Management Issues of Flexible, Multi-Level Distance Learning-Based Teacher Training

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Abstract

In this paper we describe the implementation and management of a flexible model for multi-level distance learning-based teacher training. The model was implemented to introduce curricular and pedagogical aspects of teaching logic programming, to high-school computer science leading-teachers, in the framework of an in-service course. Although the advantages of preparing a unique training program for each teacher and initiating peer collaboration were clearly demonstrated during the course, we also noticed several difficulties that may be associated with the decentralization of the course and the exposure and accessibility of the web-based communication.

1. Introduction

Last year the Israeli National Center for High-School Computer Science Teachers [2] organized a special modular course for a group of experienced CS teachers who had begun to teach a new CS curriculum [1]. The main objectives of the course were to enrich teachers’ curricular and pedagogical knowledge, and to create a group of leading-teachers who will support their colleagues in teaching the new curriculum. Here we describe the logic programming (LP) optional module that was organized according to a unique, flexible training model.

The LP module was composed of a three-level course of study: (a) Fundamental: designed for teachers who were not familiar with the LP module. (b) Professional development: designed for teachers who were already teaching the LP module and were interested in advanced curricular and pedagogical aspects of this module. (c) Tutor: designed for experienced teachers, who teach also advanced topics in AI; each was also responsible for counseling 1 or 2 fundamental teachers. Twenty-four participants were placed according to their curricular expertise and teaching experience; each was assigned to a personal, unique self-study program, and was assigned to some peer activity and was responsible for the communication therein.

2. The Course Web Shell

The training model was learner-centered and integrated traditional teaching with distance asynchronous web-supported training that was conducted through a shell (http://netcollege.beitberl.ac.il in Hebrew) designed by two Israeli organizations Net-college that specialized in the management of distance learning courses, and Beit Berl College that holds academic courses for teacher training. The shell components and the online course activities are presented in Table 1.

The management of the course was done entirely through the course web site including email support, online discussions, sharing learning materials, and submitting assignments. All the communication between peers and the course instructors were done through the course web shell. Accordingly, we (the course instructors) were challenged by determining rules of communication and choosing management and assessment methods aimed at coping with the complexity of the multi-level course.

3. An Example of a Peer Activity

Students taking the logic programming course are required to develop knowledge-based projects as a final assignment for their matriculation examinations [1, 4]. As teachers often expressed difficulties in assessing their students’ projects, we decided to dedicate a special meeting of the professional development course to discuss project assessment issues. The teachers were asked to prepare the following (individual and group) assignments before the meeting: (1) suggesting one authentic project of one of their own students’, (2) individually assessing each of the collectively suggested projects, and (3) each teacher had to summarize the suggested assessments.
regarding his student’s project. The assignments were supposed to be submitted using the course web shell. The meeting was conducted by a course instructor that shared with the teachers his expertise in project-based instruction [4]. Various aspects of project assessment were discussed and criteria for the uniformity of project assessment were collaboratively suggested.

### Table 1. Course activities supported by the course web shell

<table>
<thead>
<tr>
<th>Web-Based Tools</th>
<th>Associated activities and management possibilities</th>
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</thead>
<tbody>
<tr>
<td><strong>Agenda</strong></td>
<td>The course manager constructs the main course page. It is updating as required and includes announcements to the different groups, and indicates changes or new materials.</td>
</tr>
<tr>
<td><strong>On line assignments</strong></td>
<td>A central table containing titles and links to materials like guidance, a booklet of exercises, a timetable, presentations, and program code.</td>
</tr>
<tr>
<td><strong>Forums</strong></td>
<td>Specific forums were designated for each course of study, and for the web-based group assignment. An additional forum was designated for general-purpose discussions.</td>
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<tr>
<td><strong>Folders for submitting assignments</strong></td>
<td>A &quot;visible&quot; folder with slots for submitted assignments. There is a folder for each assignment. Every peer or instructor can link visible comments to each of the participants’ assignments. Each participant had access to all submitted material and to the associated comments.</td>
</tr>
<tr>
<td><strong>Participants’ email list</strong></td>
<td>A convenient facility for sending e-mail messages to individuals or to groups of participants.</td>
</tr>
<tr>
<td><strong>Flexible list of links</strong></td>
<td>The course instructors occasionally update links to central and interesting sites.</td>
</tr>
<tr>
<td><strong>Chat room</strong></td>
<td>Designated for synchronous interaction.</td>
</tr>
<tr>
<td><strong>Web-based group assignment</strong></td>
<td>A long-range web-based collaborative assignment including the following: (1) suggesting and summarizing two online articles one about teaching LP and one that compare different programming paradigms, (2) assessing the importance and the interest of each collectively suggested article, and (3) creating a comprehensive document according to all individual assessments to gain a group assessment.</td>
</tr>
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</table>

### 4. Management Issues

Although the advantages of preparing a unique training program for each teacher and initiating peer collaboration were clearly demonstrated during the course, we also noticed several difficulties that may be associated with the decentralization of the course and the exposure and accessibility of the web-based communication. Teachers usually feel uncomfortable about submitting solutions to a public area where anyone can see and criticize their occasional mistakes. Some of the participants had no previous experience with web tools and with email communication, and therefore avoided participation in the forum and web activities.

We should also point out the enormous effort needed to manage this kind of course with respect to: (1) Encouraging teachers to be devoted to their missions and to be involved in all the activities including accessing their colleagues work, (2) Being continuously attentive and responding quickly to teachers’ involvement in all kinds of shell activities. In the future we will try to deal with these difficulties by appointing selected participants to be responsible for different activities such as one forum or one mission.

Recently, we started to formally assess the implementation and management of the course, and we plan to use our findings for further development of the training model.

### 5. References


http://www.umuc.edu/virtualteaching/module1/strategies.html