

Contextual Learning

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Abstract—this paper examines the use of Contextual Learning to answer questions about the multiple aspects of any learning environment, whether a classroom, a laboratory and encourages educators to design learning environments to get preferred learning outcomes.

Keywords—context, teaching, learning, style, student, teacher

I. INTRODUCTION

Growing numbers of studies show that “most students' interest and achievement in math, science, and language improve dramatically when they are helped to make connections between new knowledge and experiences they have had, or with other knowledge they have already mastered (Shea & Morgan, 1979) p.221.” Students' commitment in their schoolwork “increases significantly when they are taught why they are learning the concepts and how those concepts can be used in real-world contexts (Berns & Erickson, 2001) p.112.”

Contextualized learning is a proven concept that “incorporates the most recent research in cognitive science (Thomas, 2000) p.213.” It is also a response to the “behaviorist theories” that have controlled American education for long time. The contextual approach distinguishes that “learning is a complex and multifaceted process that goes far beyond drill-oriented, stimulus-and-response methodologies (Byars-Winston & Fouad, 2008) p.28.”

II. CONTEXTUAL LEARNING

Contextual Learning (CL) is a learning system that ties brain actions to crating patters that have meaning. CI does it by connecting academic content to the context of real life. This is very important because it helps to store not only short-term memory, which students usually easily forget, but it also help to store long term memory which will help them to apply these memories to their job obligations later in their life.

CL-called contextual approach because it helps teachers connect content that students learn academically with real-world situations that usually students experience. This inspires students to make connections between the knowledge and their lives.

According to Hull “contextual learning theory says that learning occurs only when students process new information or knowledge in such a way that it makes sense in their frame of reference (Hull, 1995) p.23.” He also says that this approach to “learning and teaching assumes that the mind naturally seeks meaning in context and does so by searching for relationships that make sense and appear useful (Hull, 1995) p.24.” This approach accepts that the brain searches for the meaning of specific relationships with our surroundings (Johnson, 2002; Powers & Guan, 2000). Based on this CL activities not only can be done in the classroom, but also in laboratories, and in the future in the workplace. Educators have to be smart to design learning environments that can be easily related to real life. In this type of environment students can find connection between not realistic ideas and everyday submissions in real-world context.

Curriculum and instruction based on contextual learning strategies should be structured to encourage five essential forms of learning: Relating, Experiencing, Applying, Cooperation, and Transfer (REACT).

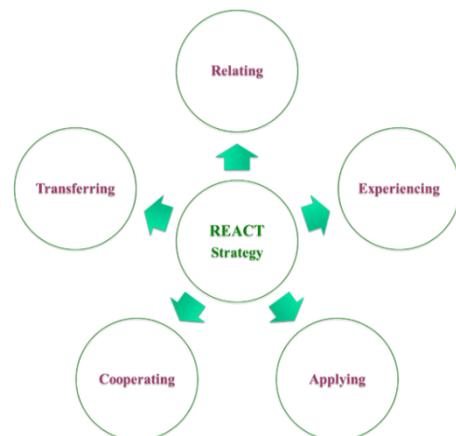


Figure 1. REACT strategy

A. Relating

Relating is “learning in the context of life experience, or associate (Johnson, 2002) p.46.” Teachers using this strategy must connect new perceptions with something familiar for students. “This helps students to link their knowledge with new information (Powers & Guan, 2000) p.25.” In this stage curriculum must try to help learning in the setting of life experience. It will encourage students to relate daily events that they see with the lessons that they learn. This will make possible for students to find a solution to of the problem (Ege, Coppola, & Lawton, 1997).

For example, when teacher wants to give a definition of a slope of a line, instead of saying that a slope is the change in y for a unit change in x along the line is better to show a road sign of a steep hill (Picture 1) and explain that a slope is a steepness.



Picture 1: Steep Hill

The sign is familiar to them from driving around and this familiar picture from their life experience will help them to understand a new knowledge- the concept of a slope of a line.

