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A NOVEL WAY TO IMPLEMENT VIRTUAL LEARNING ENVIRONMENT IN TEACHING AND LEARNING SITE USING WEKA TOOL

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ABSTRACT

Virtual Learning Environments (VLEs) are popular with many educational institutions, ranging from primary schools to universities. This research report provides a development and evaluation of a virtual learning environment pilot program in college. This research analysis is based on the purpose of virtual learning environment by students and staffs with data mining technology. A VLE is a software tool which brings together in an integrated environmentarranges the resources that enable learners and staff to interact online, and includes content delivery and tracking. In this research, one of the parameter of Virtual Learning Environment is internet usage of college student's data set is to be analyzed and concluded that in "WEKA TOOL" to visualize the output chart by the Decision tree algorithm. An MLE (Managed Learning Environment) brings together two distinct standards – a VLE and a management information system (MIS) and has the potential to fully integrate learning materials, pupil data and assessment (MLE = VLE + MIS). The positive benefits emerging from the use of VLEs in further and higher education have potential applicability to all the students.

Keywords: Assessment, Content/Communication, Classification, Education, Information.

I. INTRODUCTION

In the last 10 years, education has benefited from a real e-revolution most schools and universities now have a functioning Virtual Learning Environment (VLE), at the heart of their teaching and e-learning programs. A VLE, or learning platform, is an online system that allows teachers to share educational materials with their pupil via the web. A VLE is a virtual classroom that allows teachers and students to communicate with each other through online. Class information, learning materials, and assignments are typically provided in the Web. Students can log in to the class website to view the information and may also download assignments and required reading materials to their computers. Some VLEs even allow assignments and tests to be completed online.

In a virtual classroom, the teacher may communicate with the students in real-time using video or Web conferencing. This type of communication is typically used for giving lectures and for question and answer sessions. The students may also receive an e-mail notification letting them know a new assignment has been

posted. If class members have questions about the homework, they can participate in online forums or submit individual questions to the teacher.

Virtual learning environments are a popular method of e-learning, which refers to learning through electronic means. While a VLE cannot fully replace the traditional classroom, it can be a useful way of teaching students who reside in many different locations.

Every educational establishment ought to integrate a VLE into their lessons and allow it to become second nature to learners and educators outside of the classroom. Here are some reasons why[10]:

- Communication – opens up an infinite number of channels in the format of forums, discussion threads, polls, surveys – instant feedback either as a group or individually
- Producing work – students do not physically has to find their teacher to hand in work due to secure virtual 'hand-in' folders that have time windows
- Resource hub – teachers have infinite online storage space for PPT, docs, worksheets etc. that can either be secure or shared with students
- Dynamic home pages – teachers have the opportunity to create an exciting virtual space to represent their room/subject
- Links to outside sources – pathways to all other online learning spaces are linked via the VLE
- Embedded content – YouTube, BBC, and newspapers can all be embedded as the dynamic feed of the homepage

The research is based on how the Virtual Learning Environment is utilized by the students and staff member to gain the information, content and communication, and to assess themselves for evaluate them by some assignments and tests.

II. PROBLEM DEFINTION AND DESCRIPTION

VLE's are still relatively new to the schools market, the general impression is that they are likely to have a significant impact on the process of teaching and learning in the future. While most of the academic literature is from further and higher education, in many cases there is potential applicability to the school sector. Some of these features may include[8]:

•Communication
•Assessment
•Online content (organized into courses with controlled access) and shared areas
•Management and tracking of students
•Student tools and autonomy

Communication: Using a VLE has been found to increase the level of communication and collaboration between users ; they have more of a chance of articulating their thoughts and understanding. This is a positive process as one can be developed further by interacting with another

Assessment: Use of a VLE has been known to refine students learning styles, allowing them to use higher level thinking skills and to develop time management skills .VLEs can be usedfor summative assessment, but due to potential exploitation and cheating, they are mostfrequently used for formative assessment. In particular, self-

assessment, whichmay take the form of a multiple choice assessment, or quiz, which provides automaticmarking and gives instant feedback to the student

Online Content and shared areas: The delivery of a course often consists of notes, supporting links, images and video clips. These will be placed by the teacher into a shared area, accessible by all users registered to that space. Depending on the way permissions have been set, students may be able to upload files to the same space.

