

**A.Y 2021-22**

**Semester-2**

**17IT4703C :IRS**

**Active Learning for Information Retrieval System Course**

Tool-based learning (Case Studies )

**Tool Based Learning Approach:**

In order to design information retrieval (IR) learning environments and its importance in day today life, it is important to explore learning outcomes of different pedagogical solutions. The focus of this study is the assessment of learning outcomes in tool based learning environment compared to traditional teaching methodology.

The 40 students of three academic years were selected for this study, and the analysis illustrates their learning outcomes regarding both conceptual change and development of IR skills.

Course activity was conducted to explore different retrieval tools and to measure the performance of different IR technique's/models choosing appropriate data set.

Students in the tool based learning environment changed their conceptions more regarding aspects of IR and concentrated more on management of search process. Development of information retrieval (IR)

systems and applications has made IR a commonplace activity in different work, educational and other activities. End user searchers are now afforded with tools and have access to a wide variety of information sources. Information access skills have gained attention both in professional and all-round education. Different open source tools were used by the students to develop IR applications/systems. So this TBL approach enhanced their learning and concept understanding in-depth and better. Lucene is the most widely used information retrieval library many groups of students have utilized this tool library files to develop their applications, similar to lucene other tools and library files are being used in he course activity process

## ACTIVE LEARNING

<b>Name of the Faculty:</b> G.JayaLakshmi	<b>Designation:</b> Assistant Professor	<b>Subject:</b> IRS
<b>Year/ Semester:</b> III/IV	<b>Section:</b> A&B	<b>Topic:</b> The TREC Collections
<b>Name of the activity:</b> Peer with group	<b>Date:</b> 6-4-2022	<b>No. of students attended:</b> 40

### Objective of the activity:

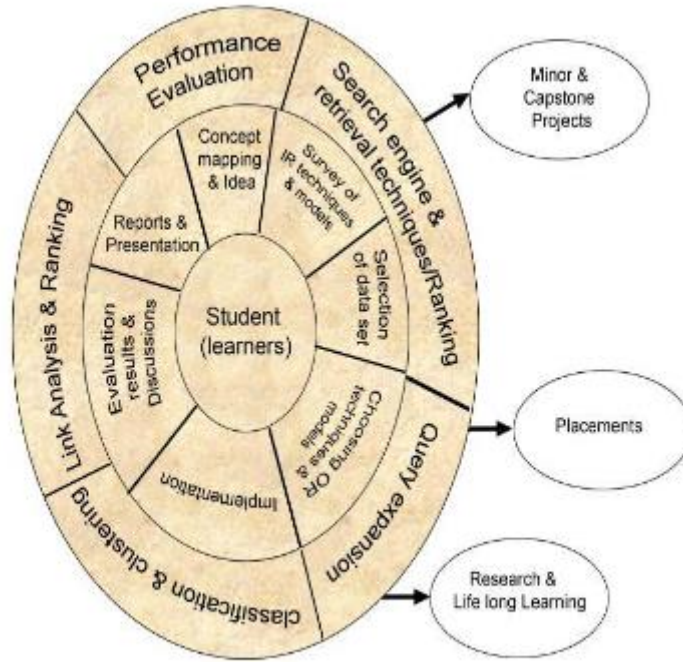
- Present learners with problems and challenges based on real life situations and drive them to make difficult decisions based on the evidence given.
- To raise questions and to present just enough data to stimulate/engage learners to find their own answers.

### Execution Plan:

**Time management: Class time:** 50mins

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### Students IR Course learning frame work



### Activity Conduction Process

Review 1	Activity Details	Faculty Role
<ul style="list-style-type: none"> <li>* Task identification (Problem requirements)</li> <li>* Survey of different IR techniques.</li> <li>* Proposed solution</li> <li>* Data Set</li> <li>* Technique selection</li> <li>* Methodology</li> </ul>	<ul style="list-style-type: none"> <li>* Form 4 members groups</li> <li>* Discuss motivation goals</li> <li>Scope of the task</li> <li>1) Building a Boolean model using incidence matrix</li> <li>2) Developing IR model using vector space model, probability</li> <li>3) Cluster model</li> <li>4) Classification of documents using Naive bayes, Nearest Neighbour.</li> <li>5) Clustering: Agglomerative &amp; hierarchical method: (K-means)</li> <li>6) Page Rank algorithm implementations</li> </ul>	<ul style="list-style-type: none"> <li>* Explanation of concepts</li> <li>* Real time Examples &amp; discussion</li> <li>* Guidelines to implement the techniques/methods</li> </ul>
<ul style="list-style-type: none"> <li>* Implementation of techniques</li> <li>* Result validation</li> <li>* Performance evaluation</li> <li>* Report</li> </ul>		<ul style="list-style-type: none"> <li>* Student Role</li> <li>* Understanding concepts, techniques.</li> <li>* Choosing appropriate data set</li> <li>* Analyzing different techniques &amp; selection of the suitable technique</li> <li>* Implementation of the technique.</li> <li>* Performance evaluation.</li> </ul>

### Expected Outcomes:

- The students can be able to
- Analyze the conceptual model to design ER diagram.
- Understand the three levels of database system architecture with their mappings.

- Understand process and need of normalization
- Summarize normal forms and its applicability

Sl.n	Topic Name
1	Implement your own web crawler
2	Implement K-means clustering technique considering your own data set
3	Apply single link method to classify the Documents/data. Assume your own relevant data set
4	Vector Space Model: Implementing a vector space model. Calculate weights for the query and documents and rank the documents. Comparative study: Euclidean distance vs. Cosine Similarity
5	Implement rochho relevance feedback mechanism
6	Implement k-means clustering technique for clustering a set of documents. Choose appropriate document set
7	How page rank algorithm works, work out with simple example and demonstrate the same

Parameters	Marks (%weightage)
Data set, concepts, techniques and process followed	20%
Implementation	40%
Result evaluation	20%
Report and Presentation	20%

No of students involved in activity	No of students with Negative change	No of students without change	No of students with Improvement	Impact (%)
40	21	5	24	67%

