

## Cognitive Learning and Teaching Style

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### **ABSTRACT**

Cognitive teaching and learning styles encourage the development of our country in all different attachment. Cognitive load theory adopts an appropriate approach to the efficient and effective teaching of defined content. The packaged computer based learning environments are highly effective, controlled that filter out much of the world's complexity and provide learners with an authentic enough environment conducive to learning. The problem-based learning model is simpler in design yet more ambitious in the sense that it departs more radically from established instructional methods. At the same time, some of the most valuable lesson , may learned many come from the real – world experience gained in setting up and administering program. The implementation can be just as important as the theory guided design. The constructivist movement in education involves curriculum reform a rethinking of what it means to know something. Teachers and students must see the sense of what they are doing, come to believe in the efficacy of the program and work hard to ensure that the right outcomes are achieved.

### **ABSTRAK**

Pembelajaran dan pengajaran kognitif menggalakkan pertumbuhan di Negara kita dalam pelbagai pendekatan. Teori kognitif menadaptasi pendekatan yang efektif dan efisien dalam pengajaran. Persekitaran yang menggunakan kemudahan computer adalah lebih efektif dan menyebabkan proses pembelajaran dan pengajaran lebih kondusif. Model pembelajaran berasaskan masalah adalah ringkas darisegi rekaan tetapi mempunyai masa

depan yang cerah dalam memperkenalkan teori-teori pembinaan yang baru. Dalam masa yang sama, sesetengah pengajaran yang bermanfaat datang daripada pengalaman yang pernah dialami dalam pembentukan proses pengajaran atau pembelajaran dan membolehkan pengurusan sesuatu program. Penyerapannya adalah sama penting seperti rekabentuk teori. Penglibatan konstruktivism dalam pendidikan merangkumi pembentukan kurikulum. Guru-guru dan pelajar-pelajar perlu tahu apa yang dilakukan, mempercayai manfaat sesuatu program dan berusaha untuk mencapai matlamat yang diimpikan.

### **COGNITIVE LOAD THEORY**

Cognitive load theory is based on the straight forward reading of information-processing concepts of memory, schema development and automatist of procedural knowledge. Cognitive load theory leads to some specific predictions for learning such as simple content which relatively few intrinsic interactive elements is not threatened by weak instructional methods. Learners are generally able to fit the demands of content and instruction within their working memory and learning does not occur. Cognitive load theory has lead to a number of instructional prescriptions including defines elements and trouble arise when the learner must attend to many different elements at the same time.

The different between an expert and novice is that a novice hasn't acquired the schemes of an expert. Learning requires a change in the schematic structures of long term memory and is demonstrated by performance that progresses from clumsy, error-prone, slow and difficult to smooth and effortless. The change in performance occurs because as the learner becomes increasingly familiar with material, the cognitive characteristics associated with the material are altered so that it can be handled more efficiently by

working memory. Coherent representations allow the learner to focus attention rather than split attention between two places such as a diagram and the text. Redundant information between text and diagram have been shown to decrease learning. Systematic problem space provide exploration instead of conventional repeated practice.

Sweller and Cooper (1985), confront a conventional end of chapter practice exercise they devote too much attention to the problem goal and to relatively weak search strategies such as means end analysis. Student already know how to use general search strategies to solve problems. Learners might benefit from studying worked examples until they have “mastered” them, rather than working on conventional practice problem as soon as they have obtained a basic familiarity with new material.

## **COGNITIVE FLEXIBILITY THEORY**

Cognitive flexibility theory focuses on the on the nature of learning in complex and ill structured domains. Spiro & Jehng (1990, p. 165) state: “ By cognitive flexibility , we mean the ability to spontaneously restructure one’s knowledge, in many ways, in adaptive response to radically changing situational demands...This is a function of both the way knowledge is represented and the processes that operate on those mental representation.

The theory is largely concerned with transfer of knowledge and skills beyond their initial learning situation. For the reason, emphasis is placed upon the presentation of

information from multiple perspectives and use of many case studies that present diverse examples. The theory also asserts that effective learning is context-dependent, so instruction needs to be very specific. In addition, the theory stresses the importance of constructed knowledge, learners must be given an opportunity to develop their own representations of information in order to properly learn.

## **MULTIPLE INTELLIGENCES THEORY**

Theory of multiple intelligences suggests that there are three distinct forms of intelligence that each individual possesses in varying degrees. Gardner proposes seven primary forms such as linguistic, musical, logical-mathematical, spatial, body-kinesthetic, intrapersonal and interpersonal.

According to Gardner, the implication of the theory is that learning or teaching should focus on the particular intelligences of each person. For example, if an individual has strong spatial or musical intelligences, they should be encouraged to develop these abilities. Gardner points out that the different intelligences represent not only different content domains but also learning modalities. A further implication of the theory is that assessment of abilities should measure all forms of intelligence not just linguistic and logical mathematics.

The theory of multiple intelligences has been focused mostly on child development although it applies to all ages. While there is no direct empirical support for the theory, Gardner presents evidence from many domains including biology,

anthropology and the creative arts and Gardner discusses application of the theory to school programs. Gardner explores the implications of the framework for creativity.

## **COGNITIVE APPRENTICESHIP**

Collins, Brown and colleagues developed an instructional derived from the metaphor of the apprentice working under the master craftsperson in traditional societies and from the way people seem to learn in everyday informal environments. The need for a problem solving orientation to education is apparent from the difficulty schools are having in achieving substantial learning outcomes, emulating the best features of apprenticeship is needed because noted, lengthy periods of apprenticeship are becoming a rarity in industrial and military settings.