Management & Tracking of Students: Security credentials are used, so that only registered students can access the environment.This is particularly necessary when assessing a student. A teacher is able to generatestatistics, based on which resources the user has accessed and when; a map can be built of an individual's learning pattern. Students can be connected into groups, mirroring the physicalgroupings that each student may or may not be accustomed to.

In this Research, one of the parameter of Virtual Learning Environment–Internet usage of student's data set to be analyzed and concluded that in "WEKA TOOL" to visualize the output chart by the Decision tree algorithm. The survey has taken to the college students and staff members about how they utilize the VLE's to get the primary data through the questionnaire format. The classes are mentioned as Content/Communication, Assessment, Information and the result is analyzed by WEKA tool.

III. METHODOLOGY

Data mining is generally iterative and interacting discovery process. The goal of the process is to mine the pattern and statistically significant structures from the large amount of data sets. Furthermore mined data are novel, valid, useful, and understandable.

Classification /Predictive modeling can sometimebut not necessarily desirablybe seenas a \black box" that makes predictions about the future based on information from the past and present. Some models are better than othersin terms of accuracy. Some models are better than others in terms of understandability; for example, the models range from easy-to-understand to incomprehensible (in order of understandability): decision trees, rule induction, regression models,and neuralnetworks.Classificationis one kind of predictive modeling. More specifically, Classification is the processofassigningnewobjectstopretended categoriesor classes: Given a set of labeled records, build a model such as a decisiontree, and predict labels for future unlabeled records. Model building in the classification process is a supervised learning problem.

Training examples are described in terms of (1) attributes, which canbe categoricali.e., unordered symbolic valuesor numeric; and (2) classlabel, which is also called the predicted or output attribute. If the latter iscategorical, then we have a classification problem. If the latter is numeric,then we have a regression problem.

The training examples are processedusing some machine learning algorithm to build a decision function such asa decision tree to predict labels of new data.

The J48 algorithm is the WEKA implementation of C4.5 decision tree learner. The algorithm uses the greedy technique to induce the decision tree for classification and reduced error pruning [11].

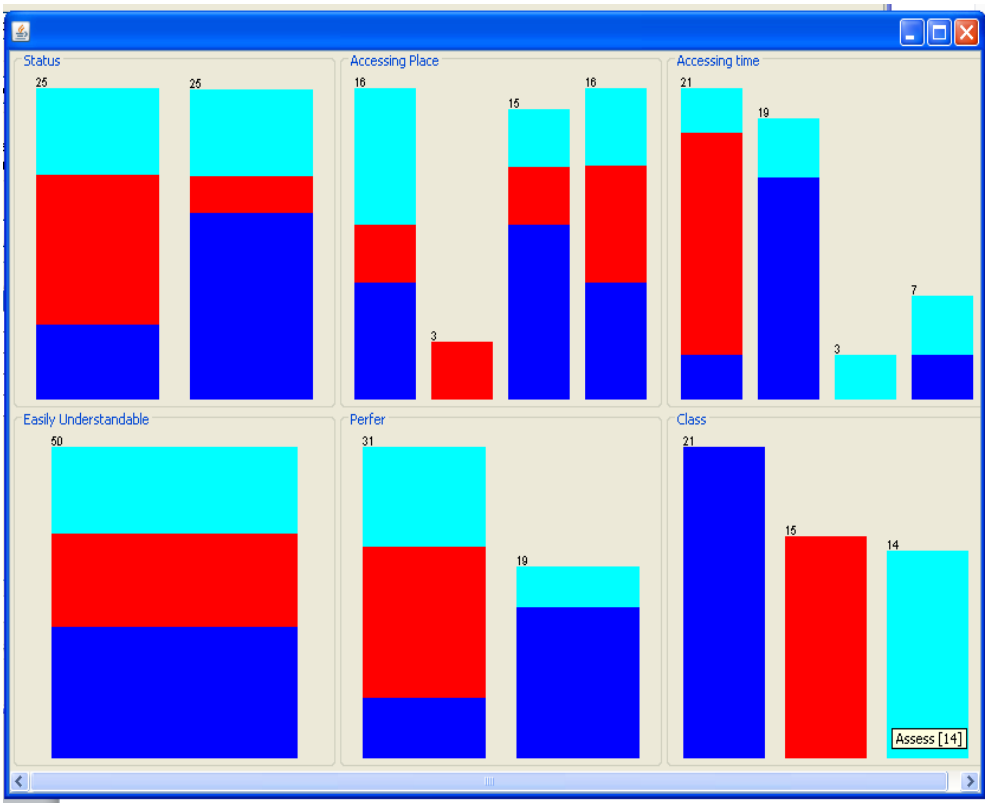
J48 is an open source Java implementation of the C4.5 algorithm in the WEKA data mining tool. C4.5 is a program that creates a decision tree based on a set of labeled input data. This algorithm was developed by Ross Quinlan. The decision trees generated byC4.5 can be used for classification, and for this reason, C4.5 is often referred to as a statistical classifier.

