Real Time Analysis of Attributes of an Indian E-Learning Site

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ABSTRACT

E-learning is an evolving paradigm in the modern educational settings. For an effective e-learning, a lot of concentration should be made to understand the learner usage patterns, requirements and individual capabilities for delivering e-content. The main aim of this paper is to analyze and present the selected attributes of how learners interact with an e-learning site using a case study of an Indian e-learning portal. A quantitative survey was carried out to compile the data pertaining to learners’ profile and to derive views on the current experiences of the learners. The valuable information thus obtained will facilitate in assessing the effectiveness of the current e-learning material and predicting acceptability of adaptive environment for learners.

KEYWORDS

e-learning, Adaptive e-Learning, usage pattern analysis, personalization, data mining

1 INTRODUCTION

E-learning is the use of information and communication technology to deliver learning material for education and training. It is convenient to access this learning material at one’s convenience at a click of the mouse; however, overall it can be an overwhelming experience [26]. The learner is on his/her own and depending on the given e-content, the learner might get lost in the process [1]. Adaptive e-learning system aims at accommodating the individual needs and characteristics of students in an e-learning environment [12]. Adaptive e-learning is the ability to modify e-Learning lessons using different parameters and a set of predefined rules [13]. However, in spite of its usefulness, acceptance of such system should be predicted beforehand to facilitate the future system development.

The e-learning systems generate a huge volume of information which is useful for analyzing learners’ behavior. It could make a goldmine of educational data (as stated by [9]). Data mining (DM) is the science of analyzing large databases to find patterns and trends [16]. Author [9] opined that the learner interaction data like reading, writing, taking online tests, even communicating with peers and performing various other tasks can be mined for creating intelligence for the site improvement. Many data mining techniques can be utilized on this data for personalization [20].

2 RELATED WORKS

Various researchers have carried out usage pattern study in e-learning [15]; [11]; [6]; [8]; [7]; [17]; [18]; etc. The main objective becomes analyzing the patterns of system usage by teachers and learners and discovering the learners’ learning behavior patterns [21]; [3]. Author [14] analyzed the sequences patterns of students’ web usage after the analysis of log files data using data mining techniques. Author [5] used e-learner’s prior knowledge and proposes model to visualize the e-learner’s click-stream data so that any interesting pattern can be detected. Many previous studies [23] review the factors to assess effectiveness of a site e.g. accessibility, organization, language, layout, goals, objectives, course content, learning resources, evaluation etc. However, the current study constructs different dimensions as well as more items that cover the scopes of online learners’ attitudes and behaviors. The research objectives of this study are to present
an analysis of various attributes pertaining to perceptions and preferences of e-learning.

3 METHODOLOGY

The case study research design is employed (similar to data set of [25]). The research methodology was based on empirical data collected through a questionnaire survey of students enrolled in an Indian e-learning portal. This questionnaire was pretested for its reliability using Cronbach reliability coefficient and was found to be 0.95. This calculated value falls in the acceptable range (> 0.7) [10]. Then this questionnaire was disseminated randomly to the target population.

4 POPULATION

The study was conducted on 146 students studying at sahaj e-learning Indian portal on their online learning activities from July 1 2013 to Dec 31 2013. The site delivers computer education using multimedia interface to its registered learners. The precondition for accessing the e-content is that the learners have to be registered with this e-learning site. The Section ‘A’ of the questionnaire collected data on learner profile, at the beginning of the course in July 2013. Profile questionnaires in Section ‘A’ were basically designed to indicate the background information of each registered learner specifically his level of study. Thus, he was placed in the right cluster of similar learners, to deliver material corresponding to their level. The Section ‘B’ of this questionnaire was about preferences and perception towards e-learning, acceptance of e-learning and perceived usefulness of various e-learning features, which was completed after the learners had finished majority of the course by Aug 31 2013. It was designed on evaluating how to further improvise the site.

5 DATA ANALYSIS

The raw data thus collected, was entered into relational database. It was then pre-processed to remove missing data. Finally, many data mining algorithms and statistical analysis was employed to analyze the dataset collected. We used Microsoft Excel 2010 and Statistical Package of Social Science SPSS 12.0 for the analysis.

6 RESULTS AND DISCUSSIONS

The personal data collected contained details such as name, gender, age group, address and contact information. Of the respondents, 43.9% were female learners while 56.1% consisted of male learners. All these learners were in the age group of 20 to 25 years and had common aim to attain a particular qualification, for which they had enrolled after finishing their graduation.

Learner could be assessed as to whether to engage in e-Learning or not. This analysis focused on personal acceptance of e-Learning.

6.1 Frequency of Access

![Figure 1: Frequency of Access](image)

The analysis of learners’ frequency of online...
learning remained as shown in the Figure 1. Here 30% indicated that they would learn extremely frequently; 41% accepted that they would learn online just two or three times a week; 29% accessed the site two to three times a month. The number of times the male and female learners would use e-learning is shown in Figure 2.

![Figure 2: Cross Tab of Frequency of access by Male and Female Learners](image)

### 6.2 Attributes Influencing Learners’ Satisfaction

The learners’ survey results of the learners’ attitude show that a vast majority of learners are satisfied with the e-learning environment. This is because of several benefits that make a positive change in an e-learning scenario which are rated by the learners as shown in the bar diagram in Figure 3.

![Figure 3: Benefits of e-learning](image)

### 6.3 Readiness To Use Adaptive E-Learning Environment

The assessment for acceptability towards adaptive environment was carried out over what could be further improved in the learning process. The purpose of readiness assessment is to help potential students to identify their requirements and capabilities and to decide if the adaptive learning format is the right choice for them. The preliminary assessment of what adaptive e-learning can offer better compared to traditional e-learning system is presented in Figure 4.
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6.4 How Useful The Following Features Of E-Learning Site Have Been

The learners were asked to rate their level of usefulness in various features of the e-learning site during the learning process. The results have been presented in the bar diagram in Figure 5.

**Figure 5:** Usefulness of various features of e-Learning site

7 DISCUSSION AND CONCLUSIONS

The results of the questionnaires are reported on in the form of graphs and tables. The research shows that e-Learning is accepted in Indian education system. It also highlights that the e-learning is frequently accessed resource due to its valuable features which are reduction of time, effort and money, in retrieving timely and updated information. The analysis specifically reveals the learners’ perception on how adaptability will make learning more effective. This has attested the justification stated by many researchers regarding on the benefits and usefulness of adaptability such as [2], [4], [22] and [19]. The learners perceive few resources to be more useful than others during their learning process.
8 FUTURE SCOPE

This study revealed interesting patterns that can be mined and several areas that should be discussed in future research. On assessing the usability of the resources accessed, future research on this would further lead to reasons that could improve the e-resource usage; what steps to take to make e-resources more useful and what the learners really value.

The online e-learning should learn the important factors that are contributing to learners’ satisfaction which will help in adapting a website to suit another potential learner. This, in turn, will help in building a loyal learners base.

9 REFERENCES


Thailand, 22.1-22.5.