Web site for Deployment of COMPS Computer-aided Collaborative Learning Curriculum in Classrooms

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Goal

COMPS collaborative small-group exercises are being used in NC A&T computer science classes. During computer-lab time students work together by special computer-chat page.

- It is a one-stop web page where instructors can register classes, upload student rosters, and schedule lab sessions
- This project provides the tools for professors to integrate COMPS exercises into a regular classroom curriculum
- The web site delivers the lab experience. The students sign into this web page, where they are guided through pre-tests, the lab sessions, post-tests, and surveys
- These disparate student activities and resulting data are hosted by different web sites, but the control page provides one place for the student to log in and links together the separate records for each student
- The aim is to produce simple and friendly interface to export our COMPS curriculum to students and faculty from around the country

Table 1: Upload class roster

<table>
<thead>
<tr>
<th>First Name</th>
<th>Last Name</th>
<th>Primary Email</th>
<th>Username</th>
</tr>
</thead>
<tbody>
<tr>
<td>John</td>
<td>Smith</td>
<td><a href="mailto:jsmith@aggies.ncat.edu">jsmith@aggies.ncat.edu</a></td>
<td>Jsmith</td>
</tr>
<tr>
<td>Duy</td>
<td>Bui</td>
<td><a href="mailto:dbui@aggies.ncat.edu">dbui@aggies.ncat.edu</a></td>
<td>Dbui</td>
</tr>
<tr>
<td>North</td>
<td>Carolina</td>
<td><a href="mailto:cn2@aggies.ncat.edu">cn2@aggies.ncat.edu</a></td>
<td>Caro2</td>
</tr>
</tbody>
</table>

Web page

- Class roster can be extracted as CSV file from Blackboard
- Quick and Easy setup for classes

Data Visualization

- Student generally express good feeling toward the lab exercise. In addition, they can learn or establish better understanding of class material by discussing with their classmates

Data Analysis

- Pre-test and Post-test is being graded automatically
- Data is used to measure learning gain from lab exercise
- Data is used to calculate and determine effectiveness of the lab itself
- Revision of question is needed if question is too hard
- Strengthen student's knowledge in particular area is needed if too many students' answer is incorrect

Future Work

- Streamlining the lab process including improvement of User Interface and adding smart feature reduce manual input from users
- Establish better communication between Qualtrics and COMPS page to enhance user experience for both students and professors

Discussion/Chat Engine

- Students are assigned to group and work together to find the answer
- Teaching Assistant is there to check students' answers and to give helpful hints

Discussion/Chat Engine Interface

Figure 1: Entity Relationship Diagram for COMPS webpage

Figure 2: Chat Engine Interface

Figure 3: Lab roster control

- Track students’ activity and assign discussion group numbers
- Setup lab ahead of time and save
- Professor/Teaching Assistant use web-page to sequence activities during the lab time
- Server is available 24/7 and protected

Figure 4: Lab Admin control

Figure 5: Landing Page

Figure 6: Pretest, using Qualtrics service

Figure 7: End Lab Survey power by Qualtrics

Figure 8: Example question for pre-test

Figure 9: Students’ answers in pretest

Figure 10: Students’ answers for corresponding question in posttest

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