# UGC
# MINOR RESEARCH PROJECT

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## EXECUTIVE SUMMARY OF THE FINDINGS

This research work focuses on creating an e-learning like platform for presenting contents to the e-learners from the knowledge base that contains the content for various topics of few selected computer-science courses.

Extracting and preparing the content on presenting to the learners dynamically is impracticable and cannot guarantee for its correctness. Therefore, the knowledge base is to be prepared using the Instructional Design strategy and hence it could be retrieved and presented to the learners as per their requirement. Of course, the learners are to be assessed to know their requirement before offering the learning content for learning. However, the scope of this research work is limited to preparing knowledge base alone, an additional work has been carried out to know the target learners and thereby offering them the appropriate content.

The following works pertaining to this research work titled "Knowledge Base Creation for E-Learning using David Merrill's First Principles of Instruction" are carried out:

a) Literature Survey pertaining to this knowledge base creation and the prerequisites for Content Preparation for knowledge base.

b) Expert Consultation related to various educational technologies and pedagogy were carried out with:
   i. Faculty members from Engineering Education Training and Research Institute.
   ii. E-Learning Researchers from the Universities and Research Institutions
   iii. E-Leaning Industries

c) Course content prepared for few topics of various computer science and applications related courses of skill-development nature such as programming languages and packages and the concept-oriented courses such as Data Structures, Software Engineering, Operating Systems, Software Documentation, Cloud Computing, Data Mining, Client/Server Computing, Database Management Systems, Cloud Computing and Bigdata, etc. and have been considered for preparing the knowledgebase.

d) The knowledge objects have been attempted for creation by extracting content from various learning sources like text, images, audio, video, etc. A paper titled **"Text Preprocessing on Extracted Text from Audio /Video using R"** has been published.

e) While creating the knowledge base, the proven instructional design strategy called David Merrill's First Principles of Instruction has been adopted for each topic (problem) of learning. The various phases like Activation, Demonstration, Application and Integration around the central Problem are considered for every instruction being taught. Hence, this

content can be suitable and reused as such for e-learning. The content prepared for any topic includes these five phases of instruction.

f) To offer the content to learners from knowledge base, an e-learning kind of platform is required so as to be used by the learners with learning content offered from base to the front-end or User Interface. This platform has been developed using c# as front-end and Ms-Access as backend.

g) Various modes of presenting the content are: i) PowerPoint slides with the phases of instruction notified at the top of the slide; ii) Flash Video; iii) Simple Textual content like as a document file or PDF; iv) Simple images with its elements and v) a database with learning object representation (a unit of content at all phases as one record in a database). PowerPoint presentations are the predominant portion of content prepared.

h) Such of those content has been ported to knowledge base so that the knowledge base is ready for use at an end.

# PAPERS PUBLISHED UNDER THIS PROJECT

1. B. K. Poornima et al. "Text preprocessing on extracted text from audio/ video using R" International Journal of Computational Intelligence and Informatics vol. 6 no. 4 March 2017.
2. D. Deenadayalan, A. Kangaiammal and B. K. Poornima, "EEG Based Learner's Learning Style and Preference Prediction for E-learning," *2018 2nd International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC)I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC), 2018 2nd International Conference on*, Palladam, India, 2018, pp. 316-320. doi: 10.1109/I-SMAC.2018.8653693
3. Deenadayalan D., Kangaiammal A., Poornima B.K. (2019) Learner Level and Preference Prediction of E-learners for E-learning Recommender Systems. In: Krishna A., Srikantaiah K., Naveena C. (eds) Integrated Intelligent Computing, Communication and Security. Studies in Computational Intelligence, vol 771. Springer, Singapore.