KOLB'S LEARNING STYLES IN THE
EVALUATION PROCESS

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Abstract: This study discusses how the knowledge of learning styles can be useful in an evaluation process that seeks to accompany and support the students' learning. It addressed the concept of learning styles based on experience and suggests ways to use the Inventory of Learning Styles of Kolb (1993) in the evaluation process guided by goals that aim to assist in the continuous, formative and diverse learning.

Keywords: Learning Styles, Evaluation, Kolb Learning Styles Inventory

1. INTRODUCTION

The literature review of learning styles (Keefe, 1988; Kolb, 1984; Alonso; Gallego and Honey, 2002; Felder, 2002) although with different settings, supports the Idea that people have different learning styles and these styles refers to preferences learning and not the intelligence, capacity or ability.

Based on these studies, some authors such as Palloff and Pratt (2004), Cabrera and Farinas (2005) and Barros (2009) point out the importance of proposing diversified learning activities in order to facilitate the different learning styles, and provide so more meaningful learning. However, related studies from the learning styles theory also are needed. The present study discuss the evaluation process consistent with learning styles theory and suggests ways to apply the kolb's Learning Style Inventory (Kolb, 1993) in the assessment of learning.

It is concluded that knowledge of students learning styles can be an important resource about evaluation that contains the functions: diagnostic, formative and summative, to alert teachers to plan learning diversified activities within a teaching process guided on clear objectives and continuous evaluation.

2. Formative evaluation

The assessment of learning has become inextricably linked to the teaching-learning process with the compulsory education of the masses in the twentieth century. The logic of the school was to offer learning opportunities to all and it is for each one enjoy it. This idea justified an "single assessment" or "individual evaluation" (Perrenoud, 1999).

This traditional conception of education suggested that all people could learn the contents of programs through methods such as didactic transmission of knowledge and repetition. The evaluation had a character to approve or disapprove.

Constructivist approaches point to several problems of assessment in this traditionalist perspective, such as: people do not learn equally, so do not have the same pre-requisites that would enable to learning the same way and using the same criteria. The very concept of learning styles based on the fact that people have preferences in the act of learning in various aspects such as cognitive, emotional, and physical environment. So, if people do not learn the same way, then an assessment of learning which refers only to check the end of the process becomes inefficient.

In this perspective, Libâneo (1991) explains that evaluation is an essential task for the didactic teaching. It can't be summed up simply carrying out tests and grading. It is something more complex and must be understood as a global educational action. Thus, it must fulfill three functions didactic and pedagogical: diagnostic function, summative function and formative function.

Diagnostic function – it is the initial assessment that identifies the students' prior knowledge and verification of individual and group characteristics. Besides checking possible learning problems and their causes.

Formative function – it is applied in the process of teaching and learning and serves as a form of control that aims to inform about the student's performance, shortcomings and possible alignments needed in teaching planning to achieve goals. Can be used as feedback for both students and teachers to identify deficiencies and reformulate their work. Thus, the basic function of this type of evaluation is the control.

Summative function – used to classifying students according their levels. It is performed at the end of a course and within established criteria, either imposing or combined.

Scott (2005) apud Both (2007) corroborates this idea to express that assess student learning, means concomitantly assess the education offered, and if there expected to learning, then it is because the school did not fulfill its purpose to making learn.

However, in practice, use of the evaluation with an end in itself continues to prevail. Luckesi (1996) calls this practice as "pedagogy of exam" in which what counts is the score, the promotion. Since this is the concern of parents, teachers and students, regardless of how they were obtained and by what paths. The notes are "operated and manipulated as if they had nothing to do with the way the active learning process" (Luckesi, 1996, p.18).

Tape & Tapia (2004) explain that do activities with a goal not go badly, achieve notes, wait for rewards, is detrimental to learning, because students come down to decorating concepts or rules, which effectively does not help in understanding (p.23) . Not to mention that may have adverse effect on learning by making students engage in solving problem less difficult, that focus less on learning the skills necessary for their solution, that are less logical and consistent use of strategies and to focus more on results.

