2014 IEEE Sixth International Conference on Technology for Education

(T4E 2014)

Kerala, India
18-21 December 2014
# 2014 IEEE Sixth International Conference on Technology for Education

## T4E 2014

### Table of Contents

**Foreword** .......................................................................................................................................................................x

**Message from the General Chairs** .........................................................................................................................xi

**Committee Members** ................................................................................................................................................xii

---

**Proceedings of the 2014 IEEE Sixth International Conference on Technology for Education—T4E 2014**

A Mobile App in Cross Platform: G3—Gain Grip for GRE ..........................................................................................1

*R. Nivedha, D. Dhipikaasri, C. Sunilkumar, S. Vasudevan, and P. Karthikeyan*

A Model for Deploying Software Tutors ..........................................................................................................................3

*Amruth N. Kumar*

A Self Study Learning Environment for Modeling Abilities: Do All Learners Take the Same Learning Path? ..............................................................................................................................................10

*Anura. B. Kenkre and Sahana Murthy*

A Software Solution to Conduct Inquiry Based Student Directed Learning .............................................................18

*Shitanshu Mishra and Mukulika Maity*

An Online Physical Simulation Platform for Android Programming ..............................................................................26

*Yu Liu, Ying Li, Jianwei Niu, and Qinghua Cao*

Any Time Virtual Labs: On Portable Media and as Debian Packages .................................................................................28

*Nurendra Choudhary, Venkatesh Choppella, Raghu Reddy, and Thirumal Ravula*

Application of Program Slicing Technique to Improve Novice Programming Competency in Spoken Tutorial Workshops .............................................................................................................................................32

*Kiran L.N. Eranki and Kannan M. Moudgalya*

Assistive Learning Environment Markup Language (ALEML) for the Learning Disabled .................................................................................................................................................................................................36

*Zainab Pirani and M. Sasikumar*
Beyond interfaces: Understanding the Process of Designing Grassroots technologies, to Develop Sustainability Case Studies for Engineering Education ..............................................................40
Geetanjali Date and Sanjay Chandrasekharan

Board Game as a Tool to Teach Software Engineering Concept — Technical Debt .........................................................44
Lakshmi Ganesh

Bringing Knowledge to the Edge with Jnana Edge and Buddhi Edge: Architecture, Implementation, and Future Directions ..............................................................48
Dilip Krishnaswamy, Asif Qamar, Ram Krishnan, Krishnakumar Rajagopal, Naveen Narayan, Kamal Bijlani, and Kannan Moudgalya

C GLANCE: An Interactive Way to Learn C ........................................................................................................................52
Vishal Kumar, A. Shraban Kumar, and S. Kalaimagal

CarromTutor: A Cognitive Apprenticeship Based Tutor for Carrom Skills and Strategies ..................................................................................................................54
Mrinal Malick, Mayur Katke, and Sridhar Iyer

Clicker: Device Independent Student Response System, Developed for Classroom and Remote Learning to Provide Instant Response and Feedback ..................................................................................................................62
D. Rajavel and Rajesh Kushalkar

Computer Aided Design of Distillation Column Suitable for Classroom Teaching ..................................................................................................................66
Prabirkumar Saha

Correlation between Teaching Behavior and Real-Time Student Evaluations ..............................................................................................68
Yusuke Kometani, Takahito Tomoto, Takako Akakura, and Keizo Nagaoka

Creating a Learner Centric Environment through POGIL: Our Experience in Engineering and Management Education in India ..................................................................................................................72
Sandhya Kode and Jyotsna Cherukuri

Design of Valid Summative Assessment Instruments in Formal Higher Education Programs ..................................................................................................................76
Shilpi Banerjee, N.J. Rao, Chandrashekhar Ramanathan, and Vyshnavi Ramesh

Designing Engineering Curricula Based on Phenomenographic Results: Relating Theory to Practice ..................................................................................................................80

Dynamic Sequencing of Learning Objects Based on Learning Goals ..................................................................................................................88
Gunashekhar Nandiboyina and Prachi Gharpure

Effect of Conceptual Cue Based (CCB) Practical Exam Evaluation of Learning and Evaluation Approaches: A Case for Use in Process-Based Pedagogy ..................................................................................................................90
Jignesh C. Doshi and Maxwell Christian