B. Experiencing

Experiencing is a learning in the context of exploration, experience. Learning “happens” faster when students can use equipment and materials and do active research by themselves (Bjornavold, 2000) p.(Falk & Dierking, 2000)231. This step is not design to educate students for exact jobs, but it helps them to practice actions that are straight connected to real-life work. These activities and skills can be used in labs and can be used in many professions (Falk & Dierking, 2000; Wood Daudelin, 1997).

For example in a letter to European Urology, Dr. Maria Cerruto indicated that women who wore high heel shoes with a 15° slope to the ground developed stronger pelvic muscles. Students can work with their partners to measure the length of their feet and calculate a perfect hill for themselves or for their partners. This activity will help them to learn the concept by experiencing: using what they learned about slope to determine the height of a 15° sloped high heel shoe.

C. Applying

Applying is learning concepts and information in a useful situation. Students apply a concept when they can apply their real world experienced to their problem-solving activities. Teachers can motivate students by making problems realistic and relevant to students’ life (Gerlai, 1998).

For example, instead of giving a boring problem with letters and numbers, teachers can check students understanding of a slope of a line with the following problem: if 5 students fall asleep during class after 10 minutes, and 15 are asleep after 20 minutes, how long will it be until the whole class of 25

students are asleep? All students are familiar with this situation, so all of them can apply this experience to their new knowledge.

D. Cooperating

Cooperating is learning in the context of sharing, responding, and communicating with other students. This is a very important strategy in teaching context. Students who “work by themselves usually do not progress as much as students who work in groups (Borko & Mayfield, 1995) p.54.” Working in groups helps students to solve complex problems with very little help. This practice helps students to understand and learn the concept and connect it with the real world. Later in their life this experience will help them in their work environment to “communicate effectively, share information well, and work comfortably in a team (Powers & Guan, 2000) p.34.”

For example, to check students’ understanding the concept of a slope, teachers can divide the class into small groups and ask them to play “Who Wants to be a Millionaire” game where all question and problems are about slope of a line. By participating in this activity, students will learn to answer to a question or solve a problem cooperatively.

E. Transferring

Transferring is “learning in the context of existing knowledge. It uses and builds on students’ prior knowledge (Billett, 2001) p.44.” In this stage the teacher makes help students to take what they have learned and apply it to new situations and contexts (Lent et al., 2001) .

For example, to check students’ knowledge of the concept of a slope of a line, teacher can show a picture of an old car (Picture 2) give them this problem: The price of this car was \$25,000 in 2001 and it was \$15,000 in 2006. Which year I’ll be able to buy this for \$5,000?The word “data” is plural, not singular.



Picture 2: Old car

This activity will help students to transfer their exciting knowledge about a car depreciation to understand a new concept. Students use their prior knowledge and apply it to a new setting.

III. MANY WAYS OF LEARNING

Gardner’s theory about multiple intelligences explains that the knowledge of human’s brain and body can be helpful in educational settings (Gardner, 1985). Students have many “learning styles” and teachers must design their lessons by using many teaching techniques to reach all students (Felder & Silverman, 1988) p.76. David Kolb’s study shows that

“learners tend to perceive information either abstractly (by conceptualizing/thinking) or concretely (by experiencing/feeling) and then process that information either actively (by experimenting/doing) or reflectively (by observing/watching) (Kolb & Kolb, 2005) p.64.” Researchers found that “relatively few students learn by thinking and watching” but schools and universities use lecturing as a teaching method (Honey & Mumford, 1986) p.323.’ Most students learn best over collaborative “interactions, group learning, sharing, mutual support, team processes, and positive reinforcement (Catrambone & Holyoak, 1989) p. 45.” Kolb’s model shows general learning styles and their connection to CL (Kolb & Kolb, 2005). His research shows that “most students do not fit neatly into one category or the other (Kolb & Kolb, 2005)” Almost all students can “learn by and benefit from all four experiences (thinking, feeling, doing, and watching) (Kolb & Kolb, 2005) p.85.” All learning styles are important part of the learning process. Moreover, “most students show a preference for one or two particular kinds of learning and this” liking specifies students’ dominant learning style(s) (Coffield, Moseley, Hall, & Ecclestone, 2004) p.233.’

