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# Monitoring Online Test through Data Exploration and Data Visualization

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**Abstract**— *Its requires exacts and correct assessment process through entire online test of student to ensure learner behaviors pattern, learner interaction with the test pattern, conceptual relationship among the tests items and finally bring into focus and previously unknown aspects related to time consumption, aptitude, efficiency, logical ability of learners. Keeping in view this fact and approach the present data visualization chart, system going to contribute much towards the most appropriate improved assessment of the learner. The approach exploits data visualization to draw the data characterizing the learner test strategy.*

**Keywords**— *Introduction Distance learning, data visualization, Interactive data exploration and knowledge findings*

## I. INTRODUCTION

Today's world is the full of the competition. In order to test the learner's knowledge, the online test is the powerful medium mostly used in the academic study as well as the other public sector recruitment process. This online test gives the multiple choices of the answers for the questions. As this is the online test, the computer can easily access the possible results. Though this is a useful technique, many learners oppose to such types of test. They think that they cannot express their knowledge properly as

the questions are being dead- ended, many of terms questions the fruitfulness of the test. Some of the examiners astonish whether the learner are more regulated by the question type or by its actual problem. There are so many experiments have been performed in the past to capture the learner behavior while giving the test. One of these experiments when carried out, learners was allowed to speak whatever was coming into their mind while giving the test which was recorded in the tape by the operator. This experiment results into a lot of noisy disturbance as many learners express their views regarding a test in loud which might disturb the experiment's goal. Hence it is advisable to use the better strategy while collecting the data during the experiment. The care should be taken not to distract any learner during the examination. The second thing, arises from this experiments, is the need to modify the learners view during the test as the valuable data is collected from this

In spite of this experiment is conducted the observation indicates that there is interconnection between eye movement and the mouse movement. This can be explained as the user react to the particular question, this action is captured by the eye tracker as the test is bound with the time limit, the user quickly mark the known answer by the mouse movement also tracked by the machine experiment. One can draw out the important factors useful in testing activity to upgrade the learners' performance.

By facing all the critics we have decided that the learners are concealed from the experiment going on online test they are not even told to correct their behavior, which ultimately gives the more genius results. The KDD strategy can be applied At last we are dealing with system that gathers all the data including how the learner react with the peculiar questions, answering manner by the learner, how often learner visited the answers, are corrected. All the specific information are provided to prepare the visualization chart involving the careful examination according to the order of the time for the test. During the online test the learner apply the certain strategies which when compared with final test score, tutor can obtain the fruitfulness of their strategies. Adding with this, the tutor can easily perceive whether the procedure for answering the question is helping the learner to answer the other questions or not, all the details can be viewed from the chart. The system can also find the unfair means attempted by the learner like the glimpse of the other paper for crediting the answer, trying to play with the system. Such a system can be accessed by using the internet and the web based technology, for searching the new collected data mining algorithms are used to identify patterns in the data but algorithms fails to explain the irregular classification in multidimensional data. In order to remove this drawback, the illustration of data is required to attract the user in the mining process. This illustration is made by proper visualization information that helps to find structures, patterns, and understand the data more conveniently. Tutor can take advantage of visual data mining process for searching patterns structures, data relations this will grabs our attention towards those point which were not discussed before for example skillful planning useful by the learner during online test and other factors that affect the final score.

Like the other e-testing system, this system also comprises of logging passwords and storing the log files for the information system to analyze the data.

## II. RELATED WORK

The approach, regarding the findings of new data accepted by the tutor to present the different skillful planning for the online test, shows the understanding of the learner's behavior towards the online test. In order to involve more deeply, we have illustrated the graphical representation of behavioral patterns and the other factors that are not captured before, concerned with learners behavior during the online test. The illustration is made possible with the help of symbolic data visualization strategy that are used in the KDD technique. The KDD process consists of certain steps based on the data mining.

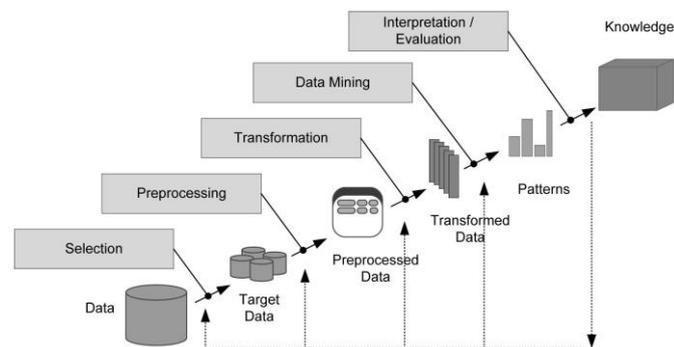


Fig.1 The steps of a KDD process

The above steps guarantee efficient knowledge is absorbed from the data.

