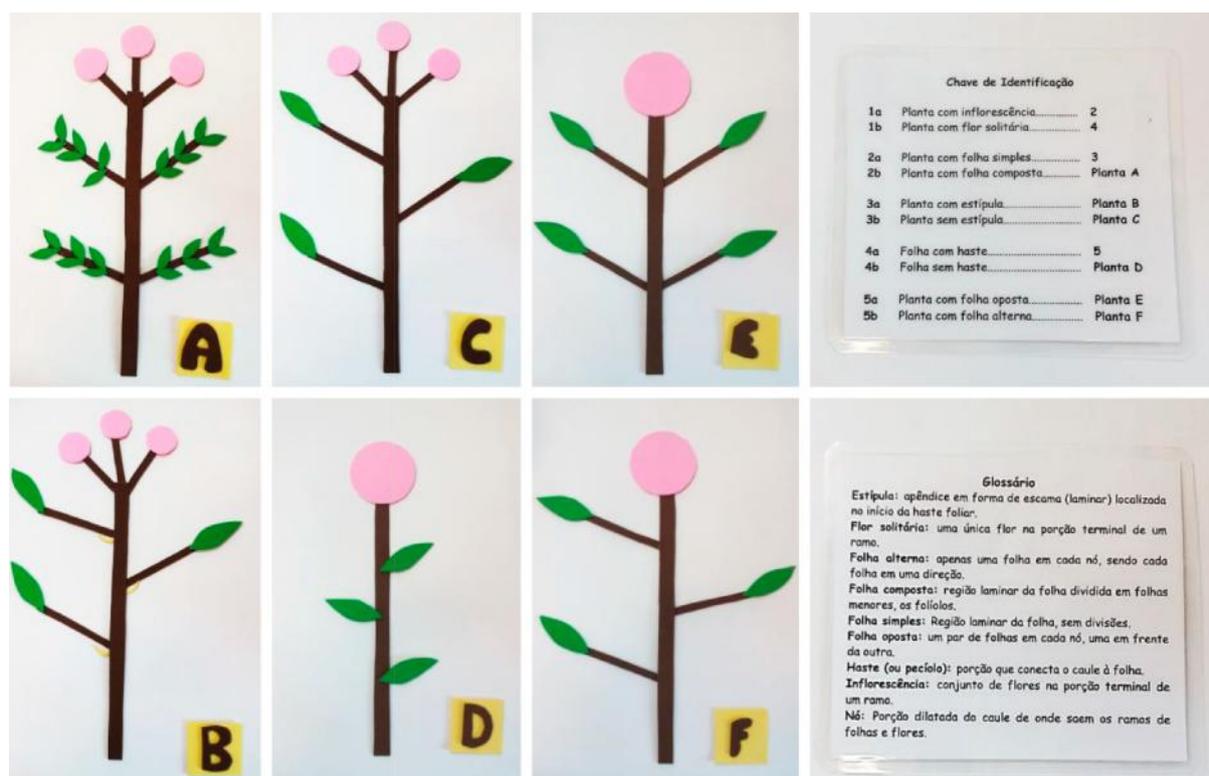


Figure 1. Model plants of didactic game "Identifique-me!", presenting here its corresponding letters (Plant A to Plant F). On the right top is the card with the Identification Key of the model plants, with the steps to be followed by the players. On the right down is the back of the card, containing the glossary of botanical terms related to plant morphology, terms present in the ID Key.

Table 1. Quality questionnaire about "Identifique-me!" game.

QUESTIONS*	ANSWERS (%)	
	YES	NOT
Have you ever played didactic games in basic school or in the first year of graduation?	100	0
Do you think that it's important to insert didactic games into the teaching and learning process?	100	0
Did you understand the principle of a ID key before the game?	88,9	11,1
After the game, will you feel able to run an ID key?	100	0

* The fifth question was not insert in this table because it was a subjective question, their answers bring considerable contribution and there are on the text.

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