As input to the model seven variables are used, whose names and coding is shown in Table.

	Variable	**Coding**
1	Name	Name
2	Status	Student Staff
3	Accessing place	House College House & College
4	Accessing time	<=1 hour 2 to 5 hour 5 to 10 hour
5	Easily understandable	Yes No
6	prefer	VLE Traditional
7	Class	Content Communication Assessment Information

IV. RESULT

The input data are fed into the Excel by the categorical values only. The classification algorithm is used to predict how they utilize of VLE bysome predefined classes like Content/Communication, Information, Assessment etc. Mainly consider the values ofthe input variable given by the classification.



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Classifier output

Scheme: weka.classifiers.trees.J48 -C 0.25 -M 2

Relation: vvvvv-weka.filters.unsupervised.attribute.Remove-R1,4,6

Instances: 50

Attributes: 4

Status

Accessing Place

Easily Understandable

Class

Test mode: evaluate on training data

=== Classifier model (full training set) ===

J48 pruned tree

Accessing Place = HC

| Status = sta: Con/comm (6.0)

| Status = stu: Assess (10.0/3.0)

Accessing Place = C : Info (3.0)

Accessing Place = C

| Status = sta: Info (6.0/3.0)

| Status = stu: Con/comm (9.0)

Accessing Place = H

| Status = sta: Info (10.0/4.0)

| Status = stu: Con/comm (6.0)

Number of Leaves : 7

Size of the tree : 11

Time taken to build model: 0 seconds

=== Evaluation on training set ===

Time taken to test model on training data: 0.02 seconds

=== Summary ===

Correctly Classified Instances	40	80 %
Incorrectly Classified Instances	10	20 %
Kappa statistic	0.694	
Mean absolute error	0.16	
Root mean squared error	0.2828	
Relative absolute error	36.5938 %	
Root relative squared error	60.5211 %	
Coverage of cases (0.95 level)	100 %	
Mean rel. region size (0.95 level)	50.6667 %	
Total Number of Instances	50	

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Class
	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	Con/comm
	0.800	0.200	0.632	0.800	0.706	0.566	0.886	0.707	Info
	0.500	0.083	0.700	0.500	0.583	0.468	0.881	0.638	Assess
Weighted Avg.	0.800	0.083	0.805	0.800	0.795	0.721	0.932	0.811	

