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Understanding of Bloom's Taxonomy through Outcomes of the Examination in ERP System

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Abstract

The present article considers the results of computer science students of one of the private university in Odisha through which one can realise the improvements of blooms taxonomy. The inclusions of bloom taxonomy in enterprise resource planning would enhance or improve the quality of education. Moreover, there are six type of parameters such as remembering, understanding, applying, analyzing, evaluating and creating have been considered. Here 4 different computer science papers have been realised through the setting of the question papers from all these six categories. Finally, the results of these six parameters have disclosed through result analysis. Apart from this, the Average enrolled for module, Average admitted to the examination, Male to female Percentage and Examination Pass rate have been discussed. Finally, a representation of through bar graph is indicated. The quality education would be realised if the aforementioned parameters could include in the enterprise resource planning system.

Keywords: ERP system, Bloom Taxonomy, planning, management, Centralized Environment

INTRODUCTION

ERP or Enterprise Resource Planning is an industry name for a multi-module, integrated programme. Software packages intended to service and assist a number of different tasks (Bahar Yelken, 2005) [1]. Software products designed to serve and aid with a variety of activities. Students, faculty, schedules, examinations, admissions, fees, reporting, and other information are easily and quickly accessible through an education ERP system. This enables management to explore and analyse diverse elements of the institution more quickly, resulting in increased planning capacities [2]. Advances in information technology have reshaped the way educational institutions do business. The replacement of outdated legacy systems with centralised ERP results in immediate and measurable improvements in the administration process. The programme provides a collection of tools that modernises the campus while also improving the planning and management of activities such as student registration, lecture sessions, courses, libraries, customer service, and so on. An educational ERP system organizes and simplifies all activities inside the institution's borders, considerably improving the effectiveness of assigning and running academic resources [3]. Following are amongst the most significant benefits of deploying ERP in academic system.

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Simplify the Admissions Procedure

Admissions to schools, universities, colleges, and other educational establishments are frequently hard and time-consuming. Each application contains a wealth of information on the individual, such as their date of birth, grades, specialism, and more [4]. All of these records must be checked to

verify the candidate's eligibility. When the work is completed by hand, the procedure becomes exceedingly time consuming. But, with the assistance of ERP software, this approach for enrolling the best-fit pupils becomes straightforward [5]. The system presents all of the required components in one location, making them conveniently accessible to the administrator and thereby speeding up the certification program.

Fee Payments Should Be Automated

Another critical procedure in every educational institution is fee collecting. Prior to the introduction of ERP, administrators struggled to manage the process [6]. They must examine each student's payment status to determine what charges have been paid and what are still owed.

An ERP system automates and simplifies fee collecting, making it less time-consuming and exhausting. To assist students keep up to speed on their fee status, the programme automatically categorises the fees collected and monitors all of the components in the fee structure, including amounts paid for tuition, entrance, books, lab, and so on. In addition, the software solution provides automated notifications to guarantee that pupils or their guardians are alerted on time via the proper channel of communication [7].

Data Management in a Centralized Environment

Massive volumes of information on students, books, test dates, lesson plans, and other data must be stored by educational institutions. An ERP solution unites the whole campus and its divisions into a single system to simplify data management [8]. The programme allows for the exchange of stored data between departments in order to keep instructors, staff, and students up to speed on crucial news. This manner, you'd have better control over internal and external communication in your organisation, and you'd never have a breakdown in communication.

Budget-friendly

Amongst the most obvious benefits of ERP installation in any industry, including educational institutions is its low cost. The programme reduces the amount of man-hours spent on manual chores involved in the essential techniques of campus administration such as admission, payroll, fee collections, and others, resulting in cost savings [9]. The money saved can be used for important educational reasons.

Faster Management Procedures

An education ERP system allows for simple and rapid access to information concerning students, faculty, schedules, assessments, admissions, fees, reporting, and other topics [10]. This enables management to assess and analyse many elements of the institution more quickly, resulting in increased planning capacities. Through strategic data analysis, greater data availability also promotes well-informed decision-making.

Enhance Resource Management

An effective ERP system eliminates the need for manual maintenance of time-consuming resource databases. The programme can manage real-time inventory and resource utilisation, allowing you to optimise operations, distribute resources, and monitor all actions in the institution in real time [11]. This aids in the acceleration of day-to-day activity and the resolution of issues or problems in a timely manner.

