

Enhancing Online Learning through Learning Experience Design Research using Graph based analytics of the Online interaction data.

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Abstract: Online learning lacks personal touch, the flash of recognition cross students face gives personal touch in face to face learning where online learning is mostly mechanical knowledge transfer. Online Learning can be enhanced by personalizing learning experience. To personalize learning Experience there is need of tangible learning experience design. Learning experience design research results in highly adaptive learning experience. During online learning every learner activity is trackable. Lot of data generates during every learner activity. It may be worthwhile to dive into this data. Research on this data may result in concrete facets. Savvy instructional designer can design around well researched standards. Research study aims to propose a graph based data mining framework to capture learner interaction data, data preparation, rules generation and results evaluation and interpretation.

Date of Submission: 04-10-2019

Date of Acceptance: 21-10-2019

I. INTRODUCTION

Instructional designer do not merely decorate they create an experience of walk through learning path. Learning experience is brittle link of online Learning. Gathering learners interaction data and applying analytics is corner Stone for creating a great learning experience. LX research is all about capturing Learners interaction data and translating them into concert facet. Design can be updated accordingly resulting in highly personalized learning. It need a systematic method to analyze data and formulate rules. Data mining is the useful tool to generate rules out of data. This study proposes a graph based data mining framework. The result of research can assist designer in designing high Learnability online learning platform.

LX Design thinking process. The design of LX is beauty and brains. Just LX good look can lead to disappointed among learner if cannot reach brain. LX design should be done as iterative process to understand the learner, challenge assumption and redefine the problem
Identify alternate solutions that might not be obvious early level of understanding.
Data is generated at every learner activity. This data can be analyzed to understand learners need.

Graph based data mining. Data mining is art of discovering highly useful patterns from large amount of data. Data generated during online interaction can be mined to find learning pattern.
This approach can help LX designer team to find out the valuable knowledge which may lead to better LX. Graph mining is one of technique appropriate for it. Graph analytics among
Connected data give more insight and give more accurate outcomes.

Framework for Graph based mining of LX data.

Framework consists of following stages

Data Preparation from the reaction of users, the data collected including LX experienced information. The graph structured data can be transformed to “adjacency matrix”.

Rules Generation Graph mining is conducted to generate derive candidate rules with the training data. Frequency of each induced subgraph is obtained. The procedures are shown as follows:

1. Construct the adjacency matrix.
2. Generate induced subgraphs Generate all possible redacts with which have obvious relationship with reaction variables.
3. Generate rules: Generate candidate rules based on the selected redacts from sub graph.
4. Filter the decision results:
5. Calculate the support value.

6. Calculate the confidence level.

7. Filter the rules: Retained the rules under the condition of the confidence level and the lift value higher than the setting threshold.

II. RESULTS ANALYSIS

The rules obtained from learner interaction interpretation discussion of interpretation of results can be transformed into appropriate LX design.

III. CONCLUSION

Graph data mining may be a key ingredient in LX design work. Adding analytics to LX work enables us to improve by learning process starting with existing LX processes and determining where metrics can add value in those processes. Creating novel and powerful LX. Providing more natural and effective learning environment. Accelerating adoption of online learning.

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IOSR Journal Of Humanities And Social Science (IOSR-JHSS) is UGC approved Journal with Sl. No. 5070, Journal no. 49323.

M Munshi. " Enhancing Online Learning through Learning Experience Design Research using Graph based analytics of the Online interaction data.." IOSR Journal of Humanities and Social Science (IOSR-JHSS). vol. 24 no. 10, 2019, pp. 08-09.