So the challenge of teacher is to make evaluation assumes dimensions that go beyond their association with the exams, notes, success, failure, repetition and promotion, to for an educational activity based on objectives aimed at changing students' behaviors. The assessment being responsible to monitor whether these objectives are being met, to "help the student progress in learning" (Haydt, 1995, p.8).

2.1. Learning styles as a feature to the formative evaluation

Kolb, as well as other authors such as Honey, Munford and Alonso propose a scheme of the learning process based on experience and divided into four stages that follow cyclically: a) having an experience, b) pass on the experience c) draw conclusions from the experience and d) plan the next steps (Valdebenito et al. 2009 as cited in Neiva, 2009).

The authors explain that each person to perform this process, usually focuses on one of the steps. These preferences are called learning styles.

Briefly Kolb calls each step as: a) to experience: Concrete Experience (CE), b) receive and consider: Reflective Observation (RO), c) generalize and develop hypotheses: Abstract Conceptualization (AC) d) apply: Active Experimentation (EA).

In his Learning Styles Inventory, Kolb (1976, 1993) uses these four modes of learning, combined two by two diametrically generating the four learning styles proposed by the

author: accommodating (EC-EA) divergent (EC-OR); convergent (CA-AE) and assimilator (CA-AB);

At the beginning of a period or course, a tool for identifying learning styles as the Kolb Inventory of Learning Styles can be applied to aid the diagnostic evaluation to identify the characteristics of each individual student and the class. During the whole educational process the profile of the learning styles of the class may be related to pre-established goals, diversification of learning activities and assessment in formative and summative perspectives.

In Table I prefaced a relationship between the characteristics of each learning style kolb with suggestions for objectives, activities and assessment of learning. Learning activities listed in Table I can also be used as instruments for summative or formative assessment. The important thing is that the goals previously established to target the learning activities, as well as the criteria and assessment instruments, often because the teacher works in the content and theoretical levels when making a summative evaluation, as a written test questions provides application.

Thus, the verbs of the objectives proposed in Table I, seeking to support academic planning (goal, strategy and assessment) are related to the categories of Bloom's Taxonomy, which is a planning tool to support the didactic-pedagogic aims to help identification and statement of objectives related to the cognitive, emotional and psychomotor. The Bloom's Taxonomy was created in 1950 by a multidisciplinary committee of experts from several U.S. universities, led by Benjamin S. Bloom. Only the cognitive domain was developed in its entirety. In this area, the objectives were grouped into six categories and are presented in a hierarchy of complexity and dependency (categories), from simple to more complex.

The categories of this domain in the first version of the taxonomy are: Knowledge: specific facts, patterns of behavior and concepts; Understanding: print meaning, translates, interprets problems and instructions; Application: using learning in new situations; Analysis: elements , relations and principles of organization; Synthesis: establishes paradigms; Rating: judges based on internal evidence or external criteria (Ferraz & Belhot, 2010).

The use of verbs such as Bloom's taxonomy of objectives in Table I is related without theoretical known, but which is justified by the choice of learning styles based on Kolb's experience, in which preferences for experience steps define the style learning. The convergent prefer to generalize and develop hypotheses in view of its application, since the assimilators prefer to generalize and develop theoretical hypotheses, unrelated to the practice. The acommodators prefer to live the knowledge and apply it, while the diverging like to stay in step only the observation of concrete experience. However, each stage of learning is important: to live the experience, receive and analyze, generalize and develop hypotheses and apply.

Similarly, Bloom argues that the human capacity for learning differs from one person to another that can be characterized by the strategies used (teaching and learning styles) and the organization of learning processes to stimulate cognitive development. By which educators can help their students so structured and consciously develop the specific skills from simple to more complex (Ferraz & Belhot, 2010).

In this sense, the relationship of learning styles and goals was performed only as an example of each style as well as the proposed objectives can encourage learning at certain levels of knowledge, what emerges from the need to plan strategies that develop over a course or period abilities and skills in these different levels.