Data Safety

The basis of the retail industry necessitates a dynamic pricing mechanism. Keeping track of this manually, on the other hand, is a time-consuming task [12]. For this, you'll need a solid ERP solution that can manage the procedure of recording product prices and discounts, making the process

straightforward and painless. Every educational institution must preserve student data for the current academic year, as well as alumni, professors, books, and other resources from a single or numerous campuses. When all of this data is combined, the volume of data grows enormous, and physically putting it on shelves is never secure. This massive volume of data may be securely stored using ERP software. The programme features a backup method to keep the data safe, which is very difficult to have store in files. Focus Softnet offers over 25 years of expertise in the implementation and maintenance of full ERP solutions. If you want to leverage the potential of ERP software for your academic institutions or improve your current corporate software solutions, simply fill out this form and specialists can get return to you.

Figure 1. Different components of the ERP system [13].

Even though different components are playing an important role in the education ERP system, the question pattern in the examination system plays a key role. For example; we cannot set the question paper arbitrarily, there is a certain rule to fabricate and deign a certain question paper. The rules pertaining to the same is Bloom Taxonomy. Keeping the importance of Bloom Taxonomy in the ERP system, the present article discusses the fundamental of Bloom Taxonomy in ERP system and the questions on the rule of Bloom Taxonomy and its outcomes. As far as the organization of the paper is concerned, section 2 discusses the fundamental of BL where section 3 focuses on the outcomes of the bloom Taxonomy and finally, conclusions are drawn.

Overview of Bloom's Taxonomy

Bloom's Taxonomy was developed in 1956 by educational psychologist Dr. Benjamin Bloom in foster higher types of thinking in education, such as analyzing and assessing concepts, processes, processes, and theories, rather than just memorising information. This was most commonly utilised in the development of instructional, teaching, and learning methods [14]. Table 1 & Figure 1 depicts Blooms Taxonomy

Table 1. Blooms Taxonomy

	Blooms Taxonomy	
Domain	***Keyword***	***Example***
REMEBRING: Remember or regain previously acquired knowledge.	Defines, describes, identifies, knows, names, lists, reproduce, select, state.	Repeat a policy statement. Price quotes from a database to a consumer. Memorize the safety precautions.
KNOWLEDGE: Pay close attention to the meaning, interpretation, recombination, and interpretation of instructions and difficulties. Describe an issue in your own thoughts.	Follow, convert, estimates, defends, distinguish, extend, generalises, infers, interprets, paraphrases and translates, predicts, rewrites, summarises.	Rewrites the fundamentals of exam writing Describe in one's own thoughts how to do a complicated assignment.
EMPLOYING: Applying an idea in a new circumstance or when encouraged to apply an abstraction. Uses what was learned in the classroom to noble situation in the work place.	Applies, changes, compues, constructs, demonstrates, discovers, manipulates, modifies, operates, predicts, produces, shows, solves, relates, prepairs, process.	Calculate an employee's vacation time using a manual. Use statistical principles to assess the dependability of a written examination.
ANALYSIS: The process of breaking down material or thoughts into component elements in order to understand their organisational structure.	Analyses, breaks down, contrasts, diagram, differentiates, identifies, outlines, separates, selects.	Use valid logic to troubleshoot a piece of machinery.
ASSESSING: Form opinions regarding the worth of ideas or things.	Compare, conclude, defend, describe, interpret, justify, support.	Choose the most efficient solution.
CREATING: Built a structure or pattern from diverse elements.	Categories, combines, creates, designs, generates, modifies, reconstructs, relates, rewrites.	Design a machine to perform specific task revises and processes to improve the outcomes.

Discussion of Blooms' Parameters

It is observed in the previous section that Booms' six parameters are played a vital role to design a question paper as well as making an assessment of the same. The Bloom parameters should include in the ERP system which would enhance the quality education.

To verify the same, this paper considers the question of computer science department of a certain private university in odisha. The question paper is segregated among four years such as 1st, 2nd, 3rd and 4th year's subjects. Though many question papers have been included, we have taken few papers off them. For example; 12 papers from the first year, 10 papers from the second year, 8 papers from the third years and 5 papers from the final years. The reason for choosing such papers is due to the availability of the data of that particular department. The detailed about the same is indicated in the Table 2.

