

# Personalization and mentoring: Our experience with training teachers

Sandhya Kode, Shuchita Rao

EnhanceEdu

International Institute of Information Technology, Hyderabad (IIIT-H)

India

[skodev@iiit.ac.in](mailto:skodev@iiit.ac.in), [shuchita.rao@gmail.com](mailto:shuchita.rao@gmail.com)

**Abstract**—There has been a rapid increase in number of engineering colleges in India in the recent decade. Scarcity of qualified and motivated faculty is a common problem. To enhance the quality of education in engineering colleges, an innovative Certificate in Information Technology (CIT) program was started by the Ministry of Communications and Information Technology (MCIT) and IIIT-Hyderabad (International Institute of Information Technology). EnhanceEdu, a division of IIIT-H, has worked with over 50 engineering colleges in Andhra Pradesh, India, and trained their faculty on a variety of technical and non-technical subjects. This paper shares the results of a study where two groups of teachers were given mentor-assisted 2-day workshops on “Art of Teaching” in two separate sessions, where the master trainer used personalization techniques with one group and not with the other. Teachers were expected to collaborate, create online lessons and present to the participants of the workshop. Enhanced collaboration between members, reduced time for creation of lessons, in-depth content and improved design of assessment questions were observed with the lessons created by the group where learning was personalized.

**Keywords**-personalization; learning by doing(LbD); mentoring

## I. INTRODUCTION

The objective of the CIT program is to enhance the quality of IT education in engineering colleges [1]. The necessity and importance of properly qualified and motivated faculty members is key to such an initiative. A teacher training program for teachers is provided every year at EnhanceEdu. It spans two months in summer and one month in winter and includes training in core technical subjects and soft skills. EnhanceEdu adopts an approach where faculty members are trained to mentor small groups of students (up to 10 students) by making personalization a key feature of the student’s learning process. Personalization refers to relating a topic to suit curiosities, interests and life of the learner and additionally teach them to find personal meaning in a topic to gain conceptual insights, enabling long term engagement [2]. The trained teachers return to their colleges and use a personalized approach to mentor their students.

## II. “ART OF TEACHING” WORKSHOP

In December 2011, EnhanceEdu offered an intensive workshop on “Art of Teaching” to provide focused training on techniques to engage student attention such as building awareness of learning styles, learner-centric teaching methods, rubric design, use of multi-modal resources to differentiate instruction, use of mind maps & graphic

organizers and design of assessment using principles of Bloom’s taxonomy. 2-day workshops for each set of engineering college teachers was held at EnhanceEdu on December 10 &11, 2011 and December 17&18, 2011. 24 teachers from 5 engineering colleges (referred to as Group 1 henceforth) attended first workshop while 29 teachers from 9 engineering colleges (referred to as Group 2 henceforth) attended the second workshop.

The morning sessions of the workshops featured presentation of the principles that go into creating a tightly knit, engaging lesson for students such as

- creation of learning objectives and outcomes
- breaking down of complex technical topics into simple modules
- creation of meaningful tasks that call for application of knowledge gained
- provision of multi-modal resources for the benefit of learners of different learning styles such as auditory, visual and kinesthetic learners
- design of assessments that not only test students on factual knowledge but challenge them to analyze, synthesize, evaluate and apply information in accordance with Bloom’s taxonomy

Use of variety of multi-modal resources such as PowerPoint presentation, films, and hands-on tasks to differentiate instruction was demonstrated.

The afternoon sessions of the workshop had several mentor-assisted hands-on tasks designed as group activities conforming to the “Learning by Doing” (LBD) pedagogical approach followed for courses taught at EnhanceEdu. One of the main tasks was for each group to design a lesson that integrated concepts and principles learned at the workshop and present it in the workshop.

Students’ learning should be facilitated to meet their needs and personal characteristics and develop their potential, particularly CMI (contextualized multiple intelligence) in an optimal way[4]. At the beginning of the workshops, participants provided information on their educational background, area of expertise and research interest as part of their self-introductions. During the workshop, they answered questionnaires that determined their learning style. This data was used for relating topics to suit the interests of the teachers as an exercise in personalization with members of Group 2.