Table I. Learning Styles of Kolb and application in teaching and evaluation

Kolb's learning style	Examples of verbs of objectives / skills to be developed (based on Bloom's Taxonomy)	Suggested learning activities	Suggestions for learning evaluation (formative or summative)
Assimilators: Prefer to create models and theoretical reasoning inductive, or integrate distinct observations bringing them together integrated plantations. Since the convergent, the integrator is less interested in people and more focused on ideas and abstract concepts.	Knowledge: list, define, describe, identify, name, list, name, match, highlight, point, remember, remember, relate, play, resolve, declare, tell, label, store, sort and recognize.	Prefer individual activities and feedback teacher / student. Observation and research activities focused on abstract concepts and have to prove the resolution. Examples: reading and interpretation of theoretical texts. Reviews, abstracts, articles. Projects that facilitate the organization and classification of things. Interpretation of maps and diagrams, etc.	Evaluation can be written, theoretical, objective and detached, that is, those that are usually applied favor this type of student.
Convergers: Your is greater in capacity troubleshooting in decision making and practical application in ideas. The knowledge the convergence is so organized that by reasoning hypothetical-deductive reasoning, he can maintain the focus in trouble specific.	Analysis: Analyze, reduce, classify, compare, contrast, decide, deduce, diagram, differentiate, differentiate, identify, illustrate, point, infer, relate, select, separate, divide, calculate, distinguish, examine, experiment, test, and lay question.	Individual activities and feedback teacher / student that encourage problem solving, decision making and practical implementation of ideas. Learn best through research that relate to the practice. Examples: practical and research projects that relate to the practice and problem solving. Discussions of controversial issues. Presentation of seminars. Case studies.	Evaluation can be a practical problem solving, simulations, case studies.
Accommodators: Your greatest potential force) is do things, make plans and experiences, and engage in new experiments. they tend to accept the more risks of the decisions that people from other three styles, in adaptive trait.	Application: Apply, change, plan, establish, develop, discover, dramatize, employ, illustrate, interpret, manipulate, modify, organize, anticipate, prepare, produce, report, solve, transfer, use, build, draw, select, write, operate and practice.	Prefer group activities. Learn more with the information provided by other people in their own analytical ability. They prefer practical activities and experiences that can deal with people. In the classroom switch moments theoretical and practical. Example: Projects group. Debates and interviews. Practical classes of assembly and construction of objects and simulations, etc.	Evaluation Group. Evaluation with consultation on specific problem and application of theory in practical situations. Written report on case studies.
Divergers: Has imaginative ability, creative and aware of meanings and values. The divergence is great ability to see concrete situations from many perspectives and to organize different many relationships of a so systemically significant.	Summary: categorize, combine, compile, compose, design, build, create, design, develop, establish, explain, formulate, generalize, invent, modify, organize, plan, propose, rearrange, relate, revise, rewrite, summarize, organize, build and design.	They are more focused on feelings. They prefer activities that are geared to feel and look, that require creativity. Examples: Work done collaboratively in groups. Creation of plays, musicals, discussion groups, discussion of critical issues. Case studies, etc.	Evaluation could be done in teams, using the technique of brainstorming with cases that require creativity and imagination and not just playing theoretical concepts.

Hence the importance of a coherent pedagogical planning , with clear objectives and learning activities and assessment consistent with them. And to propose methodologies that focus all

learning styles in order to not only work with the preferred styles of students in individual cases of hardship or class, especially as developing other styles so they can take advantage of different learning strategies , since society demands this kind of flexibility (Palloff & Pratt, 2004).

When dealing specifically with online learning, Palloff and Pratt (2004) based on studies of Paulsen (1995) suggest several activities that can be performed in an online course that used together meet all the learning styles of the virtual student. These activities are included in the categories: individual, in pairs, teacher / student, and group, as described below:

• *Individual activities*: some of these activities are searching the Internet, including the use of databases and online journals, participate in discussion lists related to material studied in the course, receive information by mail online groups that produce information related to course material and apply prior knowledge.

• *Activities in pairs*: include conducting independent studies, special courses, correspondence courses and apprenticeship contracts made by students.

• *Activities teacher* / student: include online lectures, sessions on the whiteboard (communication tool that allows two or more people draw far apart on the same screen area. It is usually accompanied by text or voice call), and symposia online using audio and video produced by the teacher.

