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COGNITIVE, AFFECTIVE AND CONATIVE MODEL FOR ANALYSING HIGHER EDUCATION STUDENTS

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ABSTRACT

Many models are used in recent years to analyze behavior of the students in the higher education. Analyzing the learning style and student performance in academic studies are very essential to enhance their performance. This research work is focused on analyzing the learners behavior using three dimensions, i.e., cognitive, affective, and conative model. In this paper, we used Moodle learning management system which is a learning platform to create a personalized learning environment and to track learning abilities using activities. This model will be helpful to study the cognitive, conative, and emotions of students.

Keywords: Cognitive, Affective, Conative, Moodle, Kolb's conative model.

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INTRODUCTION

Cognitive-affective-conative are psychological process model for humans. In this, cognitive term shows thinking ability understanding capacity and decision-making skills of a person. Cognitive psychology is interested into read mind of person. Affective is another psychological term related with emotions, motivation of students. Emotions of a person may be positive or negative depends on the situation and depends on persons thinking. Motivation and demotivation comes under affective psychology. There are many ways to motivate students like use a variety of student - active teaching activities. Conative means any natural tendency, impulse or directed effort. Conative is one of three parts of mind along with affective and cognitive. Conative shows action on any thought process which differs from person to person. Kolb's learning model is used for conative psychology. Kolb's model consists of four components, i.e., fact finder, follow through, Quick start and implementer. These four components have different functionality. Fact-finder oriented people gathers and share information, follow - through shows how to arrange and design things, quick-start deals with risk and it is used for innovative ideas, implementer is for incorporating those innovative ideas.

LITERATURE SURVEY

Cognitive-affective-conative model of destination image

In this research work, map cognitive-affective-conative model [1] to study behavior of tourist with the help of destination image. When a tourist wants to visit any place, he plans for the trip for various aspects. First, he decides which place he would like to visit which infers his thinking and decision-making ability. This decision-making and thinking ability comes under the cognitive model. After visiting destination tourist gives their feedback related to that place which may be positive or negative differ with person to person. This feedback infers emotions of tourist related to that place. If those tourists after completion of their tour share some positive points related to that place to other people, which may motivates people. This emotions and motivation term comes under affective domain. After getting motivated people may decide to visit the same place that decision of people comes under conative model.

Development of hierarchy of effect model in advertising

The aim of this paper is to show the effect of hierarchy model in advertisement field using model [2] attention, interest, desire, and action. In this model, merchant advertise their products and gives various offers on it which may impress customers to buy those products. When customer thinks about that product after watching advertise, they make some decision on that, this behavior of customer comes under cognitive model. If customer decides after thinking not to buy that product at that time merchant may try to give some extra offers because of that customer may get motivated to buy those product. This motivational factor comes under affective model. The customer makes a decision either to buy the product or not based on his own intuition and experience. This decision-making process is categorized as a conative model.

Learning style and cognitive traits-their relationship and benefits in web-based educational system

Each student has different abilities of gaining knowledge. These abilities of gaining knowledge are nothing but learning style of the student. This paper [7] examines the relationship between learning style and cognitive model. It provides adaptive learning process through cognitive model.

Effects of future mathematics teacher affective, cognitive, and sociodemographic characteristics on their knowledge at the end of teachers education in Germany and Taiwan

This paper shows that achievement of students was depended on the teaching style of instructors and their knowledge. Many tests were conducted for teacher to examine their knowledge level that is acquired from different sources. The result of that test shows thinking ability and understanding of teacher, which comes under cognitive. The teacher gets motivated by the good scores which improve the teaching styles and students performances. This papers result shows that knowledge of Germany teacher is stronger than Taiwan teacher.

An exploration of the conative domain among engineering students

This paper tells us about student retention, demotivation [2], and absence of trust in building courses. This observation recommends the importance of investigation on conative space to prepare students for future difficulties in designing study. This paper explores the conative domain among engineering students. The outcomes from research showed students were less confident of their own technical skills and have a lower level of self-respect [3] compared to employers view. Outcomes from lecturers interviews showed students attitudes and interest were the major obstacle that affects their willingness in exploring engineering

skills. This research proved that engineering education also should focus on designing learning activities and instructional instruments that can faster student conative capacity.

Providing cognitive and affective scaffolding through teaching strategies: Applying linguistic politeness to the educational context

Providing students with cognitive and affective support is generally recognized as important [3] to their fruitful learning. This paper shows a model of instructors selecting corrective feedback based on the politeness [4] perspective of face. For getting these feedback authors have used some strategies like student oriented factors, lesson-oriented factors which include student confidence, student interest motivated, difficulty of lesson, importance of materials, and ability of student. This paper has created one model which is using case-based reasoning technique and asked questions based on respective subject to students. These answers are evaluated by four mentors using the created model which is based on above strategies.