### 2.1 Data collection

In the data collection method we have already performed an experiment to collect the data regarding the learners during online test. This experiment was the think out loud method, but this method has given the several demerits such as it is very noisy

distributing. It affects the learner behavior and this experiment needs the expert to interpret the recorded information. In order to option select the data, the experiment to observe the eye movement trackers as the online test involves the several user that might raise the budget of the experiment.

The technical data is collected during sessions. Each page has a question a sequence of visited page creates a session.

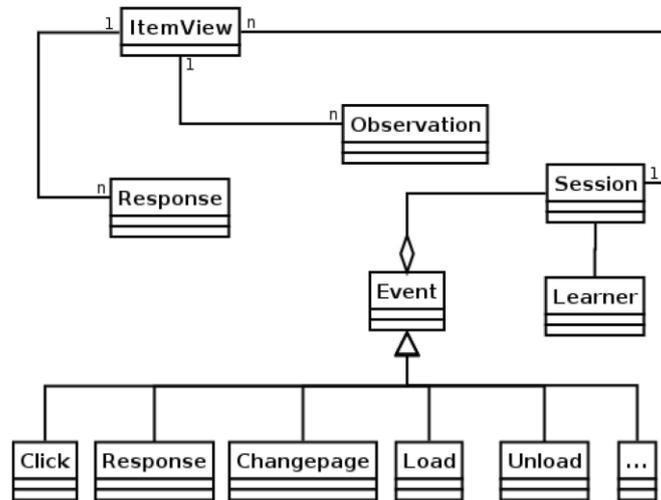


Fig. 2: Conceptual schema of the data collected during a test session

The page visit requires the data like the time period during the page is visited. Inactively time during the visit, learner response during the visit. The time used by the user in perceiving the meaning of question and also the options. All the data is arranged in the planning as shown in fig. 2

The concept the planning describes that the learner during each session works in the set of item view which are connected to a set of response and observations. The Item view is the no of pages visited by the learner during the session often many learners revisit the question of skip certain questions that affect the item view. The set of observation is the learner’s activity to words the each item view. The learner’s activity is associated with the mouse movement during every visit of question page and the time observed during the activity.

**2.2 Data visualization**

The behavioral patterns of the learner are discovered when the classical data mining algorithms are applied with the above concept.

Here, the data visualization is used to uplift the learner’s activity to consolidate the reasonable opinion with tutor observation obtained from the presentation of data graphics. The collected data is further process to visualize the learner activity by the presentation graphics. The 2D chart is made to scrutinize the chronology if the test successfully done in particular time. The fig 3 shows the several segments from by the interaction of the horizontal and vertical lines which gives the complete test conductivity. The horizontal axis has the time line where as the vertical have the question given to the learner.

A horizontal segment gives the item view with time stamp therefore the segment length is proportional to the visualization time.

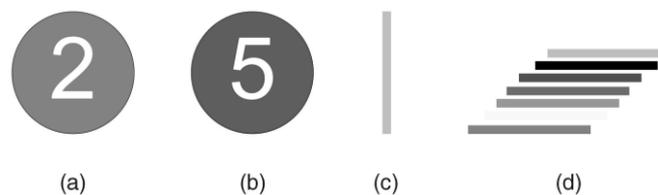


Fig. 3: Basic elements of the chart. (a) Wrong response. (b) Right response. (c) Browsing event. (d) Item view.

A browsing event is shown by the vertical segment that gives the previous event present at the base point of the chart, which means the previous item might be checked by the learner during the test. On the contrary, the segments present at the top gives forward event.

The pointer position while viewing the item is indicated by using the color. The colors are also painted to show right or wrong response such as blue for right and red for wrong response which is presented within the circle also confines the respective number from the option chosen by the learner.

The horizontal black lines show the pointer position in the question area. When the pointer moves towards the option area the different color is achieved by horizontal line. These different colors are nothing but the color present in the each option. The neutral zone of the pointer gives the gray line.

The skillful planning of the learner during the test is clearly visible while viewing the entire chart in the online test. The test is of 25 items for 20 minutes. There are two progressive phases conducted during the test. In the first phase all the items are viewed by the learner from 1 to 25 and also responses to 19 questions are ready in this phase. The skipping of questions, learner's strategy and applied thinking gives the more responses of few items than just one.

### III. CONCLUSION AND FUTURE WORK

The tutor can perceive the learners' skillful planning during online test. The data visualization used to describe the quality of learners' planning during the test. It also grabs the tutor's needs to find out the unexplored earlier behavioral patterns of learners. The above approach scrutinizes the process of assessment for a better gain. The system applied in this paper explains the planning behind the test to understand the entire process. This approach helps us to obtain the different patterns that are associated with the degree of test, properties of the applied strategies and effect in the final score. The failure of this concept will give rise to the different approach with a new visual graphics and use of this approach in the several fields like e-commerce will add more data with the new vision.

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