Table 2. Explanation of Blooms' parameters with outcomes.

Parameters in the Bloom Taxonomy	**CS-I**	**CS-II**	**CS-III**	**CS-IV**
	Average of 12 papers (%)	***Average of 10 papers (%)***	***Average of 8 papers (%)***	***Average of 5 papers (%)***
Remembering	29	29	45	23
Understanding	0	0	12	37
Applying	59	58	32	8
Analyzing	0	0	0	5
Evaluating	5	9	4	4
Creating	7	4	7	23
Total percentage	100	100	100	100

Table 2 gives the numerical values against each Bloom's parameters. The column 1, column 2, column 3, column 4 and column 5 represents the bloom's parameter and other criteria, percentage of marks in the first year (chosen) subjects, second year (chosen) subjects, third year (chosen) subjects and fourth year (chosen) subjects. The outcomes of the Table 3 in terms of an examination are indicated in the Table 3.

Table 3. Outcome so the examination of CS students.

Average enrolled for module	572	316	125	34
Average admitted to the examination	392	226	113	30
Male to female Percentage	72%/28%	75%/25%	72%/28%	71%/29%
Examination Pass rate	58%	59%	86%	93%

In the Table 3; Average number students enrolled for that particular module is 572, 316, 125 and 34 for first, second, third year students respectively. Similarly average number of students admitted to the examination is about 392, 226,113 and 30 for first, second, third year students respectively. Then we have also collected the data in terms of the male to female percentage which are indicated 72 and 28, 75 and 25, 72 and 28, 71 and 29 for first, second, third year students respectively.

Finally the percentage of pass rate is also shown, which is found an interesting result. For example results in the final year students better as compared to first and second year students. It inferred that first- and second-year students have less understanding with respect to the Bloom's rule as compared to the third and fourth year students.

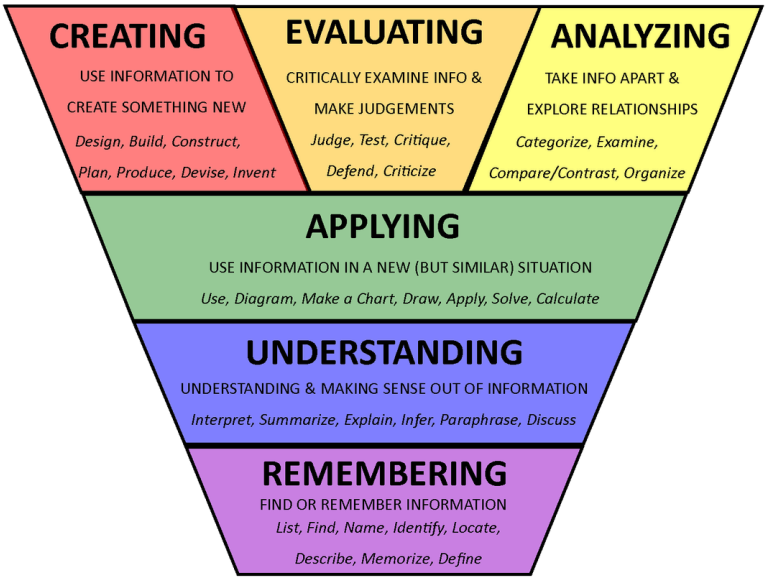

Figure 2. (Pictorial representation of Blooms Taxonomy).

In the Figure 2, Graphical representation of different blooms components with different distribution of marks a computer science in a certain university is shown. Apart from this, the total percentage of marks is indicated here. This result is replicate of the Table 2. Similarly, a graph is plotted to validate the data corresponding to the Table 3, which is indicated in the Figure 3.