Focusing on the complexity of emotion issues in academic learning: A dynamical component systems approach

Understanding inter-relations among intellectual, passionate, motivational, and volitional methods [6] is an emerging focus in educational psychology. This system considers feelings to be a set up that is made out of subjective, neurophysiological, motor expression, and motivational procedure and also sentiments that commonly manage each other after some time furthermore, inside a specific setting. This exhaustive perspective of emotions gives a more finish comprehension dynamical nature of feelings and the integration of feelings within learning processes. In this paper, researchers have performed some activity with students. They have provided some scenarios to student and asked them to give solution for the same. With the help of this, they found problem-solving skill of students and also the belief while solving a problem. Whether they are able to solve a problem or not? And also the confidence which is the most important fact while solving any problem. This paper proved that utilizing a dynamical segment view for studying emotions within academic settings provides a powerful empirical framework for stimulation.

PROPOSED ARCHITECTURE

This architecture is divided into three models cognitive, affective, and conative as given in Fig. 1. We conducted few activities in Moodle for students and teacher. These activities help teachers to analyze behavior of students. Moodle is an open source learning platform which is used widely in many universities.

To identify cognitive psychology of students, we can perform two activities in Moodle, i.e., Lesson and Quiz. For affective psychology, feedback activity can be performed to analyze emotions of student regarding quiz. In conative, on Kolb's model [5] different activities can be performed. For fact finder, wiki activity is used. For follow thru puzzles activity, for quick start we have to perform such activity which may give real time application design and last one is implementer in which student can use workspace for writing code in virtual program application. By performing this all activities, we can analyze the Student behavior. These activities are very much important for mapping these three model, i.e., cognitive, affective, and conative.

IMPLEMENTATION

In this model, teacher should provide a descriptive content of particular topic related to any course to the students. The delivery of contents is carried out by our first activity that is lesson as shown in Fig. 3 which can be accessed in online mode. All information is present in those links. Student can read those contain any time and understand it, can start thinking on it. In next step, teachers can provide one quiz as shown in Fig. 4 on the basis of that content and students have to solve those questions. After completion of quiz, students score will help to identify whether students understand a particular topic or not. If he scored less marks, then the students have to study the course materials again and gain knowledge. These two activities, i.e., Lesson and Quiz tells cognitive psychology of particular student.

After completing quiz, teacher makes the students to fill up feedback form as shown in Fig. 5 about quiz. In feedback form, multiple choice questions are there which students have to give answers. On the basis of each feedback, teacher will come to know emotions of each student. If students give a more positive response about quiz then we can analyze that students understand contents and he is happy by gaining knowledge.