Effective Use of Rubrics in Computer Assisted Subjective Answer-Script Evaluation ..................................................................................................................95
Kissan G. Gauns Dessai, Venkatesh V. Kamat, and Ramrao S. Wagh
Eliciting Teachers’ ICT Competence Profiles Based on Usage Patterns within Learning Object Repositories ............................................................................................................................99

Stylianos Sergis and Demetrios G. Sampson

Equivalence of Problems in Problem Based e-Learning of Database ..........................................................106

Abu Sayed Md. Latiful Hoque, Golam Md. Muradul Bashiry, and Md. Rasel Uddin

Explicit Interactions by Users Form a Critical Element in Virtual Labs Aiding Enhanced Education—A Case Study from Biotechnology Virtual Labs ............................................................110

Rakhi Radhamani, Hemalatha Sasidharakurup, Dhanush Kumar, Nijin Nizar, Bipin Nair, Krishnashree Achuthan, and Shyam Diwakar

Eye-Tracking in STEM Education Research: Limitations, Experiences and Possible Extensions ............................................................116

Prajakt Pande and Sanjay Chandrasekharan

Fair and Non-repudiable Protocol for Exchange of E-examination Question Paper and Answer-Scripts .....................................................................................................................120

Kissan G. Gauns Dessai and Venkatesh V. Kamat

Flip Class Based Group Quiz: Observations from Engineering Classes ........................................................122

A. Sadiq


Abhinav Anand, Aditi Kothiyal, Bipin Rajendran, and Sahana Murthy

Impact on Students’ Achievement in Teaching Mathematics Using Geogebra .....................................................134

Rahul Chandra Kushwaha, Praveen Kumar Chaurasia, and Achintya Singhal

Interactive Stratified Attribute Tracking Diagram for Learning Analytics ........................................................138

Rwitajit Majumdar, Kavya Alse, and Sridhar Iyer

JFLAP Extensions for Instructors and Students ...............................................................................................140

Vinay Shekhar, Akshata Prabhu, Kavitha Puranik, Lakshmi Antin, and Viraj Kumar

Laboratory Model for Teaching Real Power Flow Control in Transmission Line .................................................144

S. Balamurugan, N. Janarthanan, K.R.M. Vijayachandrakala, and R.R. Lekshmi

Large Scale Web Page Optimization of Virtual Labs .......................................................................................146

Jatin Agarwal, Utkarsh Rastogi, Prateek Pandey, Nurendra Choudhary, Venkatesh Choppella, and Raghu Reddy

Learning Analytics in the Energy Industry: Measuring Competences in Emergency Procedures ..........................................................148

David Boulanger, Jérémie Seanosky, Michael Baddeley, Vivekanandan Kumar, and Kinshuk

Massive Project Based Learning through a Competition: Impact of and Insights from the e-Yantra Robotics Competition (eYRC – 2013) .................................................................156

S. Krithivasan, S. Shandilya, K. Lala, and K. Arya
Movie Based Context-Aware Language Learning: Its Concept and System ................................................................. 164
  Hazrani, Tsuneo Nakanishi, Kenji Hisazumi, and Akira Fukuda

Multi Dimensional Analysis of Learning Experiences over the E-learning Environment for Effective Retrieval of LOs .................................................................................................................. 168
  V.R. Raghuvane and B.K. Tripathy

Multi-dimensional Sentiment Classification in Online Learning Environment ................................................................. 172
  Steven C. Harris, Lanqin Zheng, Vive Kumar, and Kinshuk

Multiple Choice Questions with Justifications ........................................................................................................... 176
  Anusha Hegde, Nayanika Ghosh, and Viraj Kumar

NaVaSH: Examination Software for ICT Based Institutions .......................................................................................... 178
  C.H. Naveen Kumar, K. Shiva Kumar, Y. Harish, K. Vikram, and J. Chakravarthi

Netra3D: Android Application with Affordances of Tablet Computers ............................................................................ 182
  Sameer Sahasrabudhe, Nitin Ayer, Pooja Bhawar, Ruchi Chaurasia, Arpana Swarnkar,
  Himalini Sharma, Medha Srivastava, Rakshita Vijay, Ravikumar Jogu, and
  Sumanth Kumar Mora