• *Group work*: they are the most common activities. Include discussion groups, lists and panel discussions, debates on controversial or critical issues about the content of the courses, simulations, role playing, case studies, group projects done collaboratively, etc. (Palloff & Pratt, 2004, p.54).

According to these authors, if the teacher chooses to incorporate many of these activities in preparing their course, will be attending the preferences of most students.

3. CONCLUSION

The studies devoted to educational issues already show that is no longer enough Just to look at education from the viewpoint of mass teaching, where the dominant criterion is only the efficient use of resources (teachers, classroom materials and other resources and information).

The Guidelines Law National Education of Brazil (LDB) de 1996, determines that the attention of education return to their students and their needs and seek new paradigms that meet these demands from the ongoing potential. For this to happen, we must shift focus from "teaching" to "learn", the basic activity should be directed to the student (Colenci, 2000). In this sense, evaluation is seen as a process and not as a result.

This study directed that knowledge of learning styles of students can be an important resource in evaluation that aims to assist the learning functions in diagnostic, formative and summative. To warn of the need for teachers to plan activities learning within a diverse teaching and learning process ruled by clear objectives and continuous evaluation.

In addition, the learning model proposed by Kolb is an efficient tool to show what types of assessment can be better used for each learning styles of students. Thus, it emphasizes the importance of a global pedagogic planning that takes in to account individual differences of students also regarding the assessment.

REFERENCIAS

Brasil. (1996). *Lei de Diretrizes e Bases da Educação Nacional*. Lei nº 9394, de 20 de dezembro de 1996. Estabelece as diretrizes e bases da educação nacional. Brasília, Brasil.

Both, I. J. (2007). *Avaliação planejada, aprendizagem consentida*: a fisiologia do conhecimento. Curitiba: Ibpex,.

Colenci, A. T. (2000). *O Ensino de engenharia como uma atividade de serviços*: A exigência de atuação em novos patamares de qualidade acadêmica. Dissertação de mestrado não-publicada, Universidade de São Paulo – USP, São Carlos, SP, Brasil.

Ferraz & Belhot. (2010). Taxonomia de Bloom: revisão teórica e apresentação das adequações do instrumento para definição de objetivos instrucionais. *Gest. Prod.*, São Carlos, v. 17, n. 2, p. 421-431. Recuperado em 14 abril, 2011, de http://www.scielo.br/pdf/gp/v17n2/a15v17n2.pdf

Haydt, R. C. (1995). *Avaliação do processo ensino-aprendizagem*. São Paulo: Editora Ática.

Kolb, D. A. (1976). *Learning Style Inventory Technical Manual*. Boston: Hay McBer,.

Kolb, D. A. (1984). *Experimental learning*: Experience as the source of learning and development. New Jersey: Prentice-Hall, Englewood Cliffs.

Kolb, D. A. (1993). *Self-Scoring Inventory and interpretation booklet.* Revised Edition. Boston: Hay McBer.

Libâneo, J. C. (1991). *Didática*: São Paulo: Cortez.

Luckesi, Cipriano C. (1996). *Avaliação da Aprendizagem Escolar*. São Paulo: Cortez.

Neiva, J. S. F. S (2009). *Estilos de Aprendizagem de estudantes do Curso de Pedagogia a distância da Universidade Aberta do Brasil / Universidade de Brasília*. Dissertação não-publicada, Universidade de Brasília, Brasília, DF, Brasil.

Pallof, R. M.; Pratt, K. (2004). *O aluno virtual*: um guia para trabalhar com estudantes online. Trad. Vinícios Figueira. Porto Alegre: Artmed.

Perrenoud, P. (1999). *Avaliação:* da excelência à regulação das aprendizagens, entre duas lógicas. Porto Alegre: Artmed.

TREVELIN, A. T. C. (2007). *A relação professor aluno estudada sob a ótica dos estilos de aprendizagem:* análise em uma Faculdade de Tecnologia – Fatec. Tese de Doutorado, Universidade de São Paulo, São Carlos, SP, Brasil.