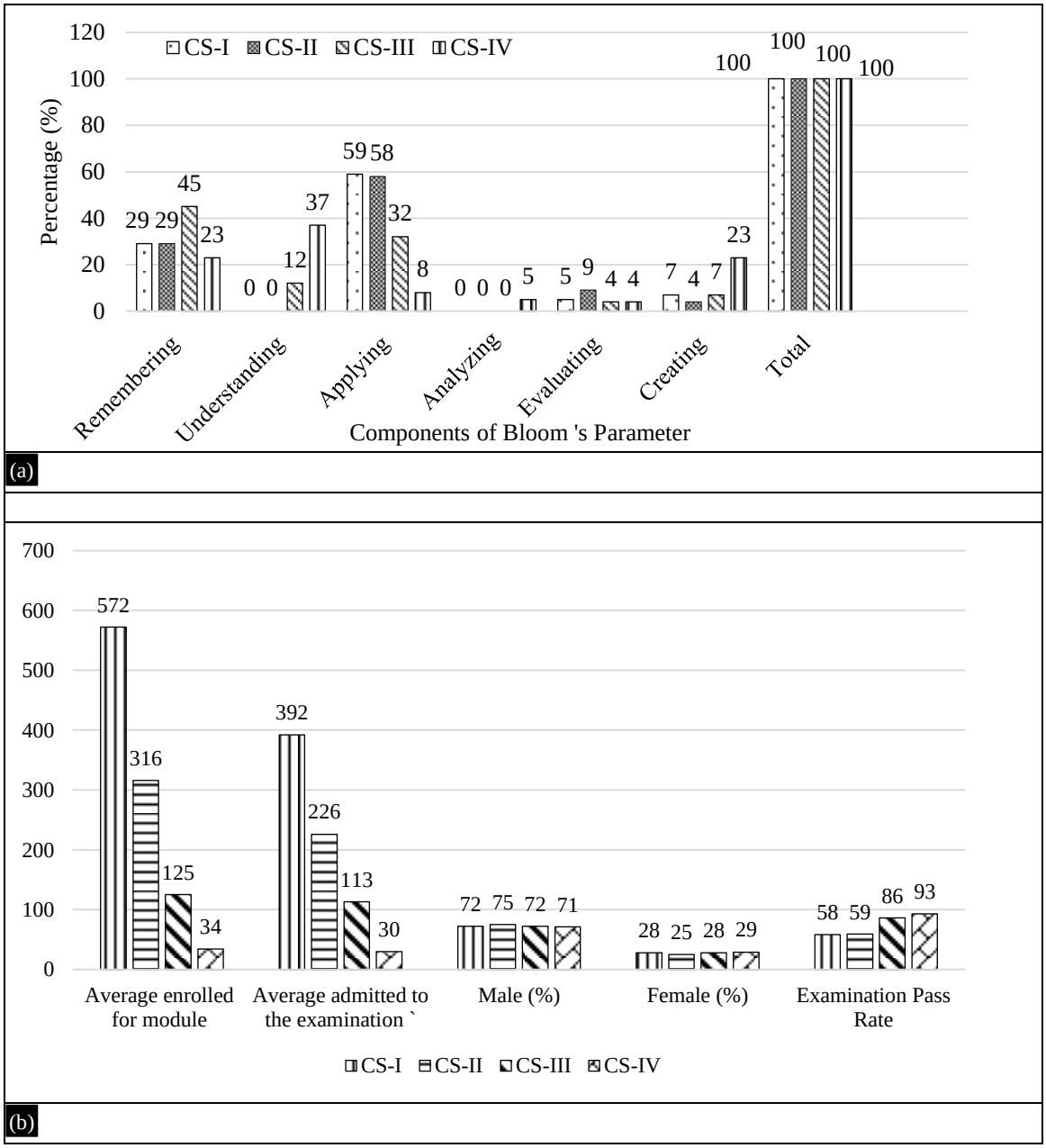

Figure 3. (a, b) Different parameters for supporting the Table 3.

In the Figure 3; first two parameters is taken in terms of number where last three parameters are taken in %.

CONCLUSIONS

The blooms Taxonomy parameters have been nicely explained in the present paper with respect to the computer science department of the private university in Odisha. As the availability of date is privacy, we have conceded with the average data or information. Apart from this the present paper

focuses the outcomes of the result or examination of the students of CS department. It is also inferred that 3rd and 4th year students of the UG course has better understanding of such taxonomy as compared to the first and second years students. Finally, the present work disclosed that in Bloom's Taxonomy should be included in the ERP system.

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