Kolb’s studies demonstrate that most students by “feeling and doing while the school system teach in an abstract way (by thinking and watching) (Kolb & Kolb, 2005) p.322.” Most learn a new knowledge by relating it to an experiences and/or experimentation. Students learn best by communicating with others and positive reinforcement.

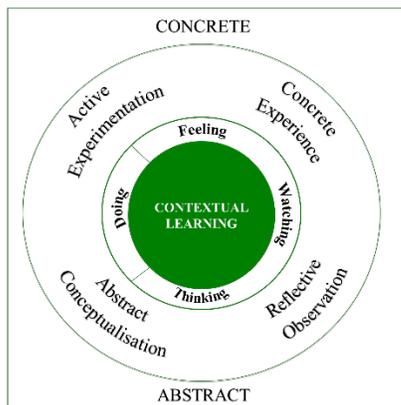


Figure 2. The connection of Contextual Learning with all styles of learning

IMPORTANCE OF CONTEXTUAL LEARNING

Contextual Learning is very important because:

- It highlights problem-solving.
- It understands the need for teaching and learning in many contexts - home, community, and work sites.
- It teaches students take control over their learning helps them to become independent learners.
- It presents teaching in students’ real world experience.

- It helps students to learn from each other and together in a team.

CONCLUSION

Using contextual learning in the classroom does not involve new tools. It involves new teaching styles and strategies. Teachers can maximize the outcomes of this type of learning by successfully applying the REACT strategies in their everyday lessons: relating what is being taught into the context of the real world, experiencing the new knowledge, applying new concepts to the real world situations, solving problems by communicating with each other, and transferring that knowledge to an experience that they will have in the future. Teachers can do this by effectively engaging students into learning activities and eliminating the questions of “Why do I need to learn this stuff?”

Contextual learning is a project learning where activities go from class to class and underline the necessity of different skills complete the project effectively, all the way down to a project assessment on the success of that activity. In addition, students learn important skills for real.

Teachers can learn how to implement Contextual learning through professional development. This professional development will equip with necessary tools and help teachers to use the theory of contextual learning and its translation into classroom-specific practices.

REFERENCES

- BERNS, R. G., & ERICKSON, P. M. (2001). *CONTEXTUAL TEACHING AND LEARNING: PREPARING STUDENTS FOR THE NEW ECONOMY*: NATIONAL DISSEMINATION CENTER FOR CAREER AND TECHNICAL EDUCATION.
- BILLETT, S. (2001). *LEARNING IN THE WORKPLACE: STRATEGIES FOR EFFECTIVE PRACTICE*: ERIC.
- BJORNAVOLD, J. (2000). *MAKING LEARNING VISIBLE: IDENTIFICATION, ASSESSMENT AND RECOGNITION OF NON-FORMAL LEARNING IN EUROPE*: ERIC.
- BORKO, H., & MAYFIELD, V. (1995). THE ROLES OF THE COOPERATING TEACHER AND UNIVERSITY SUPERVISOR IN LEARNING TO TEACH. *TEACHING AND TEACHER EDUCATION, 11*(5), 501-518.
- BYARS-WINSTON, A. M., & FOUAD, N. A. (2008). MATH AND SCIENCE SOCIAL COGNITIVE VARIABLES IN COLLEGE STUDENTS CONTRIBUTIONS OF CONTEXTUAL FACTORS IN PREDICTING GOALS. *JOURNAL OF CAREER ASSESSMENT, 16*(4), 425-440.
- CATRAMBONE, R., & HOLYOAK, K. J. (1989). OVERCOMING CONTEXTUAL LIMITATIONS ON PROBLEM-SOLVING TRANSFER. *JOURNAL OF EXPERIMENTAL PSYCHOLOGY: LEARNING, MEMORY, AND COGNITION, 15*(6), 1147.