=== Confusion Matrix ===

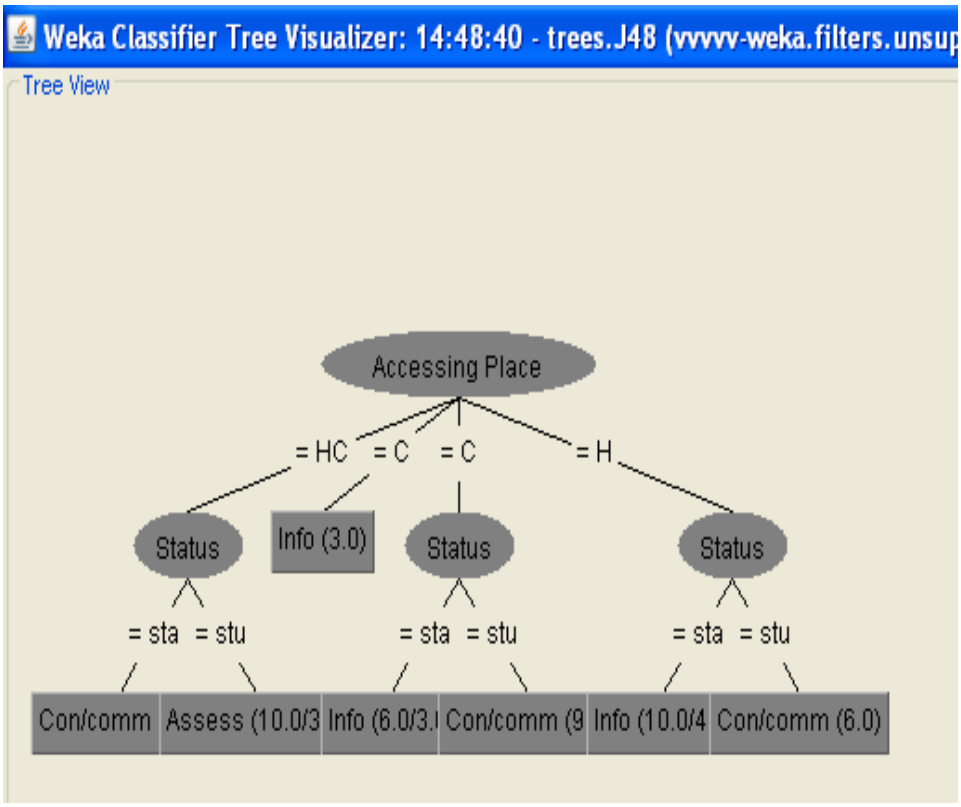
a b c <-- classified as

21 0 0 | a = Con/comm

0 12 3 | b = Info

0 7 7 | c = Assess

V. FULL TREE



VI. DISCUSSION

The Figure 1 shows different purpose of virtual learning environment. The purposes are divided into following groups:

1. Content
2. Communication
3. Information
4. Assessment

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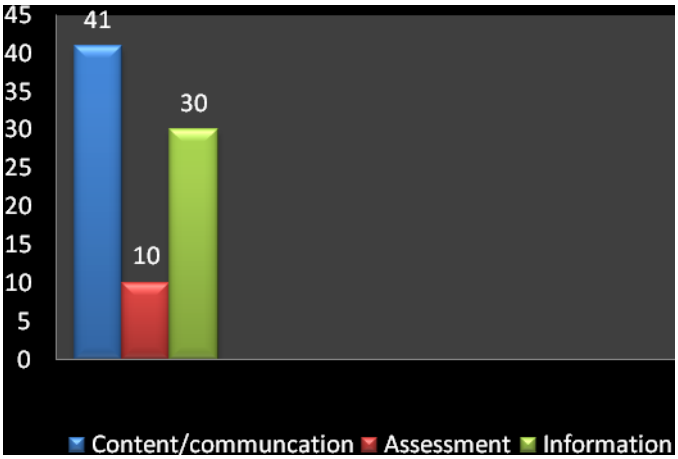

Fig.1. Different Purpose of VLE for Staff and Student

As we can see from Figure 1 most of the staff and student use the virtual learning environment for view the content and communicate with author and staff and some other person. Only a very small part of staff and student use the virtual learning environment for assessment and gain the information. Thus is possible to state that students and staffs use the virtual learning environment to many reasons.

The accessing place is divided into following categories:

1. House
2. College
3. House and college

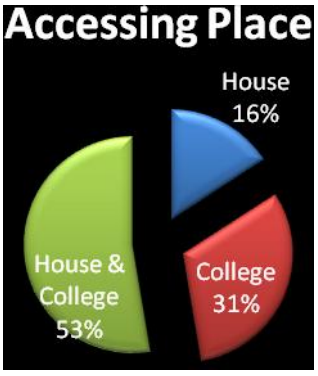

Fig.2. Different Accessing Place of VLE for Staff and Student

In this figure, most of them use the virtual learning environment in house and college.

VII. CONCLUSION

This paper aimed to investigate whether VLEs help or hinder student engagement and performance. The ultimate aim was to identity the purpose of using virtual learning environment. In this Research, one of the parameter of Virtual Learning Environment–Internet usage of school student's data set to be analyzed and concluded that in "WEKA TOOL" to visualize the output chart by the Decision tree algorithm. A significant proportion of students (53%) have used internet access at home and college. The results of this pilot program

evaluation show that VLE opportunities are changing instructional and student learning practices. Students using VLEs work differently than those not using them; learning shifts from the classroom to anywhere there is an Internet connection and a connected device. Changing access results in changing expectations. Students and staff using VLEs are more satisfied with their access to technology at college, but less satisfied with their Internet access at home for retrieving the content and communicate with others. Reliability of Internet access, both at home and at college, becomes a primary concern for both students and teachers.

The following reasons are made to prefer virtual learning environment:

- Publish existing documents and presentations easily
- Link to online sources of data, news services, records and publications
- Link to online resources such as simulations and tutorials
- They are easy to use for both students and lecturers
- They widen student access on and off campus to learning materials and resources
- Students should be able to access these resources at any time, in any place

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