OntoBAeval: Ontology Based Automatic Evaluation of Free-Text Response .................................................................... 189
  Pratik Thanawala, Jyoti Pareek, and Manan Shah

Pedagogical Approach to Teach the Modeling of Power Electronic Converters ............................................................. 191
  P.V.V. Rama Rao, G. Durga Prasad, and S. Dileep Kumar Varma

Pedagogy Experiments with Recorded Video Lectures .................................................................................................. 193
  Sruthy Anand, Shiffon Chatterjee, and Kamal Bijlani

Pedagogy-Based Design of Live Virtual Classroom for Large-Scale Training .................................................................... 195
  Sruthy Anand, K.R. Jayahari, Kamal Bijlani, Vivek Vijayan, and Shiffon Chatterjee

Perception of NPTEL among Its Stakeholders .................................................................................................................. 202
  Jayanti S. Ravi, Haresh Jani, Tushar Patel, and Adit Ravi

Powering Imagination: An Initiative for Technology Enhanced Learning in Rural Schools .................................................. 206
  V.S. Abhijith, C.V. Anoop, S. Venugopal, Titto Thomas, K. Vineeth, and K. Reshma

Proposing a Classification Methodology to Reduce Learning Style Combinations for Better Teaching and Learning .................................................. 208
  D. Anitha, C. Deisy, S.B. Lakshmi, and M. Karpaga Meenakshi

Recovery Spaces: An Enhanced Learning Technology for Treatment and Rehabilitation Centres .................................................. 212
  James Ohene-Djan and Mark Jones

Remote Triggered Lab for Robotics: Architecture, Design and Implementation Challenges .................................................. 214
  Shriguru Nayak, Prashanth Vakrani, Amruta Purohit, and G.N. Srinivasa Prasanna
Semantic Similarity Based Approach for Automatic Evaluation of Free Text Answers
Using Link Grammar ..................................................................................................................218
   Udit Kr. Chakraborty, Rashmi Gurung, and Samir Roy

Semi-Automatic Generation of Metadata for Items in a Question Repository ..................................................222
   Rekha Ramesh, Shitanshu Mishra, M. Sasikumar, and Sridhar Iyer

Technology Enhanced Learning in Addiction Mental Health: Developing a Virtual Knowledge Network: NIMHANS ECHO ..............................................................................................................229
   Prabhat Chand, Pratima Murthy, Vivek Gupta, Arun Kandasamy, Deepak Jayarajan,
   Lakshmanan Sethu, Vivek Benegal, Mathew Varghese, Miriam Komaromy,
   and Sanjeev Arora

The Enactive equation: Exploring How Multiple External Representations are Integrated, Using a Fully Controllable Interface and Eye-Tracking ..........................................................................................233
   Rwitajit Majumdar, Aditi Kothiyal, Ajit Ranka, Prajakt Pande, Sahana Murthy,
   Harshit Agarwal, and Sanjay Chandrasekharan

The Role of Co-regulation in Synchronous Online Learning Environment ..............................................................241
   Lanqin Zheng, Vive Kumar, and Kinshuk

TPFOSSS: A Modified TPS Technique to Improve Student’s Conceptual Understanding of Compiler Construction Course ..................................................................................................................245
   Sunita M. Dol and Dattatray P. Gandhamal

Trends in Open Source Software Adoption in Indian Educational Institutions .................................................................249
   D.G. Sooryanarayan, Deepak Gupta, and V. Smrithi Rekha

Use of Syntactic Similarity Based Similarity Matrix for Evaluating Descriptive Answer ..................................................................................................................253
   Dimple V. Paul and Jyoti D. Pawar

Using Semantic Web Technologies in a Web Based System for Personalized Learning AI Course ..................................................................................................................................................................257
   Fotenei Grivokostopoulou, Isidoros Perikos, and Ioannis Hatzilygeroudis

Web Portal for Quassi Classè in Android ........................................................................................................261
   Aastikta Sharma, S. Dhivya, N. Durga, and P. Arun Raj Kumar

Author Index ..................................................................................................................................................263