- COFFIELD, F., MOSELEY, D., HALL, E., & ECCLESTONE, K. (2004). LEARNING STYLES AND PEDAGOGY IN POST-16 LEARNING: A SYSTEMATIC AND CRITICAL REVIEW.
- EGE, S. N., COPPOLA, B. P., & LAWTON, R. G. (1997). THE UNIVERSITY OF MICHIGAN UNDERGRADUATE CHEMISTRY CURRICULUM I. PHILOSOPHY, CURRICULUM, AND THE NATURE OF CHANGE. *JOURNAL OF CHEMICAL EDUCATION*, 74(1), 74.
- FALK, J. H., & DIERKING, L. D. (2000). *LEARNING FROM MUSEUMS: VISITOR EXPERIENCES AND THE MAKING OF MEANING*: ALTAMIRA PRESS.
- FELDER, R. M., & SILVERMAN, L. K. (1988). LEARNING AND TEACHING STYLES IN ENGINEERING EDUCATION. *ENGINEERING EDUCATION*, 78(7), 674-681.
- GARDNER, H. (1985). *FRAMES OF MIND: THE THEORY OF MULTIPLE INTELLIGENCES*: BASIC BOOKS.
- GERLAI, R. (1998). CONTEXTUAL LEARNING AND CUE ASSOCIATION IN FEAR CONDITIONING IN MICE: A STRAIN COMPARISON AND A LESION STUDY. *BEHAVIOURAL BRAIN RESEARCH*, 95(2), 191-203.
- HONEY, P., & MUMFORD, A. (1986). *USING YOUR LEARNING STYLES*: PETER HONEY MAIDENHEAD,, UK.
- HULL, D. (1995). *WHO ARE YOU CALLING STUPID?: THE REVOLUTION THAT'S CHANGING EDUCATION*: CORD COMMUNICATIONS.
- JOHNSON, E. B. (2002). *CONTEXTUAL TEACHING AND LEARNING: WHAT IT IS AND WHY IT'S HERE TO STAY*: CORWIN-VOLUME DISCOUNTS.
- KOLB, A. Y., & KOLB, D. A. (2005). LEARNING STYLES AND LEARNING SPACES: ENHANCING EXPERIENTIAL LEARNING IN HIGHER EDUCATION. *ACADEMY OF MANAGEMENT LEARNING & EDUCATION*, 4(2), 193-212.
- LENT, R. W., BROWN, S. D., BRENNER, B., CHOPRA, S. B., DAVIS, T., TALLEYRAND, R., & SUTHAKARAN, V. (2001). THE ROLE OF CONTEXTUAL SUPPORTS AND BARRIERS IN THE CHOICE OF MATH/SCIENCE EDUCATIONAL OPTIONS: A TEST OF SOCIAL COGNITIVE HYPOTHESES. *JOURNAL OF COUNSELING PSYCHOLOGY*, 48(4), 474.
- POWERS, S., & GUAN, S. (2000). EXAMINING THE RANGE OF STUDENT NEEDS IN THE DESIGN AND DEVELOPMENT OF A WEB-BASED COURSE. *INSTRUCTIONAL AND COGNITIVE IMPACTS OF WEB-BASED EDUCATION*, 200-216.
- SHEA, J. B., & MORGAN, R. L. (1979). CONTEXTUAL INTERFERENCE EFFECTS ON THE ACQUISITION, RETENTION, AND TRANSFER OF A MOTOR SKILL. *JOURNAL OF EXPERIMENTAL PSYCHOLOGY: HUMAN LEARNING AND MEMORY*, 5(2), 179.
- THOMAS, J. W. (2000). A REVIEW OF RESEARCH ON PROJECT-BASED LEARNING.
- WOOD DAUDELIN, M. (1997). LEARNING FROM EXPERIENCE THROUGH REFLECTION. *ORGANIZATIONAL DYNAMICS*, 24(3), 36-48.