ACM India Workshop

"Teaching Computer Science in Schools"

20 July 2013, TRDDC, Pune

ACM India Education held a workshop on Teaching Computer Science in schools in Pune. The workshop brought together educators, 50 heads and senior teachers from 28 selected schools and 27 ACM computer scientists to discuss how computing can be taught in schools. The objectives and content of current syllabuses were discussed and how within these bounds computer science (CS) can be taught. Possible changes in the computing syllabus were also discussed with the aim of bringing them to the notice of policy makers in Maharashtra and at the national level.

Neelima Gupta (Delhi University, curriculum panel for CS, CBSE) and Sridhar Iyer (IIT Bombay, originator of the Computer Masti books and curriculum) were invited as speakers. Mathai Joseph (TCS), Chandrashekhar Sahasrabuddhe (Persistent Systems), Shraddha Joshi (Persistent Systems), Nikhil Karkare, (Director, Millennium School) and Vipul Shah (TCS) were the other speakers and session moderators. The event was coordinated by Suchita Mantri (TCS).

Summary of discussions:

India has 42 educational boards and a wide variety of urban and rural schools. Heterogeneity, infrastructure, qualified faculty and scale are some of the challenges that need to be tackled, especially in rural areas.

Focus should be on developing computer fluency, not just literacy, and developing thinking skills, not just content mastery; there is need to recognize ICT and CS as separate disciplines.

Should theory and computer science be taught before use, or after?

Should CS teaching be formal (with proper grading), semi-formal or informal?

Should we start in rural areas first or in urban areas? Acceptance would be easier in urban areas but changes will not be accepted by boards till proven in rural areas.

Which software should be recommended? Freeware? Or the more popular commercial software?

Thematic integration with other subjects is important.

Students are excited about learning CS. How do teachers and parents stand up to the children's expectations?

Focusing at a small level on local activities might help to give direction to larger objectives.

What should the role of ACM India be? Designing syllabi? Training faculty?

The **action items** emerging from the workshop discussions included:

1. Creating more groups to study CSTA (Computer Science Teachers Association), CMC (Computer Masti Curriculum) and other curricula; to stress curriculum building and developing pedagogical guidelines for CS school teachers

2. To hold ACM workshops for teachers on topics such as the life of Alan Turing, algorithms, Scratch, etc..

ACM India Education

Workshop on Design and Analysis of Algorithms at Trivandrum

6-10 September 2013, Indian Institute of Information Technology and Management-Kerala

The second 5-day workshop on Design and Analysis of Algorithms was conducted by the Trivandrum Chapter of ACM India (led by Sabu Thampi), in association with the Indian Association for Research in Computing Science (IARCS) and Indian Institute of Information Technology and Management-Kerala (IIITM-K). (The first such workshop was held in Hyderabad in May 2013.)

Lecturers: Mathew C Francis (Institute of Mathematical Sciences, Chennai), Neeldhara Mishra, (Indian Institute of Science, Bangalore), NS Narayanaswamy (Indian Institute of Technology, Madras), Venkatesh Raman, Institute of Mathematical Sciences, Chennai.

Context

The aim of the workshop series is to help engineering college teachers teach this core subject more effectively. The topics covered included algorithm analysis and design, basic data structures, graphs and traversals, finding shortest paths, and NP-completeness and dynamic programming.

The participants of the workshop include teachers from engineering colleges and scientists from R&D organizations. 82 applications were received; 38 applicants attended the workshop.

A particular feature of the workshop was a separate 3-hour student workshop on how to design and analyze algorithms and how to do research. It was attended by 48 students from neighbouring institutions.

Several sessions were conducted to give the participants the opportunity to practice problem-solving individually and in small groups. Efficient solutions were then described by the lecturers to provide a comparison with the solutions from the participants.

Feedback from the participants was very positive: a number of people had suggestions for improvements (like having an introductory session on basic computer science theory) that will help in planning future workshops.

Follow-up

The next workshop in the series is planned to be held in Pune in October-November.