Smart classroom content delivery for pervasive devices using context awareness and Wi-Fi networks

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Introduction

- There is big educational data that is being generated and stored
- The education data is stored in educational databases
- Few mechanisms are in place to select relevant educational data
- Learners are overwhelmed with big educational data selection, hence time consuming
- This research proposes a mechanism for selecting relevant educational data for learners
- Linking the relevant educational data to pervasive devices
Problem statement

- Students manually search for relevant data which is time consuming
- Educational data is not readily and automatically available for pervasive devices
- Automatic location of student device with regard to the closest classroom

Broad objective

- To develop a smart classroom content delivery for pervasive devices platform, through which learners could access and share relevant education data with regard to their profession using their pervasive devices
Smart Classroom Model Scenario - 1
Smart Classroom Model Scenario - 2
# Methodology

- Collect, digitize, code, and store educational data

## Education data digitizing and coding

<table>
<thead>
<tr>
<th>Subject</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education</strong></td>
<td>01</td>
</tr>
<tr>
<td>Early childhood</td>
<td>01AA</td>
</tr>
<tr>
<td>Adult learning</td>
<td>01AB</td>
</tr>
<tr>
<td>Child psychology</td>
<td>01AC</td>
</tr>
<tr>
<td></td>
<td>etc</td>
</tr>
</tbody>
</table>

| **Computer science**     | 02    |
| Networking               | 02AA  |
| Artificial intelligence  | 02AB  |
System design and implementation

Context awareness and Wi-Fi design

- We developed a Wi-Fi network around each of the e-learning centres.
- The Wi-Fi was expected to collect the MAC address of the pervasive devices, and relay to smart boards.
- Context awareness RFID were used to collect location of the pervasive devices.
- The smart board linked to the server on fast network and automatically linked pervasive devices to server smartly.
- Server stored educational data.
Having logged in, and automatically redirected to education access location (this is a learner who is in education)
Having selected **Early childhood - code 01AA**, from education access location, several early childhood files available.
Having selected file 01AA001 from Early childhood - code 01AA, the file is now open and can be read

**Results (the real content)**

<table>
<thead>
<tr>
<th>SMART E-LEARNING ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>USER NUMBER:</strong> 00140</td>
</tr>
<tr>
<td><strong>ACCESS LOCATION:</strong> 01AA001</td>
</tr>
</tbody>
</table>

**LRN: E-LEARNING INSIDE AND OUTSIDE THE CLASSROOM**

*Supporting Collaborative Learning Communities using a Web Application Toolkit*

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**Abstract:** .LRN is an Open source Web portal and Web application toolkit designed to support both large and small communities of practice and learning inside and...
Conclusions and future work

Conclusions

- We developed a model, and as we were not able to access the services of a smart board, we used tablets as our smart boards.
- The model was able to link learner (test data) automatically to their relevant educational content with 80% precision, based on their registration details that were kept with the smart e-learning central database.
- We anticipate the growth of learners and educational data.

Recommendations

- There is need to link servers to offer big storage and accessibility services.
- Develop standard code to be used in nationwide education data coding for the education data across Kenya.
- Develop nationwide education network, instead of using commercial internet carriers to link servers.
References (some)

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Thanks for listening