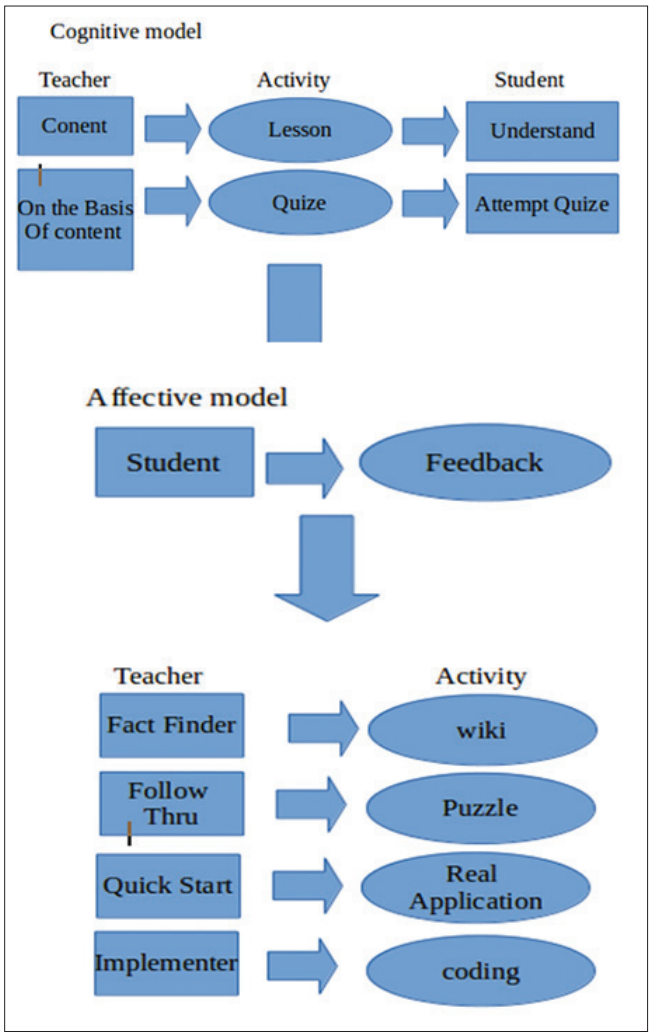

Fig. 1: Cognitive-conative-affective model

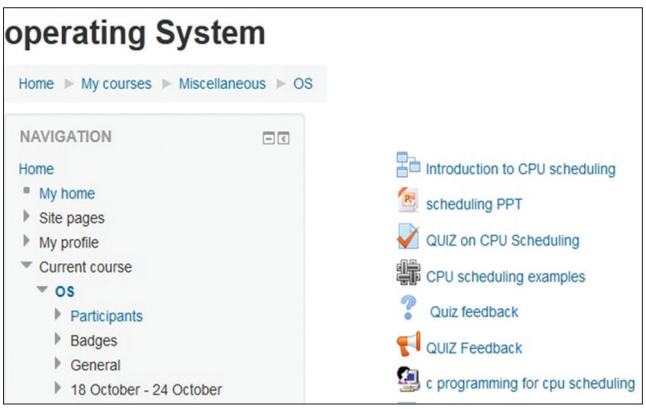

Fig. 2: Moodle course page

Thus, feedback tells affective psychology of students. If student is giving a positive response, it means that he gets motivate and he may want to collect some more information about delivering topic. To motivate more students' teacher should provide one platform where students can collect and share extra information regarding any topic. To provide this platform, there is one activity in Moodle called as Wiki as shown in Fig. 6. In these activity students can gather and share information. Other students can also edit or add more information in this wiki page.

We are using Kolb's conative model, for fact finder model we used Wiki activity in Moodle. On the basis of extra information provided by the student, design or architecture can be made which helps other students to understand those data in design manner. We can use puzzle activity for designing purpose. This puzzle activity comes under follow thru model. Next Kolb's model is quick start; here we can give some real time application on the basis of provided information. Editor activity can be performed in Moodle for giving real time application.

Last part of Kolb's model is implementer. Here students can give coding if necessary through virtual programing activity in Moodle.

The Moodle activities conducted are given below,

1. Lesson activity
   "Introduction to CPU scheduling" is a title of lesson and it contains brief information about CPU scheduling algorithm. This lesson belongs to operating system subject. Teachers can take any subject and can use this activity.
2. Quiz activity
   "Quiz on CPU scheduling" contains some multiple choice questions based on topic which is being provided in lesson activity. Teacher will ask students to solve this quiz within some time limit.
   Teacher can take as many as quiz they want and can divide the quiz in three levels, i.e., easy, medium, and hard. This level will enhance the student's confidence and will make them positive to learn and gain more knowledge.