*How was learning personalized?*

Teachers in the two workshops were sub-divided into smaller groups consisting of 4-5 members for purposes of

conducting group activities. While members of the first workshop (Group 1) were randomly divided into groups, members of the second workshop (Group 2) were carefully sub-divided into groups based on their interests. The groups were then given an introduction to using open source collaborative tool MediaWiki. Each group was provided with a mentor who guided them through the exercise of creating an online lesson that integrated the concepts they had learned in the workshop and gave pertinent suggestions on how to personalize the lesson to appeal to learners of different learning styles. Personalization was also introduced in the context of designing rubrics and creating assessment questions by giving examples of types of questions that would lead a student to use higher levels of thinking, in accordance with Bloom's taxonomy. This was provided *only* to members of group 2. For instance, in the case of rubric design, a sub-group of Group 2, who had indicated music as their interest was given an example of how to create a rubric to judge singing competitions by creating judgment criteria (sings in pitch, rhythm, allotted time and has good stage presence) with equal weights. For those participants who indicated an interest in cooking, the master trainer explained the concept of Bloom's taxonomy in the context of cooking with apples.

Creating	Create a low-fat apple dessert recipe
Evaluating	Evaluate taste and appearance of recipe when apples are cooked in diff. ways
Analyzing	Compare health benefits of steaming vs. frying apples
Applying	Can you cook apples in various ways mentioned?
Understanding	How can apples be used in cooking? Steaming, frying etc..
Remembering	What types of apples are commonly available in the market?

Table 1: Explaining Bloom's Taxonomy with Personalized Example

Furthermore, when individual groups presented their lessons in the workshop, detailed peer feedback was provided on how to personalize the lessons.

### III. OBSERVATIONS AND RESULTS

Overall, 100% of the participants in both groups found the workshop to be informative and useful. Students' abilities to acquire organized sets of facts and skills are enhanced when they are connected to meaningful problem-solving activities and when students are helped to understand why, when and how those skills are relevant [3]. It was observed that while teachers from both group 1 and group 2 uniformly integrated knowledge and skills learned

in the workshop, members in group 2 who had been grouped based on common technology background and interests collaborated better, took lesser time to create their lessons and assessment questions that showed better overall design. The teachers in both the groups took a survey after a month of completion of workshop for the purpose of assessing the use of concepts learned in the workshop.

Concept	Group 1	Group 2
Learning Styles	60%	63%
Pedagogy	70%	81%
Rubric Design	63%	75%
Use of Multi-modal resources	72%	81%
Personalizing topic	54%	63%
Use of mind maps	54%	81%
Use of graphic organizers	72%	81%
Assessment questions based on Bloom's taxonomy	55%	62.5%

Table 2: Survey feedback results showing improvement in use of concepts learned in workshop

### IV. FUTURE WORK

We recommend, based on results of the study and the experience gained, that teachers collect relevant information from students about their interests, curiosities, beliefs and personal history and group them carefully for purposes of providing effective personalization. We plan on enhancing the process of monitoring and engaging mentors in order to conduct a detailed impact study on how effective personalized mentoring could lead to improved student learning.

### V. CONCLUSION

While further systematic data collection, evaluation and research is needed to confirm that learners are gaining significantly through the mentoring and personalization approach, preliminary results of the "Art of Teaching" workshop give us the confidence that personalization and mentoring can help in creating a framework of principles of how learning occurs among learners. Given the wide variety of socio-economic and cultural backgrounds of teachers teaching at engineering colleges across India, such a study could provide significant insights into development of training methods that could be adopted to lead to a more successful learning experience for students.

### REFERENCES

- [1] Certificate in Information Technology (CIT): A program to enhance the quality of IT education in engineering colleges - Surya Kiran Reddy, Sandhya Kode (T4E 2010)
- [2] Enhancing the learning experience by addressing the needs of the learner through customization and personalization in the learning by doing methodology - Surya Kiran Reddy, Sandhya Kode (ICALT 2010)
- [3] How People Learn: Brain, Mind, Experience and School - National Research Council(2011)
- [4] Mass customization and Personalization in Education & Training - Robert Freund(Elearn China 2003)