## **FEATURES OF COGNITIVE APPRENTICESHIP**

Cognitive apprenticeship incorporates instructional strategies such as content, situated learning modeling and explaining, coaching , articulation, reflection, exploration

and sequence. Content is refer to four kind of knowledge, teach tacit, heuristic knowledge and as well as text book knowledge.

Domain knowledge is the conceptual , factual and procedural knowledge typically found in textbook and other instructional materials. Heuristic strategies are “ tricks of the trade” or “rules of thumbs” that help people narrow solution paths while solving problem. Experts usually pick up heuristic knowledge indirectly through repeated problem practice, slower learners usually fail to this subtle knowledge and never develop competence. Control strategies are required for students to monitor and regulate their problem solving activity. Control strategies have monitoring , diagnostic and remedial components. Learning strategies are strategies for learning, they domain, heuristic or control strategies.

Situated learning ,teach knowledge and skills in contexts that reflect the way the knowledge will be useful in real life. Learners learn to apply their knowledge under appropriate conditions. Problem solving situations foster invention and creativity. Knowledge is stored in ways that make it accessible when solving problem. People tend to retrieve knowledge more easily when they return to the setting of its acquisition.

Modeling and explaining, its show how a process unfolds and tell reasons why it happens that way. Computer can be used to aid in the modeling of these processes. Learners need access to explanations as they observe details of the modeled performance. Teachers in this way are seen as “ intelligent novices”, by seeing both process modeling and accompanying explanations, students can develop “ conditionalized ” knowledge, that is about when and where knowledge should be used to solve a variety of problems.

Coaching, observe students as they try to complete tasks and provide hints and helps when needed. Intelligent tutoring systems sometimes embody sophisticated coaching that models the learners 's progress and provide hints and as practice activities increase in difficulty . Coaches need to monitor learners performance to prevent their getting too far off base, but leaving enough room to allow for a real sense of exploration and problem solving. Coaches help learners reflect on their performance and compare it ot others.

Articulation, student think about their actions and give reasons for their decisions and strategies, thus making tacit knowledge more explicit. If the learners tacit knowledge is brought to light, that knowledge can solve recruited to solve the problems.

Reflection, students look back their efforts to complete a task and analyze their own performance. Reflection is like articulation except it is pointed backwards to past tasks. Analyzing past performance efforts can also strategic goal setting and international learning.

Exploration, encourage student to try out different strategies and hypotheses and observe their effects. Student learns how to set achievable goals and to managed the pursuit of those goals. They learn to set , try and seek for knowledge independently.

Sequence, present instruction in an ordering from the simple to complex, with increasing diversity and global before local skills. Even though learners are not engaged in full problem solving , through modeling and helping on parts of the task (scaffolding ), they can understand the goals of the activity and the way various strategies relate to the problem's solution.

## **TOOLS FOR KNOWLEDGE BUILDING COMMUNITIES**

The design of collaborative learning environments, Pea (1994) describes three metaphors of communication such as transmission of information, as ritual and as a transformation.

Communication as transmission of information ,the dominant idea that communication convey a message over time and distance from one person to another. Communication as ritual, refers to the participation and fellowship involved in the sharing of certain forms of expression. Participation in the performing arts such as dance, theater and music either as a performer or as an audience member. Ritual communication emphasizes the sharing and communal functions of communications, allowing groups to maintain a sense of identity and coherence.

Communication as transformation, both the “sender” and “receiver” of information are transformed as they share goal of learning and knowledge generation. Participants transformative communication open themselves up and expect change occur as part of the process. Communication thus serves as a stimulus to inquiry, observation



and reflection. Transformative communication combines aspects of knowledge sharing and collaboration with an emphasis on new experience and learning.

Transformative styles of communication are characteristic of learning communities, whether in schools, workgroups or families. Pea (1994, p.289) notes that a number of researchers are presently moving from cognitive science base toward a social cognition framework in their attempt to understand the symbols and discourses of learning communication.

## CONCLUSION

Cognitive load theory lead to specific prediction for learning, its help teachers and student combine their knowledge to produce a creative situation. Cognitive flexibility concerned with transferring knowledge and skills beyond initial learning situation. Multiple intelligence theory regarding form of intelligence that each individual possesses in varying design.

Cognitive apprenticeship incorporates strategies that make our teaching and learning effective, it make our student more involve in the lesson by presenting their group work. It emphasizes the collaborative learning environment which communal function of communication. By the combination of the methods, we can implement much more better way to increase the number of educated citizen in our beloved country.

## REFERENCES

<http://tip.psychology.org/gardner.html>

<http://tip.psychology.org/sweller.html>

<http://tip.psychology.org/styles.html>

<http://tip.psychology.org/spiro.html>

<http://www.fhsu.edu/~ggbler/WebProj/Cft-Modified/Theory.htm>

<http://ed-web3.educ.msu.edu/newed/spring02/faculty1.htm>

<http://www.ilt.columbia.edu/ilt/papers/spiro.html>

<http://snow.utoronto.ca/Learn2/mod3/index.html>

<http://falcon.jmu.edu/~ramseyil/learningstyles.htm>

<http://www.Idpride.net/learningstyles.MI.htm>