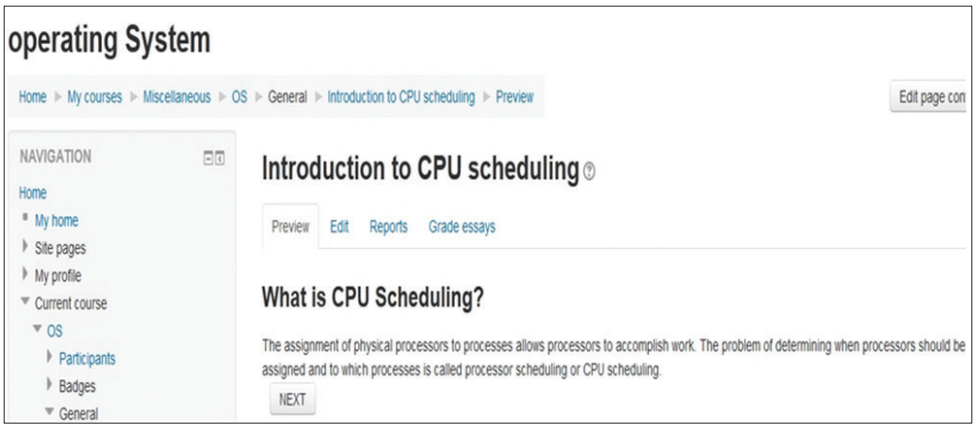

Fig. 3: Lesson activity

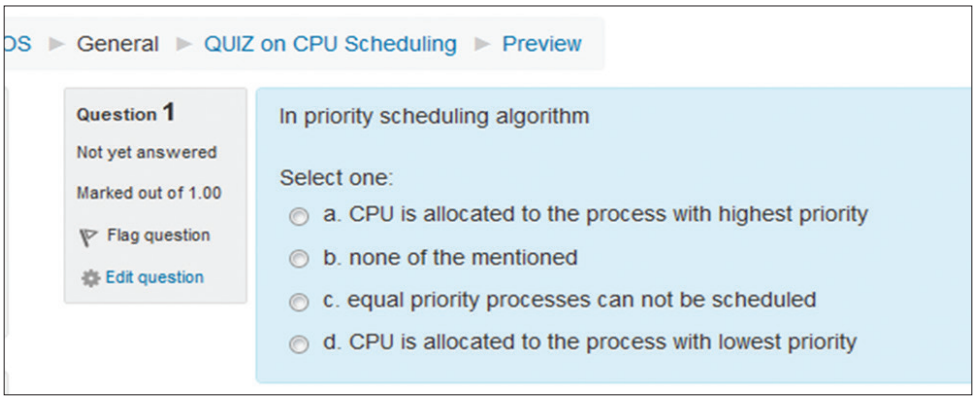

Fig. 4: Quiz activity

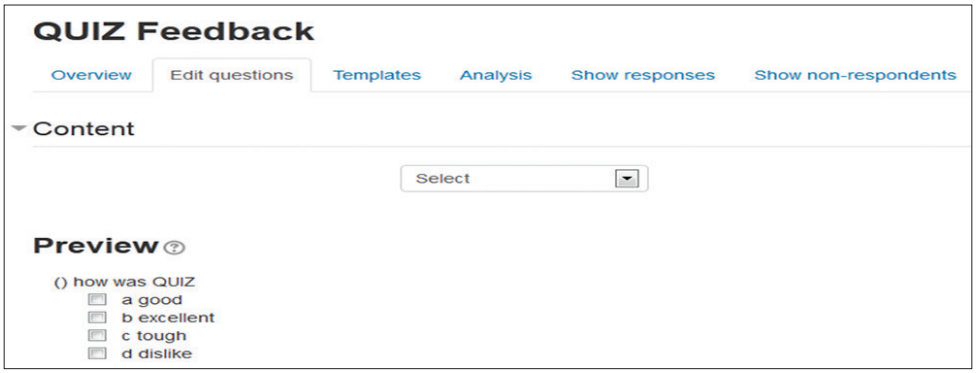

Fig. 5: Feedback activity

Fig. 6: Wiki activity

3. Feedback activity
   "Quiz feedback" contains questions based on quiz activity like how was the quiz? Difficulty level of quiz? Whether it is helpful or not? Students are enjoying this type of learning or not? etc. Teacher can set these questions according to them. These feedbacks are considered important from the teachers' point of view. It helps the teacher to understand the ability of student, student's emotions like positive or negative and their performances.
4. Wiki activity
   In this, students can add more information about any topic and can share their knowledge with teacher and other students.

In lesson activity, we have provided brief information about CPU scheduling topic and asked students to read it thoroughly as shown in Fig. 3. Like-wise, we have provided some other topics for measuring performance of each student.

Fig. 4 as shown in, we have performed quiz activity here. On the basis of lesson activity, we have asked some multiple choice questions to students and measure this performance. Quiz is divided into three levels, i.e., easy, medium, and hard. Performance is measured on marks basis.

In feedback activity, we asked students to give feedback of quiz. Questions will be like how were the difficulty level of quiz?, whether they find our previous activities valuable or not while solving quiz? etc. Based on this feedback, teacher can do some changes in the activity and can make it more convenient to students.

Teacher and student can share more information about respective topics in wiki activity as shown in Fig. 6. All will become able to access this activity, can read additional information which will help to students to enhance their knowledge.

If everyone shares some interesting and valuable information in wiki activity, then it will save everyone's time for searching related information on the internet.

CONCLUSION

In this research work, we have analyzed students behavior using cognitive, affective, and conative model. The results show that the students' performance, cognitive skills are totally depends on the way of delivering the course contents and imparting the knowledge to the students. We have performed different activities and used a different way of delivering information and mapped students' performance.

Activities performed in Moodle mapped the hierarchical architecture of cognitive, affective, and conative model. The students were more interactive, motivated and also showed positive emotions during this analysis. This study also helped the students to enhance their self- regulated learning and lifelong learning skills.

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